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# EVOLUTION OF RUSSIAN ASSAULT- BREACHING SUBUNIT

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***Summary:***

*In the Russian military art, the effectiveness of combat operations is largely dependent on the capabilities of the military engineering. It can be assumed that the capabilities of engineering forces are one of the major determinants of the efficiency of military operations. Taking into account the assumptions of contemporary operational art and tactics, the military engineering forces are constantly evolving, which results in their adaptation to the changing requirements of the environment of the operations being carried out. In this light, urbanized areas, including large agglomerations, are supposed to be places where engineering tasks will be executed. Based on the experiences of modern armed conflicts, Russian military engineers are primarily prepared for actions in the built-up environment. In the opinion of Russian specialists, the implementation of tasks in urban agglomerations requires the involvement of subunits, which ensure the maintenance of maneuverability, thereby increasing the effectiveness of combat measures used. One of the preferred solutions is to form, mainly on the basis of engineering troops, specialist task forces as assault-breaching subunits. Such an approach to adjusting (modernizing) the Russian Federation's military engineering forces to the requirements of modern warfare is not revolutionary, but a permanent evolutionary process.*

***Keywords:***

*Russian military engineering forces, evolution, assault-breaching subunits*

## INTRODUCTION

The Russian military engineering is the branch of Armed Forces purposed for engineering support of combat operations. The basic tasks of the engineering forces include: engineering reconnaissance of the enemy and terrain, erection of terrain fortifications,

construction of engineering barriers, demolition and terrain clearance, creation and maintenance of barrier gaps, preparation and maintenance of crossings and roads and fulfillment of deception tasks. Moreover, the Russian engineering forces perform tasks in the context of counter-surveillance and jamming of enemy precision strike systems. Their readiness and equipment make them also able to eliminate the effects of the enemy impact and take action in the context of disaster relief. In addition, they build and maintain airstrips for aerodromes, port facilities and naval fleet forces base areas. In the organizational structure of the Russian Federation there are subunits, units and tactical formations of the engineering military, including engineering, sappers, mining, road-engineering, pontoon and pontoon-bridge, engineering reconnaissance, crossing and assault, breaching and clearing, engineering and technical (technical rescue), deception, water exploitation and purification, power engineering and technical power engineering units. In addition, the Russian military engineering branch possesses research institutions, military higher education institutions and training centers.

## 1. THE GENESIS OF THE RUSSIAN MILITARY ENGINEERING

In the past, the necessity to have at disposal specialized troops designed for the construction of field fortifications and crossings as well as conducting siege missions was identified in the Middle Ages.[1] However, the first regular engineering subunits were formed in the French army between 1673-1681, in the Austrian and Prussian armies engineering units appeared in 1701-1704. Initially, pontoon and sappers (pioneers) subunits were formed. The genesis of the Russian engineering forces is related to the ukase of Tsar Peter I of January 21, 1701 on the creation of the Moscow Military Engineering Academy to train cadres for the future tsarist army.[2] Another Tsar's ukase of May 25, 1701, launched the formation process of the independent miners company (completed in 1702) and the first engineering and pontoon subunits (completed in 1704). By building a modern army on February 8, 1712, Peter the Great established a field artillery regiment comprising the miners company, the engineering subunit and pontonniers. In 1719, the second Military Engineering School in St. Petersburg was created in response to growing demand for staff. After the death of Peter I, the Russian engineering forces continued to develop influenced by the conclusions drawn from operations carried out by P.A. Rumyantsev, A.W. Suvorov and M.I. Kutuzov. During the Seven Years' War with Turkey (1756-63) and subsequent campaigns between 1769-1774 and 1787-1791 the improved siege art facilitated the assault of Kolobrzeg

[1] The first records of 1025 refer to the armies of the Grand Prince of Kiev Yaroslav the Wise, in which the ‘gorodniki i.e. specialists in the siege art’ and ‘mostniki i.e. builders of roads and constructors of special siege machines’ were kept. The Lviv Chronicle confirms that during the Battle of Oszela in 1219 Russian gunmen followed soldiers breaching the route with fire and axes. In 1245, during the assault of Lublin the Russians took advantage of the bases of engineering and the first siege machines. The siege art was mastered, as evidenced by seizing Pskov by Alexander Nevsky in 1242, and by the assault and seizure of Kazan in 1552 (the detonation of three mines, each with 3.9 tons of powder) and Astrakhan in 1556 by the army of Ivan IV.

