

High-Angle Fires and Maneuver: *Russian Upgraded Mortars Maintain Vital Role on Future Battlefield*

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Artillery has been integrated into Russian Army infantry regiment tables of organization and equipment (TO&Es) since at least Peter the Great (1682-1725). His 1707 field regulations specified that two three-pounder cannon or two mortars be standard in every infantry regiment. Guard's regiments would have more.¹ Cannon artillery and/or mortars have been organic to Russian maneuver units for centuries. These were separate from the standard artillery battalions assigned to the infantry regiments or operational reserves. The cannon crews and mortar crews organic to infantry battalions have always been manned by artillerymen. During World War II, Soviet infantry battalions had two Model 1937 45mm semiautomatic wheeled anti-tank guns and six 82mm mortars.

Since World War II, the composition and size of the organic artillery in infantry battalions have varied. The 1949 Soviet rifle battalion had an artillery battery of two wheeled Model 1948 57mm anti-tank guns, four 12.7mm heavy machine guns, and four PTRD-41 anti-tank rifles as well as a mortar battery of nine 82mm mortars.² Concepts began to change in the Soviet Army with the death of Stalin in 1951. Future war was expected to be fought exclusively with atomic weapons, and maneuver units were reduced in size to become less attractive targets. The Soviet motorized rifle battalion experienced at least seven more significant TO&E changes before the collapse of the Soviet Union. Cannon artillery and recoilless rifles disappeared while anti-tank guided missiles entered the force. For a brief period, when the Soviets determined that future war would only be atomic, mortars disappeared. But with the realization that future war could be nuclear or conventional maneuver war under nuclear-threatened conditions, mortars came back and have remained. After the collapse of the Soviet Union, the Russian armed forces underwent a sweeping reform with the ground forces built primarily around brigades and combined arms armies rather than regiments, divisions, and armies. They retained BMP-equipped and BTR-equipped motorized rifle battalions. Each of these battalions includes an eight-mortar battery of either 120mm 2S12 "Sani," 82mm 2B14 "Podnos," or 82mm 2B9 Vasilek mortars.³

Except for the brief period during preparations solely for an atomic battlefield, Soviet and Russian ground forces have always wanted organic battalion-level "hip-pocket"

artillery available to decimate the enemy before, during, and after contact. The mortar is that weapon of choice for enemy equipment and personnel. The anti-tank guided missile and anti-tank grenade launcher are the weapons of choice for enemy tanks. The locale of war is changing from set-piece contests in open-maneuver spaces to mountains, deserts, thick forests, marshland, and urban areas — areas that negate many of the advantages of newer technology. Mortars and light anti-tank weapons are ideal for these locales as they are transportable, effective, and relatively easy to emplace. Western forces and Russian forces view tactical war differently. The West thinks that artillery supports maneuver and that the best way to kill a tank is with another tank. Russian forces think that artillery enables maneuver and the best way to kill a tank is with an anti-tank weapon. The true value of Russian tanks is proven when they are committed deep inside the enemy rear area seizing or destroying key infrastructure and support facilities. Despite these conflicting views, neither side would disagree that the correlation between the range of fire systems and the reach of maneuver elements is now changing because the range of artillery is increasing while the speed of advance of maneuver formations is not.⁴

The Not-So-Humble Mortar

The 120mm 2B11 Sani [Сани-sled] has been in the inventory since 1981. It won a state design prize in 1984. This 4.7-inch mortar remains in Russian motorized rifle battalion batteries but is being replaced by the upgraded 2S12A Sani-complex.⁵ The emplaced weapon weighs 230 kilograms (507 pounds) and it is moved on a 2x1 wheeled chassis (designated 2L81). The mortar construction is rigid and does not have a recoil-absorption system. The new baseplate has an internal rotating firing plate which allows 360-degree engagement without time-consuming repositioning of the base plate or removal of the smooth-bore barrel. It includes a device to prevent double loading and provides a rate of fire of up to 15 rounds per minute. Night-firing holds no special challenges, and the improved gunsight can be rapidly adjusted.⁶

The "Sani's" main function remains motorized rifle direct support. Afghanistan combat proved that mortars are irreplaceable in mountainous and rugged terrain and in wooded areas where artillery fire is ineffective.⁷ In the city fighting

