Bulletin of "Carol I" National Defence University
10.53477/2284-9378-21-48

MILITARY ENGINEER CAPABILITIES PARTICIPATING TO OPERATIONS IN SUPPORT OF THE LOCAL AND CENTRAL AUTHORITIES IN EMERGENCY SITUATIONS. PRESENT AND FUTURE

Col. (ret) Lect. Andrei Th. CONSTANTIN, PhD*

Climate change over the last two decades, coupled with the health crisis caused by the SARS COV-2 virus, requires central and local public authorities to involve all resources are available to preserve the health and life of the population, as well as for the protection of their material and cultural values.In addition to the fact that the Romanian Army performs support functions, it has unique capabilities whose use becomes indispensable for the management of civil emergencies[1]. Compared to the tasks to be performed, in order to limit and eliminate the consequences caused by disasters, the military engineer structures in the Romanian Army represent the most adequate capability, by the fact that they are able to intervene in most situations. However, the military engineer capabilities must be constantly perfected and adapted so that they are able to respond to the new types of risks that may arise.

Keywords: emergency situation; emergency intervention; military engineer structures / military engineer capabilities.

Considerations on emergencies and intervention to limit and eliminate their effects

The current situation, to which we refer, reveals the fact that, in the last twenty years, the number of events generating emergencies have started to occur on our planet four times more often than before.

Scientists and researchers have discovered that there is a direct relationship between global warming and the growing number of natural disasters on our planet. If in the 80's there were 120 natural disasters in the world every year, today the number of natural disasters is about 500 cases a year[2]. Moreover, starting with the end of 2019, humanity is facing a large-scale health crisis generated by the SARS-CoV-2 virus.

For this reason, events such as natural disasters, serious disasters can simultaneously hit one or more areas of the national territory without warning.

An analysis of the risks that can generate such emergencies highlights the following types of events: vegetation fires, heavy rainfall causing floods, massive snowfalls, earthquakes, tornadoes, accidents and technological explosions, landslides land, epidemics/epizootics, the failure or sinking of ships, falling objects from the atmosphere or the cosmos[3].

Depending on the magnitude of the event, its consequences can be unpredictable and can culminate in serious damage to the life and health of the population, as well as significant material damage. For these reasons, most emergencies require urgent intervention to prevent a worsening of the situation, although sometimes mitigation may not be possible and the structures called upon to intervene may only provide palliative care for the aftermath.

A common, inter-institutional approach to emergencies is the right and viable solution. In this way, expertise and capabilities are brought together, duplication of relief efforts is avoided and it is also ensured that assistance meets the needs of those affected. Therefore, pooling capabilities allows the state to have a strong and coherent collective response. Moreover, it contributes to the coordination of disaster preparedness and prevention activities and contributes to the exchange of good practices. This facilitates the continuous development of high common standards, enabling intervention teams to better understand different approaches and work interchangeably in the event of a disaster.

At national level, the prevention, monitoring and management of emergencies is carried out in an inter-institutional and interdepartmental framework

**"Nicolae Bălcescu", Land Forces Academy, Sibiu*
e-mail: *cnstntnandrei@yahoo.com*

by the National Emergency Management System[4], whose main responsibilities are to restore normalcy after a disaster.

The Romanian Army is a part of the National Emergency Management System, and the support of local and central authorities in civil emergencies is one of its basic missions[5]. In this sense, the Ministry of National Defence, in order to fulfill its responsibilities, at the central level, constitutes a ministerial committee that operates under the leadership of the Minister of National Defence and also provides structures capable of participating in limiting and eliminating the effects of disasters.

The tasks that can be performed by the structures of the Romanian Army are in correlation with the risks mentioned above, and these are: monitoring the risks and dangers generating emergency situations; searching for and rescuing people; evacuation of the population and material goods affected by disasters; providing emergency medical assistance; participation in locating and extinguishing fires; ensuring the transport of forces and means of intervention, evacuated persons and other resources; creating facilities for accommodation and shelter for people affected by disasters; decontamination and depollution of land, equipment and materials; logistical support for restoring public order; intervention logistics; rehabilitation of the affected area.

The intervention of the structures of the Romanian Army, in order to limit and eliminate the effects produced by the events generating emergency situations, is carried out gradually on types of potential risk, the magnitude of the effects produced and with the achievement of a saving of forces and means.