[2] According to the order of the President of the Russian Federation dated 31 May 2006, the day of signing the tsarist ukase - 21 January - was established the date of the feast of military engineers of the FR Armed Forces.

(1761), while the innovative approach of A.W. Suvorov (training of subunits in built-up areas, tactics of assault groups) decided on the outcome of the storm of the Izmail Fortress (1790). Conducting maneuver operations forced the improvement of the capability to cross wide water obstacles such as the Neman, Vistula, Dnieper and Siwuch Rivers. The emergence of the first mass armies at the turn of the 18th and 19th centuries changed the warfare tactics. Line formation was replaced by column and dispersed formations. Changes in the way of fighting led, among other things, to the development of military engineering potential. In the course of the subsequent Russian-Turkish War (1828-1829) during the siege and assault of the Brailov Fortress, the Russian Army of 17,000 kept the battalion of sappers and two pontoon battalions[3].

Until 1816 the increased demand for educated cadres was met by the Main School of Engineers, which in December 1819 was transformed into the MainEngineering School, and then into the Engineering Academy in 1855. a company was the main organizational module of the Russian military engineering, which after 1816 was developed into a battalion. In 1819, engineering battalions were used to form the first Engineer Brigades. The Crimean War (1853-1856) and the defense of Sevastopol (1854-1855) proved the usefulness of the first field fortifications, which facilitated countering enemy attacks in a dispersed formation. In the region of Sevastopol, the first line of field fortifications was established, consisting of several lines of trenches, artillery positions as well as covers and shelters located at a depth of 1000-1500 m. After the defeat in the Crimean Campaign within the framework of reforming the tsarist army, Dmitry Milutin, the War Minister till 1870, concentrated most of the technical means in the reorganized engineering units. As a result of Milutin's reforms, eleven sapper battalions, 6 pontoon semi-battalions and elements of military railway units, electro-technical battalions, telegraph companies, balloon units, car subunits and armored vehicle subunits were remained in the composition of the engineering forces and transformed into military branches in the ensuing years. Another Russian-Turkish War of 1877-78, confirming the legitimacy of adopted organizational solutions, strengthened the need to improve the fortification solutions used in the Sevastopol region.

Another breakthrough in the development of the Russian military engineering was recorded during the Russian-Japanese War (1904-1905). Through ongoing operations, the usefulness of classical fortification objects (a redoubt) was undermined and replaced by the broadened 2-4 km defense zone, covering 2-3 trench lines, artillery firing positions and shelters. The first barbed wire barriers and the need to camouflage occupied positions appeared during the defense of Port Arthur. As a consequence of the Russian-Japanese War, railway troops (1904) and air force (1910-1918) were separated from the Russian military engineering, and in the following years (1914-1918) armored, motorized, chemical and communications forces were distinguished.

Shortly before the outbreak of the World War I, until July 1916, 39 battalions of sappers and 9 pontoon battalions were maintained within the Russian land forces, which

[3] The three-day (3-5 June 1828) assault began with the detonation of nearly halftone mine, which decided the fall of the Fortress. The strike was conducted by two assault columns, each one made up of an infantry regiment, two field guns and a company of sappers.