Maximum firing range – 7,100 meters (up to 9,000 meters using the “Gran” precision fire system)
Minimum firing range – 480 meters
Maximum rate of fire – up to 15 rounds a minute
Maximum initial speed of mortar round – 325 meters a second
Portable munitions load – 56 rounds
Mortar weight in combat configuration – 230 kilograms
Mortar weight with 2L81 wheeled carriage – 357 kilograms
Crew – 5 men

Table 1 — 2S12 Sani Specifications⁸

in Grozny, Chechnya, mortar fire caused the bulk of the casualties.⁹ In addition to the normal high-explosive (HE) fragmentation, smoke, illumination, incendiary, and leaflet rounds, 2S12A mortars also use the KM-8 “Gran” guided-projectile system, an HE fragmentation round with the 9E430 laser-guided self-homing seeker and the “Malakhit” automated fire control system (or the laser range finder beam). The “Gran” enables first-round hits without firing for adjustment against mobile and fixed targets at day or night. If multiple targets are located within 300 meters of each other, a single firing angle is sufficient and the gunsight does not need to be adjusted. Tests of the “Gran” system demonstrate its accuracy where six of every eight rounds will hit right on target.¹⁰

Mobility and rapid displacement are important to mortar survivability. The 2S12A “Sani” mortar is transported on a Ural-43206-0651 all-wheel drive truck or towed behind it. The 2F32 special equipment package (electric winch, loading planks, and bracing material) is carried in the truck bed. This equipment enables the crew to move the mortar from the traveling position into a firing position (and back) in under three minutes. The old 2B11 mortar required 20 minutes. A MT-LB lightly armored tractor can also be used as the prime mover.¹¹

The ability to shoot and quickly vacate the firing position is essential to crew survival. Russia has fielded turreted mobile 82mm and 120mm gun-mortars which include breech-loading, rifled tubes that can fire HE, white phosphorus, and smoke. These are mounted on tracked and wheeled chassis. Some motorized rifle battalion mortar batteries use these hybrid gun-mortars instead of the Sani. They are more mobile but have a lower rate of fire.¹²

Mortar Fire Planning

When a target is designated (depending on its nature, importance, and the combat situation), the firing missions of artillery subunits can be: destruction, annihilation, suppression, or harassment.

Destruction of the target consists of inflicting such losses

(damage) on it in which it completely loses its combat capability. The probability of hitting individual targets is 0.7-0.9 or the mathematical expectation that 50-60 percent of targets within a group will be hit.

Annihilation of a target renders it unusable.

Suppression of the target inflicts such losses on it that it temporarily loses its combat capability, restricts its maneuver, or disrupts control. The number of targets hit is about 30 percent.

Harassment is the moral and psychological impact on the enemy from firing a limited number of mortar and artillery rounds for a specified time.¹³

Types of fire planning for a mortar battery: When engaging an enemy with fire, artillery subunits use the following fire planning: fire against an individual target, fire concentration, standing barrage fire, deep standing barrage, moving barrage, successive fire concentrations, offensive rolling barrage, and massed fire.¹⁴

Fire against an individual target is battery, platoon, or individual mortar fire conducted independently from a covered firing position.

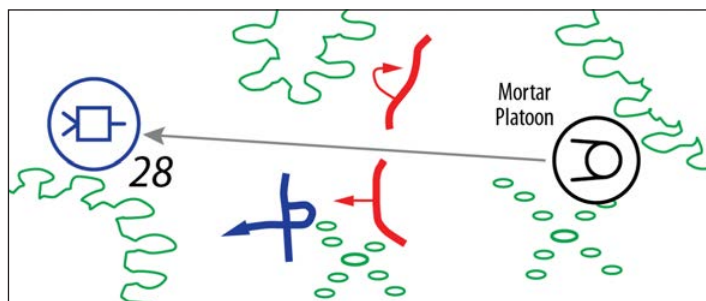


Figure 1 — Fire Against an Individual Target, in this case, an Enemy Anti-tank Guided Missile

Fire concentration is fire conducted simultaneously by several batteries on one target. The mortar battery fires a concentration area as part of a higher-level artillery plan. The maximum area for the mortar battery within a fire concentration is eight hectares.