Military engineer structures are the basic component of the Armed Forces that can intervene to limit and eliminate the effects of most types of accidents that can occur in our country.

Engineering support missions and their association with the support functions assigned to the Ministry of Defence in emergency situations

The analysis of engineer support missions, from the perspective of using military engineer capabilities to limit and eliminate the effects of calamities and disasters allows the association of specific missions of military operations with activities carried out during interventions in disaster areas. As a result, there is a correspondence between missions and support functions assigned to the Ministry of Defence in emergency situations generated by disasters. This correspondence explains the fact that in tradition, in the Romanian army, the military engineer structures represent the main force that can act in these situations. At the same time, military engineers can act as needed to fulfill other non-specific missions.

In the list of engineer support missions, in the two forms of manifestation (combat support and force support)[6], one can identify areas common to the participation of engineers both in military operations and in civilian emergencies. Therefore, the engineering support missions find a correspondent in the support functions assigned to the Ministry of Defence for emergency situations generated by calamities and can be as follows:

- operations of reconnaissance, identification, location and collection of data and information on areas affected by disasters and calamities, monitoring of specific hazards and risks, as well as their negative effects, evacuation the population in imminent danger;
- restoration of the civil communication routes and the construction of the temporary access roads to/from the calamity areas;
- restoring the continuity of communication routes to isolated localities/areas, by arranging the crossing points on temporary bridges or gates;
- unblocking of communication routes by eliminating the effects of landslides, the destruction of ice bridges/blockages on frozen rivers and the remains of damaged buildings/installations that endanger the safety of the population;
- protection/consolidation of the banks/dams/slopes/bridges/hydro technical and hydropower works with protection and support systems;
- arrangement of the camps for the victims, of the field hospitals (sanitary points) deployed in support of the calamity population;
- arrangement of the evacuation areas of the victims, of the storage points of the humanitarian aid (materials, equipment, installations);
- regarding water purification, storage and transport;
- installation and servicing of the means and equipment for the supply of electricity.

Correspondence between engineer support missions in military operations and support

functions of the Romanian Army in emergency situations leads to the opportunity to widely use military engineer capabilities to limit and eliminate the effects of disasters or other serious disasters.

Military engineer capabilities for the performance of engineer support missions, which may be associated with support functions assigned to the Ministry of Defence in civil emergency situations

The Romanian Army was engaged and acted permanently to manage the events generating emergencies using the necessary and sufficient human and material resources to return to normalcy.

The analysis of military capabilities, which can be made available by the Ministry of National Defence for the performance of assigned support functions, reveals that military engineer structures are among the most suitable for emergency response.

The use of military engineer capabilities is a determining factor in limiting and eliminating the consequences of disasters. The intervention of military engineer structures, for the management of emergency events, demonstrated and validated their usefulness, with a major impact on the return to normalcy and the resumption of daily life by the affected population, the most significant of which are presented below:

- the construction by the soldiers of the 3rd Engineer Battalion "General Constantin Poenaru" of military bridges over the Buzau River. They re-established the road connection between the historical provinces of Muntenia and Moldova, as a result of the floods produced in the summer of 2005 and which had the effect of destroying the concrete road bridge over the river Buzau, near Maracineni located on the road communication DN 2- E85. For their construction, the military used the PJM-72 metal bridge deck complete;
- distribution of basic food, mineral water and blankets by the soldiers of the "Bucharest Fortress" 96th Engineer Battalion in Teleorman and Bacau counties in the summer of 2005, The military also participated in the evacuation of civilians from areas affected by floods, such as and the evacuation of alluvium from individual households;
- the evacuation of the population affected by the floods and its material goods, by the soldiers of the "TISA" 52nd Engineer Battalion, in the summer of 2005 from Timis County in 2005;
- the evacuation of the population and of the material goods by the soldiers of the "Panait Donici" Engineering Training Center, in December 2005, as a result of the landslides produced in Ocnele Mari locality, Vâlcea county;
- unblocking/clearing, in the winter of 2006, by the soldiers of the "Bucharest Fortress" 96th Engineer Battalion, with the help of explosives of road and railway communication routes on the Olt Valley as a result of landslides caused by heavy rainfall;
- participation of the military of the "General Constantin Savu" 72nd Engineer Battalion to limit the effects of floods in the summer of 2010 by building the pontoon floating bridge using the bridge park of pontoons PR-71, over the river Suceava, in Dornești on DN 17A Siret- Rădăuți;
- the participation of the military from the "Lower Danube" 10th Engineer Brigade in unblocking the roads in Brăila County, and saving lives after the massive snowfalls of 2012, 2014, 2016;
- the participation of the soldiers of the "Danubius" River Crossing Battalion in the winter of 2012, in the unblocking of the river navigation routes, between Km 170 and km 176 using the Tugboat "Eftimie Croitoru";
- the participation of the soldiers of the "Bucharest Fortress" 96th Engineer Battalion in the construction of the infrastructure for the installation and operation of the Military Campaign Hospital at the Ana Aslan Institute during the pandemic generated by COVID-19.