were used to form regiments, thereby increasing the share of engineering troops to the overall potential of the Russian Army Corps by up to 5%. After the Revolution of 1917, the potential of Soviet military engineering was built around the Red Army Chief Military and Technical Board. In 1919, chief engineering posts were created in the headquarters and commands of the Fronts, the Armies and the Divisions. At the same time, the establishment of command entities improved the organizational structures of the engineering forces. In 1918, an engineering battalion and an engineering equipment park were incorporated into an infantry division, a company of sappers was formed in an infantry brigade, and a sapper squad was kept in an infantry regiment. In the first half of 1919, the formation of units included in the Reserve of the Supreme Commander (OND), i.e. pontoon and electro-technical battalions and independent deception companies commenced in the Red Army. After a five-year civil war (1917-1922), Mikhail Frunze was tasked with adjusting the Red Army's structures to the requirements and limitations of peacetime and the planned modernization process. As a result of the reform, the Red Army's potential was reduced and the vast majority of engineering troops became cadre units. The need to form specialized engineering and assault-breaching units was confirmed in the Winter War against Finland during the assault of the Mannerheim line fortifications defending access to the Karelian Isthmus. By implementing the ambitious program of the Red Army's rearmament in the 1930s, the battalion of sappers and the pontoon battalion were the main organizational units in the engineering forces until June 1941. In addition, the OND maintained 18 engineering and 16 pontoons regiments.

The process of forming the first Army of Engineering Forces began in the Soviet land forces in October 1941 with the aim of accelerating the fortification works on the successive lines of defense, where enemy attacks were expected to be stopped. In November 1941, the Headquarters (Command) of the Engineering Forces was established within the structure of the Red Army, the counterparts were created at the level of the Fronts and the Armies. At the same time, Chiefs of the engineering forces of the Fronts and the Armies were promoted to the rank of deputy commanders. At the turn of January and February 1942, half of ten armies of the military engineering were dissolved, while the remaining ones were subordinated to the commanders of the Fronts and finally dissolved in the following years. During the World War II, the organizational structures of the engineering forces continued to evolve, with an Engineer Brigade maintained in general-military and armored forces. The guards battalions of miners were created to conduct sabotage missions infiltrating the enemy's depth lines. The largest pace of changes was observed within the OND, where from 1942 the main organizational units were the Engineer Brigade, the Engineer-Sapper Brigade, the Pontoon-Bridge Brigade and the Assault Engineer Brigade. In order to prepare and maintain paths in enemy minefields, engineering tank regiments were formed, whose T-34 tanks were equipped with mine flails and flamethrowers.

**Fig. 1.**The T-34 medium tank with PT-3 pressure mine flails designed by P.Murgalev

*Source: Н. И. Никифоров, ШтурмовыебригадыКрасной .,Moskwa: Яуза, Эксмо 2008*

In 1942, the formation of the Pontoon-Bridge Brigade used inter alia for crossing the Volga during the Battle of Stalingrad was launched. The first experience related to the necessity to shorten the time of construction of crossings through wide water barriers was used in the improvement of the Pontoon-Bridge Brigade organizational structures. As a result, in 1943, during the Battle of the Dnieper, the Pontoon-Bridge Brigade was twice as large as the 1942 prototype. In 1943, the process of forming the Engineer-Sapper Assault Brigades began in the Red Army due to the turn in the course of the War and, as a result of the Battle of Kursk, gaining a strategic initiative. New tactical formations of the engineering forces were used to carry out tasks as part of the break-through of prepared in advance defense lines, fortified areasand while assaulting built-up areas. In the years 1943-45, about twenty-six Engineer-Sapper Assault Brigades were established within the framework of the OND, which took part in the Stalingrad Battle, the Battles of Krolewiec and Wroclaw and the assault of Berlin. Soldiers from assault engineer sub-units performed tasks at the forward edge of the battle area in the field of engineering reconnaissance, mining and mine-clearing, as well as particularly complex mine laying tasks in assault groups. Steel breastplates (SN-38, SN-40, SN-42) were the distinguishing element that facilitated the identification of soldiers from subunits of the Engineer-Sapper Assault Brigades. Being made of two 2 mm thick steel sheets with a weight of over 3 kg they provided protection for the chest and groin zones against small arms and fragments. Due to the breastplates, sappers were known as crayfish and assault-breaching subunits were called the armored infantry. The sub-units of the Engineer-Sapper Assault Brigades were fully motorized, equipped with automatic weapons, flamethrowers and anti-tank rifles but completely devoid of heavy support weapons. In 1944, the Red Army's offensive moved combat operations outside the USSR to areas and lines in advance prepared for defense. Changes in the nature and conditions of operations resulted in the formation of about 90 independent assault-breaching battalions. Until May 1945 the Red Army maintained a total of 111 Engineer Brigades, 13 independent engineer regiments, and about 150 independent engineer battalions and companies subordinated to commanders of the Armies and the Fronts as well as the Commander-in-Chief. After the end of the War, the Pontoon-

