



ENGINEERING ACTIVITIES OF THE MECHANIZED BRIGADE IN OFFENSIVE OPERATIONS

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In the current context, when the dynamics of defensive and offensive operations is pronounced, which involves numerous and frequent movements and maneuvers of forces and means, modern armies attribute the primary role in ensuring their own mobility and countermobility of adversary forces which demonstrates the pronounced dynamic character of military actions. Due to the conditions and volatility of the operational environment in which the military forces must act, the engineering support is an important factor in the preparation and conduct of operations, but also in achieving the desired end state. In offensive operations, which are executed jointly, the engineer's missions support the development of the combat environment for the maneuvering forces in contact, accelerate through mobility, tactical movement and provide the necessary infrastructure to protect their own forces.

Keywords: engineering support; mobility; offensive operations; countermobility; protection.

Due to the current security environment characterized by relative complexity and instability, when military actions can be both violent and nonviolent (cyber or electromagnetic actions), engineering support must acquire an increased and modern dimension to facilitate and streamline its own actions, while counteracting the actions of the enemy, especially through countermobility and maneuvering missions.

The modernization and reorganization of the land forces, in most modern NATO partner armies, required the construction of new military expeditionary structures suitable for this process, high mobility, speed, and flexibility, equipped with military equipment and modern weapons.

The disappearance of mastodon armies, cumbersome and unable to cope with hybrid or conventional risks and threats, has led to the design of especially organized structures, trained on the principle of professionalization of force and equipped with combat equipment and materials with high performance characteristics, able to intervene quickly in resolving conflict situations, for defending one's own interests or for managing crises in different areas of interest and influence. In today's confrontations, regardless of their intensity, military structures are often forced to perform

large and rapid maneuvers, at distances and with high consumption of resources, in a battlefield characterized by the existence of increasingly sophisticated weapons.

According to NATO, the technology of the current century offers commanders the opportunity to collect, store and distribute information, starting from the tactical level and only the intelligent, physically fit, highly motivated, trained and well trained will be able to exploit this technology to its full potential. Digital interconnection, at all levels, will result in precise, fast and secure communication in all situations, communication that will go beyond the existing one and will offer the possibility of integrating engineer structures within the support forces of combined armed forces.

The scientific approach aims at knowing the essential issues specific to the engineering support, sizing and leadership, at the level of combined armed forces, in accordance with the new provisions of the main doctrines, regulations, manuals, instructions and normative acts developed at the Romanian military structures.

Perspectives on the engineering support of the mechanized brigade in offensive operations

Modern military operations are increasingly dominated by the use of unmanned aerial vehicles, which forces military structures to perform multiple maneuvers and movements in the area of operations, hence the need for high mobility,

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mainly with the support of engineers.

In the Romanian military sense, engineering support represents "the totality of engineer tasks that are planned, organized and executed by specialized engineer forces in support of all forces participating in combat."¹ Within the land forces, the place of the engineer structures depends on the echelon in which they act, on their missions, as well as on the engineering tasks entrusted to them. From an action point of view, engineer structures are positioned within the fighting support forces.

The brigade's engineering company performs specific tasks, both in the main operations – offensive and defense, as well as in stability and support operations or intermediate ones.

A particularly important role is assigned to the engineer forces in actions to help the civilian population, in crisis situations, by involving them in the search-rescue-evacuation, in case of floods or snow. The offensive actions are part of the main operations carried out by the mechanized brigade, and the engineering activities and, the engineering support too are important elements that can ensure success and victory.

Therefore, the engineering support, together with the other components of combat support, among which we mention artillery fire support, anti-aircraft or logistical support, becomes decisive in the successful conduct of operations at the tactical level.

Offensive, as a decisive kind of operations, is considered the way in which the commander imposes his own will on the opponent. In the sense that strategic, operational or tactical decisions require the defeat of an opposing force, at any level, then it goes on the offensive. Even during the actual defense, we consider that taking over and maintaining the initiative requires offensive actions aimed at the rapid and decisive conquest of objectives, with minimal personnel losses and means of combat.

From another point of view, the commanders of the combat armed forces, carry out offensive actions in order to deprive the opponent of resources or limit his access to them, occupy key points in the field, collect data and information or to keep the opponent in defensive positions, unable to fight back. To achieve these goals, engineer forces make estimates and assessments that are essential in developing the design of the operation, because

accurately identifying the opponent's obstacle system facilitates avoiding the strong elements of the opponent and hitting him on the flanks or at intervals.

The manual of engineering support in tactical operations defines the purpose of the offensive operation as „imposing one's own will on the enemy or creating the conditions for the success of subsequent operations, for the cessation of hostilities and the transition to post-conflict operations, using force or threat."² The advantages of conducting an offensive operation depends, first of all, on the commander's ability to impose his will, by having the initiative, choosing the decisive moment to attack, as well as by setting the pace of the offensive, and the engineer forces supports the offensive actions of the mechanized brigade within area of operations. We can admit that the engineering support of the offensive operation aims at: "creating favorable conditions for the timely, safe and covert realization of the offensive formations; ensuring the protection of forces during the preparation and conduct of the operation, ensuring the mobility of own forces; achieving the countermobility of the opponent's forces, etc."³ and is found in both methods of the offensive – from movement and direct contact with the opponent.