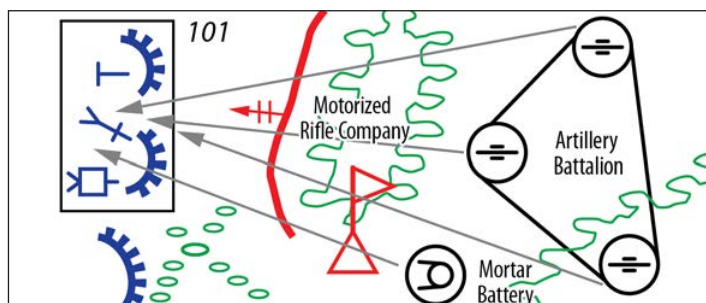


Figure 2 — Fire Concentration

Standing barrage fire is a continuous curtain of fire created in front of an attacking (or a counterattacking) enemy. It is used to repel attacks (counterattacks) of enemy infantry. The width of the fixed barrage fire sectors are assigned at

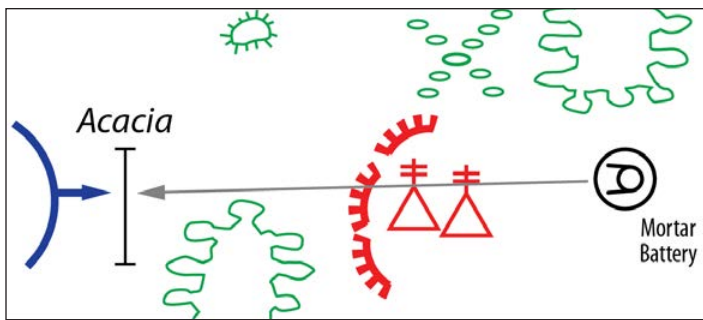


Figure 3 — Standing Barrage Fire

the rate of no more than 50 meters per mortar. The boundaries of fixed barrage fire sectors are assigned tree names such as “Beech,” “Birch,” etc. The mission is fired with HE fragmentation mortars. When conducting a single fixed barrage fire, firing begins at the moment the infantry and tanks approach the fixed barrage fire line of fire and continues until the infantry is cut off from the tanks and the attack (counterattack) is stopped. If the enemy’s infantry takes cover, the firing transitions to a fire concentration mission.

A deep standing barrage is a continuous curtain of fire on the axis of enemy tank and infantry fighting vehicles which are fired simultaneously on several lines of fire. The lines may be 400-600 meters apart, and the width of the lines are not more than 25 meters per mortar.

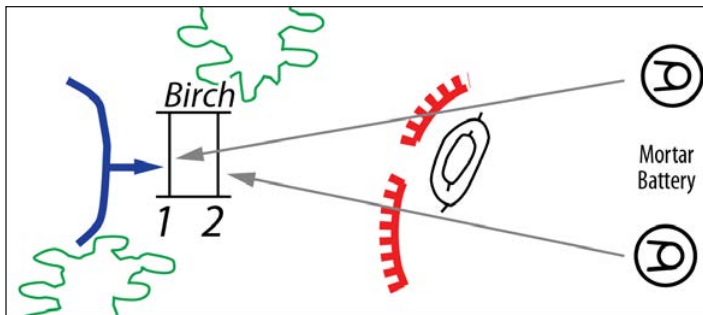
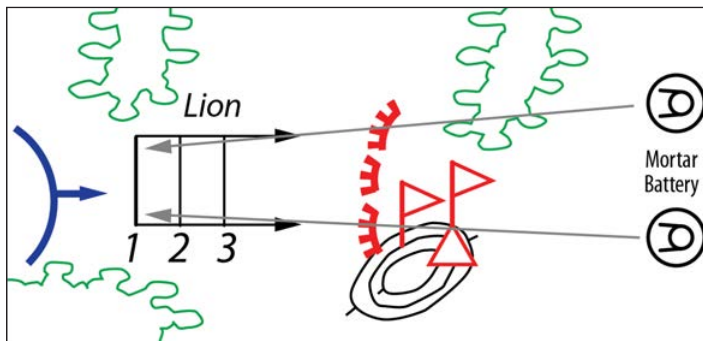


Figure 4 — Deep Standing Barrage

A moving barrage is a continuous curtain of fire created at one line on the axis of enemy tanks, infantry fighting vehicles, and armored personnel carriers and sequentially transferred to other designated lines as the main mass of the enemy leaves the zone of fire. A moving barrage is prepared at several lines located on the path of movement of enemy

Figure 5 — Moving Barrage



vehicles. The distance between the lines of the mobile barrage fire, depending on enemy speed, can be 400-600 meters. The width of the mobile barrage fire battery sector is assigned at the rate of no more than 25 meters per mortar. Barrage fires are assigned the names of predatory animals, such as “Lion,” “Tiger,” etc., and each line, starting from the most distant one, has its own designated number. A moving barrage is often planned in conjunction with a howitzer battalion. Sometimes the first two lines are fired simultaneously as in a deep standing barrage.