Bridge Brigades and the Assault Engineer Brigades were reduced to the regimental level or dissolved.

**Fig. 2.**The steel helmet and SN-40 / SN-42 breastplate distinguished soldiers of the Assault Engineer Brigades subunits

*Source: www.mil.ru*

In the years 1945-53 the development of the Soviet engineering forces was based on the experiences of the World War II. In the second half of the 1950s, after J. Stalin's death, the structure of the Front engineering forces consisting of the Engineer-Sapper Brigade, the Pontoon-Bridge Brigade, an independent pontoon-bridge regiment, water extraction and purification battalions, fortification battalions, mine-clearing battalions, deception battalions and independent demolition companies (explosion control) was formed within the Marshal G. Zhukov's reform. Specialization of units and subunits of the engineering forces was connected with the realization of more and more complex tasks under the conditions of threat of using weapons of mass destruction. In the mid-1980s, the change of the war doctrine and the reorganization of the army under the reform of Marshal Nikolai Ogarkov resulted in the return to the Assault Engineer Brigade at the level of the Front and the assault-amphibian battalions in the organizational structures of the Army of land forces. The disintegration of the Soviet Union and the necessity of relocation and significant reduction of the military potential forced the resignation of the maintenance of extensive structures of the military engineering.

## 2. THE NEXT STAGE OF THE DEVELOPMENT (TRANSFORMATION OF THE POTENTIAL OF THE ENGINEERING FORCES IN THE YEARS 2009-2016)

Subsequent attempts to reform the Russian Armed Forces until 2008 resulted in the maintenance of a reduced version of the Soviet Army, whereby the capabilities of the

engineering forces were gradually reduced and degraded. The transformation process launched in 2009 led to gradual capacity restoration, including engineering support. In the motorized and armored brigades of land forces, the engineer sapper battalions were reconstructed, completed by personnel and equipment. At the next stage, the process of forming the engineering sapper regiments and the marine engineering sapper regiments was launched in the framework of the operational unions of the land forces and coastal forces of the individual Fleets. Airfields construction battalions were recreated within the framework of the air and space forces and involved in the repair and modernization of airfield infrastructure. In the years 2012-2015 a total of seven regiments, including five engineer and sapper regiments, were formed based on the 6th, 49th and 58th Armies and the Eastern Operational and Strategic Command. In addition, the 69th and 68th Marine Engineer and Sapper Regiments were formed as part of, respectively, the Baltic Sea and Black Sea Fleets' coastal forces. In Sakhalin, the independent engineer-sapper battalion was formed within the structure of the 68th Army Corps. Until December 2015, the 28th Pontoon-Bridge Brigade (Murom) and 1st Guards Brest-Berlin Engineering Brigade (Murom) were formed within the ODN. The 28th Pontoon-Bridge Brigade was prepared to construct crossings of high load-bearing capacity (up to 120 tonnes) on wide water obstacles (over 600 m wide) and dealing with crossing of equipment and cargo. Furthermore, specialized subunits of brigades maintained the capability to conduct missions within humanitarian (flood) operations and the removal of effects of natural and technical disasters after being deployed by air. Subunits of the formed Engineer-Sapper Brigade gradually gained the capacity to perform tasks related to engineering support of combat operations as well as dealing with the aftermath of natural disasters or technical catastrophes.