The examples mentioned above are sufficiently eloquent and highlight the fact that military engineer structures have multiple and diversified capabilities for intervention in civil emergencies.

As a recognition of the high capacity for intervention, for the management of emergency situations, on 01.07.2002, the 52nd Genius Battalion "TISA" is established. Its birth certificate consists of the signing on 18.01.2002 l, by the defense ministers of Romania, Ukraine, Hungary and Slovakia of *the Agreement for the establishment of a multinational engineer structure*[7], able to intervene to limit the effects of major floods in the basin river basin of the Tisza River.

The potential of military engineer structures to make available to local and central authorities military capabilities, on types of probable risks,

in order to limit and eliminate the consequences of disasters and natural disasters, is high and may target the following activities:

- reconnaissance and monitoring of specific dangers and risks on watercourses, roads, works of art, extra-urban lands, dams, banks, etc.;
- evacuation of the affected population and material goods;
- arrangement of disaster camps and warehouses for material goods;
- arrangement of platforms and installation of field hospitals;
- arranging landing platforms;
- restoration/arrangement of some road sections and/or of some works of art;
- strengthening/consolidating some banks/ dams;
- arranging and servicing some crossing points on fixed supports/floating bridges and river vessels;
- diversion of watercourses in order to prevent household floods;
- controlled destruction of dams, banks or ice sheets to prevent the formation of dangerous water accumulations;
- clearing the access roads with the help of explosives;
- water supply to the affected population;
- electricity supply.

Trends in the development of military engineering capabilities for participation in emergency management

In order to fulfill the tasks related to the mission of support of local and central authorities in civil emergencies, it is necessary for the Romanian Army, in general and military engineer structures in particular, to continue the transformation process, in order to achieve adequate and adapted capabilities to all risks and potential hazards the national territory is subject to.

Military transformation is a complex process that covers, among other things, the areas of structural reorganization and endowment with modern equipment.

Equipping units with military engineer equipment must be aimed mainly at[8]: modernization and improvement of existing military equipment; production/purchase of new military engineer equipment adapted to the contemporary operational environment and complying with NATO standards; high maneuverability and skill; large-scale introduction of new technologies in the production process of military engineer equipment through cybernetics and robotization.

Beyond the modernization of the equipment from the endowment of military engineer structures, it is necessary to create entities and organizations, following the model of states with consolidated experience in the field of emergency intervention.

An example of good practice is Austria, which in 1990 set up a military disaster response structure called the *Army Reaction and Disaster Response Unit* (ARDRU)[9]. Also in the US, the US Army Corps of Engineers and the National Guard play a particularly important role in disaster response.

At the level of the European Union, the decision was taken in June 1999 to set up a capability to intervene in military and civilian crises. The meeting of foreign ministers held in 2000 ended with the establishment of a common mechanism to improve cooperation in civil assistance and protection interventions[10]:

The mechanism also contributes to the coordination of disaster preparedness and prevention activities of national authorities and contributes to the exchange of good practices. This facilitates the continuous development of higher common standards, allowing teams to better understand different approaches and work interchangeably when a disaster strikes. As an additional asset for the mechanism, the EU has established a European reserve of additional capacity ("rescEU reserve"). The reservation includes firefighting aircraft and helicopters and medical equipment. We are currently developing medical evacuation capabilities[11].