Successive fire concentrations are used for fire support of an attack. Successive fire concentration lines are assigned after determining the formation of the enemy’s defense at 300-1,000 meters from one another. The borders of the successive concentrations of fire are assigned names of predatory animals, such as “Lion,” “Tiger,” etc., which are numbered in the order of priority of their firing at them, starting from the closest line. The mortar battery will normally participate with an individual concentration as part of a larger battalion or brigade artillery group successive fire concentrations plan. When planning the lines of the successive fire concentrations, the mortar battery target concentration is assigned on the first line, the area of which should not exceed two hectares.

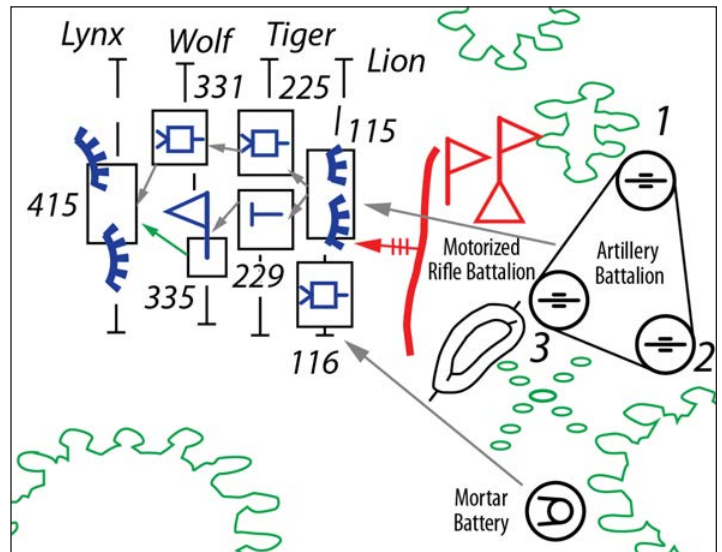


Figure 6 — Successive Fire Concentrations

An offensive rolling barrage is used for fire support of an attack. It is conducted along the main and intermediate lines. The main lines of the offensive rolling barrage fire are assigned every 300-1,000 meters from one another, and the intermediate ones are assigned 100-300 meters between the main lines. The main lines of the barrage fire are assigned names of predatory animals, such as “Fox,” “Tiger,” etc., while the lines are numbered in the order of priority of firing them, starting from the closest line. Intermediate lines are numbered separately from the main ones and are named 1st intermediate, 2nd intermediate, etc. The mortar battery will normally participate with an individual concentration as part of a larger battalion or brigade artillery group successive fire

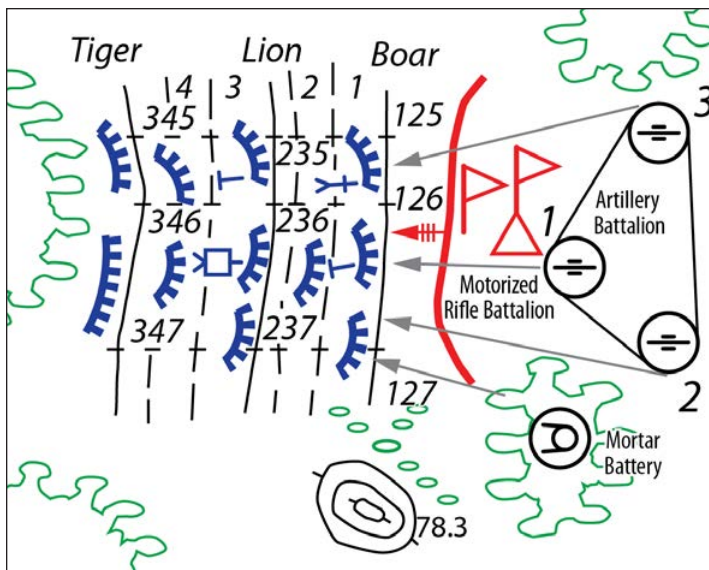


Figure 7 — Offensive Rolling Barrage

concentrations plan. The size of the mortar battery concentration is determined at the rate of 15 meters per mortar.

