Bulletin of "Carol I" National Defence University
10.12753/2284-9378-20-49

MOBILITY – COUNTERMOBILITY CORRELATION IN MILITARY ENGINEERING

Col. Adrian-Robert GHEORGHE, PhD Candidate*

The movement and maneuver have been and will remain over time imperative requirements of military structures in the tactical field. Technological progress has offered high possibilities to maneuvering structures for maintaining their freedom of movement in the tactical field, simultaneously with interdicting/hindering the maneuverability of the opponent. The need to ensure increased mobility of own combat structures in the tactical field, led to the emergence of a new generation of combat engineer support forces, modular and standardized, with a doctrine in line with the requirements of the modern battlefield and especially with an increased adaptation and integration capability of external resource, in order to fulfill its specific tasks.

Keywords: mobility; countermobility; movement; maneuver; obstacles.

In the treaties that study armed conflicts, the concepts of mobility and countermobility have occupied a special place, a well-deserved one, given their importance in the confrontations that have taken place throughout military history. Most of the time, these concepts have been studied together and this thing has certainly not been done without a reason. Military theorists have noticed that mobility and countermobility have been permanently interconnected and only a unitary approach to them has generated a significant increase in the success rate of military actions.

General considerations regarding the conceptual framework underlying the notions of mobility and countermobility

In military actions, the armed forces need the possibility of rapid execution of *movements* in order to occupy some new areas or in order to execute the *maneuvers* imposed by the situation on the battlefield.

From what was mentioned above, one can distinguish two concepts that must be treated in close connection: *movement* and *maneuver*.

Movement is the action by which groups of forces are dislocated from one place to another. This can be done by march, transport or a combination of them, and according to the Military Encyclopedic Dictionary, "the movement of forces is a military action in which forces perform a movement, in order to move from one area to another, to take part in battle or to maneuver, performed by march, transport or a combination of them" [1].

Before talking about the maneuver, firepower should be defined. Firepower is a powerful tool in weakening the opponent's ability and will to fight and is used to destroy, neutralize and / or disorganize opposing forces.

Firepower and *movement* complement each other and perform the *maneuver* together.

The importance of maneuvering on the battlefield is well-known, but, in order to emphasize the connection between movement and maneuver, one can quote from the Explanatory Dictionary of the Romanian Language, the 2nd edition of Univers Enciclopedic Publishing House, Bucharest, 1996. "The maneuver is an organized and rapid movement of some military units, intended to strike the enemy or to withdraw from his action"[2].

Maneuvering according to modern military concepts is one of the seven combat functions available to commanders; it is used "to create the necessary conditions for the success of the operation, by moving forces in relation to the opponent, so as to put him in a position unfavorable by the movement of forces and means" (FT-1 Doctrine of Land Forces Operations).

The doctrine of land forces operations defines maneuvering as "the process by which combat power is concentrated where its effect is decisive in overtaking and disorganizing the opponent's actions and requires mutually compensating actions – loss of speed to gain time, breadth for depth, concentration for dispersion".

***„Dunărea de Jos" 10 Gen Brigade**
e-mail: *gheorghe.adrian@forter.ro*

Aspects that define mobility and countermobility in NATO member armies

In order to execute *movements* or *maneuvers* on the battlefield, the forces must overcome natural or artificial obstacles, this capability being conferred by *mobility*.

Mobility is necessary to achieve effort concentration and rapid deployment, to engage the enemy, or to achieve retreat. *Mobility* achieved at a higher and well-coordinated level can compensate for numerical inferiority. The criterion of *mobility* is an important factor in determining the technique and vehicles used by the fighting forces.

In the American specialized literature, it is stated that: "*Mobility operations* are those combined arms activities that mitigate the effects of natural and man-made obstacles, to ensure freedom of movement and maneuver (ATTP 3-90.4). The primary purpose of mobility is to mitigate the effects of natural and man-made obstacles. Mobility operations include reducing, bypassing, or clearing obstacles (including gaps) and marking lanes and trails, to enable own forces to freely move and maneuver. These tasks frequently occur under conditions that require combat engineer units and most frequently, they occur when conducted at the tactical level, for maneuver support. The support for early-entry operations includes reconnaissance that mitigates antiaccess and area – denial mechanisms to clear and open aerial ports and seaports of debarkation. These tasks are often considered combat engineering tasks, even though general engineering units can perform them when the conditions allow"[3].

US military experts believe that in order to increase the maneuverability of their troops, engineer forces must improve their *mobility* by performing the following main types of tasks:

- conducting obstacle crossing;
- conducting area and route clearance;
- conducting the crossing of deep and narrow obstacles;
- constructing and maintaining combat routes and trails;
- constructing and maintaining airfields and landing areas;
- conducting and implementing traffic on communication network, in the managed area[4].

To highlight the correlation between *mobility-countermobility* in the modern battlefield, we will analyze the phrase "fighting power" of a joint force.

The fighting power of a joint force is a result of the combination of the following elements: information, *maneuver*, striking power, protection and command. The fighting power expresses the ability of a joint force to perform operations.