**Fig. 3.**The assault-breaching companies can be equipped with BTR-82M, KAMAZ 63968/969 MRAP or URAL 53099/63095 vehicles

*Source: www.mil.ru*

The engineer assault-breaching battalion manned by about 300 contract soldiers and conscripts in the mixed system remains in the structure of the brigade. In addition to two assault-breaching companies equipped with the BTR-82M (or Kamaz TYPHOON MRAP), the heavy equipment company and support subunits exist in the structure of the battalion. The first re-formed engineering assault-breaching battalion was desig-

nated to make passages in minefields, abatises and in destruction areas in the territory controlled by an enemy.

**Fig. 4.** Proven the UR-77 METEOR and the IMR-2/3 enable conducting passages in minefields and breaching

*Source: www.mil.ru*

The organizational structure of the subunit enables the formation of constituent elements of the assault-breaching group(s), including: reconnaissance, combat, breaching and support. Detection and identification of threats, location of dangerous sites, passing data and securing the area of operation remain in the domain of the reconnaissance component. The combat team assures gaining an advantage and creates conditions for the breaching team to fulfill tasks in the areas of destruction including the preparation and execution of passages, neutralization of mines, improvised explosives and other hazardous materials. The presented functional division is contractual from the point of the soldiers' readiness. Every assault-breaching group soldier is prepared for combat and reconnaissance. Selected soldiers master other functions, e.g. related to the military engineering. Taking into account the above, it should be assessed that the capabilities of overcoming engineering barriers and clearing are guaranteed using proven UR-77 and IMR-2/3. The implementation of TORNADO and SKORPION R&D programs and vehicles (robots) of the Uranium series indicate the continuing process of improving the capacities and searching for new solutions.


**Fig. 5.**The lighter Tornado based on the Ural 4320 and the Scarab based on Kamaz can be part of the RCP or light separation teams

*Source: www.mil.ru*

The experiences of two Chechen campaigns and the five-day conflict in Georgia confirmed the necessity of maintaining subunits ensuring maneuverability in the area occupied by the enemy. Similarly as during the World War II, soldiers from engineering assault-breaching subunits receive equipment and materiel markedly different from the current standards. As a result of the four-year research and development program implemented in the Moscow FORT Technology since 2016 the individual carrying equipment - manufactured in series and varied in terms of the level of protection - has been delivered to soldiers from engineering assault-breaching subunits. The OWR-3Sz Individual Carrying Equipment of soldiers from engineering assault-breaching subunits consists of a two-piece splinter proof suit (a jacket and trousers) KASPIJ, a bulletproof vest, a helmet with a splinter proof visor and communications subsystems - navigation, identification friend - foe, monitoring user status, cooling and power supply. The entirety of the kit, guaranteeing the sixth level of protection, provides protection against shooting with 7.62 mm caliber ammunition (according to standard 7N13 cartridge with

ST-M2 projectile with the 9.6 grams steel core and 820-840 m / sec flight velocity) from at a distance of 10 m.

**Fig. 6.**The OWR Individual Carrying Equipment. From the left: OWR-2-01, OWR-2-02 and OWR-3Sz

*Source: www.mil.ru*

In order to enhance the ergonomics of the suit, most of its surface and the surface of the bulletproof vest were covered with the MOLLE webbing system, enabling the attachment and carrying of additional pockets and ammunition pouches with equipment, the amount and configuration of which is determined by a user depending on the task being performed. The design of the protection system of the OWR-3Sz kit includes the splinter proof suit KASPIJ, a combination of rigid and flexible ceramic and polyethylene plates, and the LS3-2DTM VULCAN protective helmet offering the second level of protection in any exposure.