During COVID-19, the EU distributed tens of thousands of protective masks, medical gloves and 30 fans from strategic rescEU distribution centers currently hosted by 9 EU Member States to countries in need. To ensure a better response to future challenges, new EU civil protection legislation – in force since May 2021 – gives the EU additional capacity to respond to new risks in Europe and the world and stimulates the rescEU reserve[12].

By similarity at the level of the Romanian Army, in addition to the existing military engineer structures, intended to meet the operational

requirements of the army, entities can be created exclusively for intervention in emergency situations.

The establishment of these structures will bring benefits both in terms of the availability of military engineer capabilities for intervention and the promptness of response to limit and eliminate the effects of disasters. The arrangement and value of these structures will have to respect the principle of territoriality, the classification will be made with active and reserve soldiers, and the endowment will be made according to the potential risks of each geographical area.

Another positive aspect is the avoidance of affecting the operational capacity of the basic military engineer structures.

Conclusions

The intervention of the central and local authorities, for the management of the events generating emergency situations, has a decisive role for the saving of human lives, material goods and the return to normalcy.

The experience of the last years clearly shows us that the Romanian Army, through the military engineer structures in particular, represents the component best adapted to respond to the needs of the population affected by disasters.

The diversity and complexity of potential risks necessitate the constant adaptation of capabilities and response modalities, so that loss of life and property damage is kept to a minimum. Therefore, military engineer structures must go through a permanent process of structural adjustment and endowment with modern equipment, in order to be able to cope with all potential types of risk, generating disasters or other serious issues.

The set-up of the military engineer structures, intended exclusively for emergency intervention, becomes an essential requirement for a prompt and timely intervention, with major consequences in saving lives and returning to normalcy after disasters. Newly created structures should be arranged and equipped in accordance with the map of potential risks that may affect the national territory.

NOTES:

1 ***Ordonanța de Urgență no. 21 privind Sistemul Național de Management al Situațiilor de Urgență*, from 15 April 2004, published in Monitorul Oficial no. 361, from 26 April 2004.

2 Madhumitha Jaganmohan, *Global number of natural disasters events 2000-2020*, https://www.statista.com/statistics/510959/number-of-natural-disasters-events-globally, accessed on 19.10.2021.

3 *** *Ordonanța de Urgență nr. 21 privind Sistemul Național de Management al Situațiilor de Urgență*, from 15 april 2004, published in Monitorul Ofcial no. 361, from 26 april 2004.

4 *Ibidem.*

5 *** *Strategia Militară a României*, Bucharest, 2021, p. 7.

6 *** *Land Force Military Engineer Doctrine*, ATP 52 (B), pct. 109, 18 December 2008.

7 *** *Revista Armei Geniu* no. 21/2012, Râmnicu Vâlcea, 20012, p. 29.

8 Col.Assoc.Prof. Mircea Vladu, PhD (coord.), *Înzestrarea forţelor de geniu potrivit cerinţelor războiului viitorului*, "Carol I" National Defence University Publishing House, Bucharest, 2006, pp. 25-30.

9 https://www.bmi.gv.at/204_english/start.aspx, accessed on 15.10.2021.

10 *** *European Civil Protection and Humanitarian Aid Operations*, https://ec.europa.eu/echo/what/civil-protection/mechanism_en, accessed on 15.10.2021.

11 *Ibidem*.

12 *Ibidem*.

REFERENCES

*** *Carta Albă a Apărării*, 2021.

*** *Land Force Military Doctrine*, ATP-52(B), 18 December 2008.

*** *Strategia Militară a României*, Bucharest, 2021.

*** *Strategia Națională de apărare a țării pentru perioada 2020-2024*.

****Ordonanța de Urgență no. 21 privind Sistemul Național de Management al Situațiilor de Urgență*, from 15 april 2004, published in Monitorul Oficial no. 361, from 26 april 2004.

*** Colection *Revista Armei Geniu* no. 16-30, Râmnicu Vâlcea, 20012.

Col.Assoc.Prof. Vladu Mircea, PhD (coord.), *Înzestrarea forţelor de geniu potrivit cerinţelor războiului viitorului*, "Carol I" National Defence Univesity Publishing House, Bucharest, 2006.

https://www.statista.com

https://www.bmi.gv.at

https://ec.europa.eu