The superior *mobility* used to occupy key positions in the field at the proper moment of the battle, in order to catch the opponent's attention, using fire can determine a substantial increase of the fighting power of one's own forces which will have as an effect the moral domination of the opponent.

Maintaining increased *mobility* during maneuvering depends mainly on: anticipating the possibility of removing obstacles, deploying forces in the most appropriate manner, to overcome obstacles quickly, properly determining the obstacles, and the existence of effective procedures and skills for overcoming them.

A better fighting power can be obtained both by *mobility* (movement) as well as by *countermobility*.

About the *countermobility* operations, military engineering specialists from the American army state that: "they are those combined arms activities that use or enhance the effects of natural and man-made obstacles, to deny the enemy's freedom of movement and maneuver. The main purpose of *countermobility* is to slow down or divert the enemy, in order to improve the target acquisition time and to increase weapon effectiveness. The existence of networked engineering munitions that can be rapidly placed, and remotely controlled, enables engineers to conduct effective *countermobility* operations as part of offensive, defensive, and stability tasks and during the transition periods of time between these operations" [5].

Countermobility influences two elements of a joint force fighting power: *maneuvering* and force protection.

Countermobility can produce effects similar to those generated by mobility, and one of them is to increase combat power. This can result from actions generating countermobility, when these actions cause the opponent to be in a disadvantageous position.

Countermobility actions and measures are planned and executed to ensure the ingenious use

of planimetry and relief details, in the establishment and location of obstacles, including the proper use of mines for flank protection.

To achieve countermobility, the combat engineer troops together with the other categories of forces, integrating natural obstacles in the field, perform barriers (explosive, non-explosive or mixed), demolitions and camouflage – CCD (Camouflage, Concealment and Deception) tasks. Simultaneously with the execution of these actions, the units destroy by fire the forces and the means of the enemy. In the view of military specialists from the North Atlantic Treaty Organization, mine barrages are the main element of countermobility, and within it, one can conceptually include some of the natural/man-made obstacles existing in the area of operations or responsibility.

In the main modern NATO armies, modern barrage systems have been designed and built; by rapid means of dispersal (artillery, missiles, aviation, helicopters), as well as by mines and intelligent explosive means of the second, third or even fourth generation, they considerably increased their effect on the opponent's armoured vehicles and fighting technique.

In the design and the execution of a modern system of mine barrage, three important elements are taken into account:

1) mine fields – their center of gravity being represented by anti-armored mine fields;

2) own forces – specialized or non-specialized, but possessing the ability to quickly plant a wide range of mines;

3) the period of time in which the self-destruction of mines positioned in the tactical field can be set, depending on the requirements of the military actions.

In the conception and the doctrine of using the mine barrages, it is extremely important to have them engaged in combat, as a dynamic component of the own troops' fight against the aggressor's armoured vehicles.

In point of their combat utility, mine barrages can be used in three ways:

1) depending on the terrain;

2) situation oriented;

3) target oriented.

Taking into account the arguments previously mentioned, it can be stated that mine barrages, in the conception of modern armies, constitute the main element of *countermobility*. The concept of their execution differs from one army to another, but regardless of the type of mines and explosives used, regardless of the characteristics of dispersal means, actions follow mandatory elements of compatibility and interoperability established by NATO for achieving these obstacles.

To deny the opponent's freedom of movement and maneuver, the US engineer forces perform the following main types of tasks:

- placing obstacles;
- constructing, placing, or detonating obstacles;
- marking, reporting, and recording the existence of obstacles;
- maintaining the integrity of obstacles [6].

It is very important that as operations within the NATO Alliance become more expeditionary, so do the requirements for effective engineering support to all participating forces.

Because the *mobility* of own troops and the *countermobility* of enemy troops require a large amount of labor, resources, and time, early identification of engineering support requirements will help establish important constraints at all levels, from the strategical to the tactical one. In addition, engineers must be consulted in the process of selecting objectives/targets, in order for the combat area to be established and prepared in accordance with the commander's intention.

Engineers' recommendations must be valid for all branches/specialties, and their involvement in expeditionary operations will be considerable.

It is highlighted that the objectives of engineering support in NATO require that the activity of engineers be managed, following three main factors: the availability of capabilities and the interoperability of engineer forces; command and control of engineer forces and the task of engineer forces to support the sustainability of NATO forces.

The actual use and the support of combat power elements, in a unitary manner is likely to decide the final result of any kind of operations. Commanders and staffs will mainly aim at using *mobility* and *countermobility* to integrate maneuverability, striking power and protection in the optimum alternative for the situation created.

The data presented on *mobility* and *countermobility* so far, lead us to say that planning

and ensuring the *mobility* of own forces must be designed in close correlation with the reduction/ annihilation of enemy *countermobility*, and vice versa, when referring to defense, respectively achieving *countermobility* while reducing enemy *mobility*.

The tendency of permanent modernization existing in the armies of NATO states is obvious, considering the fact that proper organization and endowment represents a solid base for the success of military operations.

All branches depend, to a certain extent, on the existence of some technical platforms (vehicles) able to provide *mobility*, protection and last, but not least, the ability to design the capability needed to produce the desired effect on the battlefield, in order to accomplish the mission.