**Fig. 7.**Ballistic tests of the OWR-3Sz kit confirmed the resistance to 7.62 mm caliber projectile fire

*Source: www.mil.ru*

The entire protective suit provides resistance against penetration of fragments and 9 mm caliber projectile firing at the velocity of 550 m / sec. Additional protective elements in the form of rigid and flexible armor plates increasing the impact resistance do not limit freedom and capability of movement. The soldier's body remains covered by additional rigid and flexible elements. Ceramic blocks are placed in special pockets of bulletproof vests on the chest and back, while the sides are covered with soft polyethylene inserts. The front armor divided into two segments increases the mobility of the set. The upper segment carried in the vest and the lower placed in the attached container protect the groin zone. Ballistics tests of armor plates confirmed the resistance to the penetration of 7,62 x 54 mm caliber ŁPS, PS and B-32 projectiles fired from a distance of 5 m. The level of protection of limbs is increased by the use of additional, flexible protective elements.

**Fig. 8.**The helmet with movable visor (goggles) and universal attachment system for additional equipment

*Source: www.mil.ru*

A 2.5 kg helmet equipped with a movable transparent splinter proof visor, which, if necessary, can be replaced by goggles, supplements the ballistic protection. In addition, the helmet is equipped with hearing protectors with an active noise reduction system, which are coupled with individual communication system components. Supplementary equipment includes a diode reflector integrated with a video recording system. Additional head equipment can be attached to the helmet using clips of the universal attachment systems. Besides the extensive protection system, the individual communications system, the satellite navigation module (positioning) and the friend - foe identification system complement the OWR-3Sz's design. The soldier’s status is monitored by the set of sensors transmitting information in the format *alive* - *injured* – *dead* in the automatic mode. Relatively high weight of the set (20 kg) is a resultant of the extended protection and cooling system. The OWR-3Sz kit comprises winter and summer thermal underwear sets and an internal cooling system that allows operating in extreme heat for about 30 minutes.

**Fig. 9.**OWR-3Sz designed for soldiers from engineering assault-breaching subunits conducting missions in built-up areas

*Source: www.mil.ru*

Apart from individual weapons, the additional equipment of soldiers from engineering assault-breaching subunits using the OWR-3Sz kits can include door busters, assault ladders, elevators and spreaders – hydraulic shears, circular saws, assault shields, sapper's machetes and WOZMACH-3 multi-purpose sapper knives, depending on the task being fulfilled. At the same time, in 2016, similar sets of equipment, which differ in the protection parameters and the mass not exceeding 15 kg, began to be produced for soldiers of engineer-sapper subunits. The OWR-2-01 set was designated for the sappers of mine-clearing groups detached from engineer-sapper subunits of the general military brigade. The manpower of mine-clearing groups detached from subunits of the Engineer-Sapper Brigade is to be equipped with OWR-2-02 sets. Being much lighter than the ZKS-1 DUBLON kit (titanium armor elements, the total weight of about 11-40 kg depending on configuration) it offers a higher level of protection than OWR-1 SOKOL (approx. weight of 8.5 kg).

**Fig. 10.**Sappers performing tasks in Chechnya and Ingushetia are equipped with OWR-2-01 and the URAN-6 multi-purpose set

*Source: www.mil.ru*

As a result of the systemic adjustment of the Armed Forces' educational system, the cadre preparation for the engineering forces is carried out at the Military Higher School in Tyumen. Training of non-commissioned officers and junior specialists is provided by centers and training centers, including: 187th Regional Training Center (Volzhsk, Volgograd Oblast), 210th Training Center (Kostovo, Nizhgorod Oblast) and 66th Mine-Clearing Methodological Center (Nikolo-Uryupino, Moscow Oblast). By 2020, the dynamic staffing process is expected to provide conditions for the formation of the Pontoon-Bridge Brigades and assault-breaching companies in each Engineer-Sapper Brigade subordinate to the Strategic Operational Command.