When analyzing the engineering support of the attack we can say that it aims to create optimal conditions for breaking the opponent's defense, destroying and capturing it, and in antithesis, the offensive is adopted from a defensive position, after regrouping forces. The base of the offensive is a portion of terrain, where engineering activities have been made, and has an area corresponding to the combat formations that must provide mass killing, protection against enemy fire systems, especially chemical, biological, radiological and nuclear, the basis from which the attack can be triggered. The preparation of the base for the offensive will be carried out, mandatorily, during the night or in secret, using the engineering activities or the natural shelters existing in the brigade area of operations.

The offensive operations (attack) is adopted when there has been enough time to organize the defensive system, including engineering activities, but also if the area of operations does not have practicable roads for quick deployments.



The offensive operations (movement to contact and attack) is the procedure adopted, as a rule, when the opponent had time to organize a deep staggered defensive system, and its penetration requires the synchronized use of the entire offensive potential of the attacker.

The offensive operations (movement to contact and attack) is adopted against a chaotic or hastily prepared defense of the opponent, in which the secondary goal is to gain time, and the main one is represented by exploiting a vulnerability and taking the initiative, following the successful conduct of a defensive operation.

The forces used to launch the attack by this process are those available at the time of the decision or are brought from behind, and the preparation time is reduced to a minimum to move to destroy the opponent before he concentrates or improves his defensive system. For the successful development of offensive operations (movement to contact and attack), it is necessary to have a network developed of routes for the execution of the movements and of sufficient means of fire to neutralize the opponent. In this situation, the fire preparation of the attack starts from the moment of entering one's own forces in the opponent's artillery battle and can be executed, both by one's own means and by those of the forces in contact.

For the preparation of the offensive operations (movement to contact and attack) the following are established: concentration areas, approach routes, starting points, coordination points, phase lines, directions, coordination of fire support coordination and the final objective.

During the offensive operations, the maneuvering forces reports to the command points all the data from the field to support the effort of the upper echelon in avoiding or removing all natural obstacles or arrangements encountered on the offensive direction, and when detours are identified, it is preferable to have them used. In our opinion, the engineering support in offensive operations has the role of "paving the way" and facilitating the movement, maneuvering, hitting the opponent and the successful exploitation of combat armed forces.

Engineering activities and the main areas of engineering support – current concepts

The adjustment of the physical environment (terrain) of violent battles, in relation to the

operational requirements, contributes to the firmness and suppleness of the combat formations, but also to the protection of the forces against the actions and effects of the opponent's strikes.

The engineering activities of the terrain represents "the totality of the adjustment actions, from the engineers point of view of the terrestrial physical space – including the inland waters, the ports and the coast – of carrying out the operations, both in terms of changing the characteristics of the natural terrain and the military action."⁴

The definition of engineering activities has a general character, this being applicable to all military actions, which gives it a comprehensive area, missions and engineers work having the degree of selection, depending on the characteristics and size of the opponent, form and type of military actions, operation concept and other factors that influence the operational environment.

The engineering activities of the terrain remain a basic component of the structure of the offensive operation, alongside, and in full accordance with, the combat formations and the striking system. Thus, in its own perspective, the concept of engineering activities of the terrain should not be reduced to the works and engineering protection measures, its goal being much wider, aiming, in essence, at the important functions of engineering support.

Regarding the engineering activities of the mechanized brigade during the conduct of offensive operations, we consider that it can be achieved through specific actions and works, both in force protection and in engineering support, following the conception and approval of the upper echelon.⁵ Of course, the engineering activities, in the offensive action, definitely contributes to the achievement of an increased pace of actions and to overcoming the opponent who defends himself, depending on the forces, means and time available and under the direct coordination of a structure specialized in engineering support.

NATO's approach to offensive engineering support is clear and involves "maintaining the continuity of the attack of its own forces"⁶ so that the conquest of objectives can be achieved. Regardless of the offensive procedure adopted, engineering support is the essential element and manifests itself in four main areas, as follows: "mobility, countermobility, maintaining operational capacity and general engineering support."⁷



The concept of mobility is vital in the activity of preparation and deployment of offensive military actions. The engineering forces from the staff of the mechanized brigade bring an essential contribution to the achievement of the main elements specific to the mobility of the forces. We consider that the combat actions carried out by the engineering forces during the offensive operation are organically integrated in their joint character and are acutely manifested in the field of engineering support.

Mobility is a quality or capability of military forces that allows them to move from one place to another, while maintaining the ability to fulfill their main mission.⁸ Mobility tasks are those activities of combat armed forces that mitigate the effects of obstacles to allow freedom of movement and the execution of the maneuver of their own forces.