Advanced approaches regarding the mobility and countermobility of military engineering structures

For a better understanding of the correlation between *mobility* and *countermobility* in engineer forces, it is necessary to present the main tasks of engineer forces in *mobility* and *countermobility* operations performed by modern armies and thus they are specially selected to manage obstacles and *mobility* corridors in a unitary concept and in full agreement with the maneuver performed by own troops. Continuing the analysis, it can be seen that the management of *mobility* corridors and obstacles on the battlefield requires increased mobility of engineer forces, as well as a special logistical capacity to ensure the considerable resources needed to place obstacles or perform road construction/maintenance work.

The *mobility* of engineer forces must be at least equal to that of maneuvering structures, and this condition is still a remarkable challenge for engineers who design engineering equipment platforms.

Why is it still a challenge to build such equipment? Because the requirements in the tactical field are not only very varied, but may also require a very large volume of work, and this requires oversized dimensions and large masses.

Modern technical solutions have led to the creation of universal engineering platforms that are usually on tank chassis for combat engineer forces, and for general support engineer forces wheeled multifunctional vehicles have been chosen, some of them having the possibility to be equipped with shield plates providing adequate protection to the servant. The evolution of technology has made it possible to reduce the size of some equipment simultaneously with the increase of the values of technical–tactical characteristics of the equipment.

Taking into account the high volume of engineering works, as well as the impossibility of providing a large number of engineering equipment at the level of maneuvering forces, specialists have developed technical solutions that require the existence of equipment (minesweepers, assault bridges, etc.) that can be mounted/attached to combat vehicles or transport vehicles before entering the obstacle area. This equipment is meant to increase their maneuverability in the tactical field, without using specialized engineering means.

The factors on which *mobility* depends in this situation are: the early detection of possible obstacles; the deployment of forces in an appropriate manner, to quickly overcome obstacles; early detection and execution of obstacle reconnaissance; adopting the most effective passing procedures.

Engineering equipment has also been developed, to create *countermobility* to the opponent. They are mounted on tanks or infantry vehicles and can launch mines to protect the flanks during a maneuver.

Yet, the most important aspect we can notice today when we talk about modern engineer forces refers to the tendency of reducing their logistic print.

This involves smaller and more efficient engineering ammunition, small multifunctional equipment with high technical and tactical capabilities and low consumption, equipment with superior characteristics that require being operated by a small number of military personnel and regarding this equipment it is intended to modularize and standardize it, in order to obtain full interoperability among all types of existing military forces at the level of the alliance.

Conclusions

As an important conclusion, within the land forces of the NATO member armies there is a permanent tendency to modularize and standardize the structural elements of the engineer forces, having as main objectives: direct support of troops

engaged in combat, satisfying as much as possible the engineering support needs of the engaged forces, reorganizing specific combat missions, but also limited specialization of engineer forces.

From what is presented in this article, we can notice that this *mobility–countermobility* correlation ensures a higher level of combat capability and directly influences the combat power of a joint force. The actions and measures of *mobility–countermobility,* judiciously and efficiently used, in a unitary conception during operations, can determine the achievement of success both in combat and operations.

In conclusion, it can be said that *mobility* and *countermobility* are two very important concepts that military planners and experts in this field must take into account, especially during the planning of military actions (at all levels), and the commanders when planning and conducting military operations.

NOTES:

1 *** *Dicţionar enciclopedic militar,* Academy for Higher Military Studies Publishing House, Bucharest, 2001, p. 25.

2 *** *Dicţionarul explicativ al limbii române*, 2nd Edition, Univers Enciclopedic Publishing House, Bucharest, 1996, p. 242.

3 *** *FM 3-34, Engineer Operations* , Washington DC, April, 2014, p. 31.

4 *Ibidem*, p. 32.

5 *Ibidem*, p. 33.

6 *Ibidem*.

REFERENCES

*** *Dicţionar enciclopedic militar*, Academy for Higher Military Studies Publishing House, Bucharest, 2001.

*** *Dicţionarul explicativ al limbii române*, 2nd Edition, Univers Enciclopedic Publishing House, Bucharest, 1996.

*** *FT-1 Doctrina operaţiilor forţelor terestre*.

*** *FM 3-34, Engeneer Operations,* Washington DC, April, 2014.

Gl.bg. Grecu Petre, *Amenajarea genistică a acţiunilor militare*, Ars Docendi Publishing House, Bucharest, 2002

Col.Prof. Preda Ion, PhD ş.a., „Procesul de planificare în operaţiile militare", *Bulletin of "Carol I" National Defence University*, no. 4/2004.

Gl.mr. Frunzeti Teodor, PhD, „Mobilitatea fortelor – condiţie importantă pentru creşterea capacităţii de autoprotecţie şi de atac a forţelor terestre", seminary *România – membru al Alianţei Nord-Atalantice*, Bucharest, 2004.

Gl.bg. Visarion Neagoe, PhD ş.a., *Experienţă acumulată – Operaţii de geniu*, Technic-Editorial Center of Romanian Army, Bucharest, 2006.