## CONCLUSIONS

Despite the passage of time and changes in the operational environment for commanders, the engineering forces continue to be 'the focus of attention'. As a result of the evolution of combat resources, being formerly useful in the siege of medieval towns and fortresses, the groups of 'gorodniki' and 'mostniki' underwent transformation into modern subunits of the Russian military engineering. Their capabilities recognized by Tsar Peter I were transformed and perfected in subsequent armed conflicts. At the turn of the eighteenth and nineteenth centuries, due to the extended range of missions the Russian engineer corps expanded and were involved not only in the siege of fortresses, performing crossings and engineering construction works, but also in assault operations. The subsequent wars with Turkey and the Russian-Japanese War (1904-1905) confirmed the growing significance of building fortifications in the area of operations, thereby capabilities maintained within the engineering forces. Two consecutive global conflicts from the first half of the 20th century consolidated the positions of the engineering forces in the Red Army's structures. As a result of further Soviet Army reforms, subunits, units and tactical formations within the engineering forces were deeply specialized and mechanized in 1946-1991. The offensive character of the Soviet military doctrine fostered the development of capabilities useful during assaults. The Soviet engineering subunits were trained in overcoming the prepared fortified areas and wide water obstacles as well as conducting assault and breaching operations in the built-up areas. The disintegration of the Soviet Union, disarmament commitments and the necessity of relocation andreduction of a significant part of the military potential hampered the development of the Soviet military engineering. The Russian Federation Armed Forces' transformation process, initiated in 2009, resulting in the reconstruction and improvement of military engineering structures in consecutive years, determined the possibility of reconstructing the lost and gaining new capabilities. The actions taken in 2012-15 indicate that the potential of the engineering forces is intended to expand and thus represent another symptom of the gradual return of Russian military potential to the international arena. The reactivation of tactical formations within the Russian engineering forces, thus restoring capabilities useful in offensive operations, was justified by the worsening situation on the western and southern operational and strategic lines. Pointing to the experiences from contemporary armed conflicts, the growth in dynamics of action and the ineffectiveness of air strikes were emphasized. Based on the course of contemporary conflicts, the destruction of

communication infrastructure, crossings and the transfer of operations to cities were-pointed out. Large urban agglomerations were indicated as the main battlefields in a future armed conflict, where mines and improvised explosives would be widely used. In the context of the defined conditions of the future battlefield, the combat assets unusual for engineer subunits, such as anti-missile launchers, anti-sniper assets and a wide range of explosives needed for crossings and demolition should be expected in the armaments of the formed assault-breaching subunits. High dynamics and limited time of local and regional short-term conflicts preclude the possibility of formation of rapid subunits decisive on efficiency in built-up areas. In addition, the development of missing capabilities in conflict-driven chaos does not guarantee the opportunity to form specialized elements using untypical tactics and combat means. Therefore, the fact that the establishment of the first assault-breaching battalion in the Armed Forces and the intention to maintain subunits of this kind in all Engineer Brigades should be regarded as another Russian affirmation of the Roman maxim *si vis pacem para bellum*.

## SUMMARY

- the preparation, including equipment, of the Russian assault-breaching subunits is based on historical and contemporary combat experiences;
- in the context of the development of the Armed Forces of the Russian Federation, the capabilities and potential of the engineering forces have always been one of the main indicators of the effectiveness of combat operations;
- the Russian military assault-breaching subunits are prepared to provide freedom of movement (maneuver) to troops in built up areas and the environment where minefields, booby-trapped bombs and improvised explosive devices are present;
- the engineering machinery and devices constituting the Russian assault-breaching subunits' equipment show a comprehensive approach in terms of their destiny, capabilities and operational area;
- engineering equipment of soldiers from the assault-breaching subunits is multi-functional and protects a soldier-sapper in the context of increasing his/her life and functionality;
- with regard to the ergonomic and utility solutions of the Russian assault-breaching subunits' equipment, the systematic and comprehensive approach taking into account the specificities and factors that occur in potential combat environments is observed;
- considering the progress in the modernization of assault-breaching subunits, including the acquisition of their equipment, it required long-term work and systemic solutions based on technical and industrial base.

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## BIOGRAPHICAL NOTES

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