I believe that mobility plays an important role in the rapid deployments of the elements of the mechanized brigade staff in order to achieve the concentration of effort in order to engage the opponent and having the initiative.

Countermobility involves the construction of obstacles and the location of minefields to delay, limit and destroy the opponent by arranging the terrain.⁹

A similar definition of countermobility is found in the military literature and represents "the totality of actions and measures that contribute to slowing down the maneuver or movement of the enemy and prevent the use of terrain by him."¹⁰

Analyzing both definitions, we believe that countermobility actions must be weighed in order to interrupt the opponent's mobility, but without restricting or limiting the execution of their own maneuvers in the area of operations.

The engineering support required to maintain operational capability includes physical aspects of the protection of personnel and means of combating the effects of adverse weapons or various striking systems, as well as "participation in actions to mislead the adversary."¹¹ During offensive operations, the design, provision of resources and protection of force, as well as the provision of utilities and infrastructure, become the responsibility of engineering structures. This task involves the existence of a wide range of specific means and equipment for maintaining operational capacity through concrete land use measures.

General engineering support "consists of measures and actions to ensure and provide by

the engineering forces specific resources and a specialized workforce for their own forces or for the population in the area of operations."¹² The Romanian Armed Forces, by deploying the maneuvering structures in the theaters of operations like Afghanistan or Iraq, carried out specific actions of general engineering support, executing, in partnership with the coalition forces, activities to support the local population, as well as the development of infrastructure projects.

Due to the fact that general engineering support covers a wide range of very diverse activities, it becomes mandatory to establish links with other categories of forces and services to compete and support specialized engineering forces in carrying out missions and tasks. US military experts believe that general engineering support is applicable, by performing tasks of engineering forces before, during or after hostile actions or natural or man-made disasters to reduce their adverse effects.

Therefore, engineering support is the basic concept, encountered in modern military operations, compatible with the doctrines of allied armies through purpose, tasks, forces and means available. We consider that there is a need to ensure the compatibility and interoperability, from the point of view of endowing with engineering technique, materials and high-performance ammunition, the Romanian engineers structures with the similar ones from NATO, considering the development of multinational exercises, on the Romanian territory, and to be executed in the training centers in Cincu, Smârdan or Babadag, under the name of Resolute Castle Exercises.

Conclusions

The issue of military actions carried out by Romanian military structures must be rethought and dimensioned accordingly, given that they will usually act on the national territory in crisis situations, at the beginning of a conflict, for a limited period of time, until the intervention of the Alliance and it implies the integration of the actions carried out by them in the structure of collective defense, through the NATO structures on the Romanian territory.

In the context of the above issues, the engineer forces will have the mission to analyze and provide the virtual three-dimensional image of the battlefield and its characteristics for all categories



of forces, and the role of engineering structures will become decisive.

In this scientific approach, we considered it necessary to know the principles and main requirements of Romanian doctrine and manuals, but also the terminology used by the American engineer forces, in partnership with which missions have been performed in theaters of operations in the last nineteen years.

In conclusion, the engineering activities organized in the area of operations of the mechanized brigade that performs offensive actions is a topical and highly complex issue that requires a special study and analysis by the factors involved in designing strategic scenarios and joint operations, and engineering structures must develop more effective techniques, tactics and procedures for the protection of forces against multiple and various threats.

NOTES:

1 *** F.T./G.-2.1, *Manualul pentru luptă al batalionului de geniu* (Field Manual – Engineer Battalion), Bucharest, 2019, pp. I-2 – I-3.

2 *** F.T.9, *Manualul sprijinului de geniu în operațiile de nivel tactic* (Field Manual – Engineer Support), Bucharest, 2017, p. VII-3.

3 *** F.T./G.-1, *Manualul pentru luptă al brigăzii de geniu* (Field Manual – Engineer Brigade), Bucharest, 2018, p. IV-1.

4 *** G.-1, *Doctrina sprijinului de geniu în operațiile întrunite* (The doctrine of engineering support in joint operations), Bucharest, 2016, p. 14.

5 *** *Manualul pentru luptă al brigăzii mecanizate (infanterie, infanterie ușoară)* (Field Manual – Mechanized Brigade), Bucharest, 2004, p. 43.

6 *** NATO- ATP – 52 (B), *Land forces military engineer doctrine*, revision, 2008, p. 20.

7 *** G.-1, *Doctrina sprijinului de geniu în operațiile întrunite* (The doctrine of engineering support in joint operations), Bucharest, 2016, pp. 14-15.

8 *** FM 3-34, *Engineer operations*, Department of the Army, Washington, D.C., 2020, p. 2-2.

9 *** ATP 3-34.40, *General engineering*, Department of the Army, Washington, D.C., 2015, p. 1-4.

10 Petre Grecu, *Amenajarea genistică în acțiunile militare* (Engineering activities in military actions), Bucharest, Ars Docendi Publishing House, 2003, p. 103.

11 *** F.T./G.-2.1, *Manualul pentru luptă al batalionului de geniu* (Field Manual – Engineer Battalion), Bucharest, 2019, p. I-3.

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