Massed fire is conducted simultaneously by all or most of the artillery against an enemy grouping with the goal of decisively hitting one or several important targets in a short time. The mortar battery may have a fire concentration within the massed fire or be part of a howitzer battalion concentration.

As a rule, fixed targets that are unobservable from the mortars but seen from forward observers — such as unprotected unarmored targets — are destroyed, and covered and armored targets are suppressed or destroyed. The entire battery, and often higher artillery, is used against such targets.

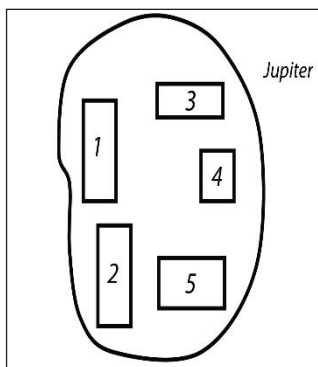


Figure 8 — Massed Fire

Enemy artillery, mortar batteries and platoons, as well as individual guns, are struck in their firing positions. Batteries (platoons) of self-propelled guns are rapidly fired upon, as a rule, immediately upon their detection. Uncovered deployed personnel and weapons are usually suppressed. Enemy anti-tank weapons (anti-tank missiles and anti-tank guns), depending on the situation, are destroyed or suppressed. Groups of unarmored and lightly armored vehicles in concen-

trated or within an area, as well as some dug-in unarmored vehicles positions, as a rule, are destroyed.

The targets of artillery (mortar) fire are usually enemy platoon strongpoints, mortar platoons, command and observation posts, radar stations, and companies in assembly areas and on the march. The firing capabilities of artillery to engage enemy targets with fire from covered firing positions are determined by the nature of the targets and engagement, number of available mortars, quantity and quality of available ammunition, and required time to complete tasks.¹⁵

Depending on the number of mortars at the disposal of the battalion (company), the duration of fire, and the mode of fire, the number of required mortars can be determined. Divide this number by the average ammunition consumption rate to obtain the number of objects that can be suppressed (destroyed) during the artillery preparation of the attack.

Mortar Battery on the Offensive

In the offense, the mortar battery destroys or suppresses the enemy's means of nuclear and chemical attacks, artillery and mortar batteries, tanks, infantry fighting vehicles, anti-tank and other direct fire weapons, personnel, command posts, communications, and fortifications. In order to carry out these fire missions, the mortar battery is deployed into its combat formation. The combat formation consists of the mortar platoons deployed into their firing positions, a command and observation post, and, if necessary, an observation post (forward and lateral).

The mortars are located in covered firing positions with intervals of 20-40 meters between them. The mortar transport vehicles are placed behind the mortars, to the right or left of them in a covered position at a distance of 300-500 meters.¹⁶

The command post is intended for the observation of the enemy and terrain, controlling fire and maneuvering units, observing the actions of the troops, and maintaining interaction with them. The command post of the battery is collocated with the command post of the motorized rifle battalion or designated motorized rifle company. In order to deploy the

Table 2 — Mortar Battery Maximum Fire Coverage by Area and Line¹⁷

Artillery Assigned	Quantity	Artillery Support of the Attack			Barrage Fire	
		Concentrated Fire	Successive Concentration of Fire	Barrage Fire	Fixed Barrage Fire	Moving Barrage Fire
120mm Mortar	8	8 hectares 20 acres	2 hectares 5 acres	120 meters 131 yards	400 meters 437 yards	200 meters 219 yards

Table 3 — Mortar Battery Assets¹⁸

System	Quantity of Mortars	Rounds per Mortar	Total Rounds	Platoons	Command Posts	Radar
120mm Mortar	8	54	432	2	1	1

mortar battery in combat formation, the firing positions and the command post site are designated. The firing positions of the mortar battery are 1-1.5 kilometers from the front-line positions of friendly troops. When attacking a defending enemy from the march, the battery, if it is involved in the preparation of the attack, must take up its firing position no later than 1.5-2 hours before the start of the artillery preparation of the attack. Deployment in combat formation is carried out, as a rule, at night, hidden from enemy ground and air observation. This time is needed to prepare the mortars for firing, lay out the ammunition (which will be used during the artillery preparation of the attack) on the ground, ensure spacing between mortars, and aim the mortars at the targets on which fire will first be laid.¹⁹

Artillery fire engagement in an offensive is carried out by phases: artillery support for the advance of troops, artillery preparation for the attack, artillery support of the attack, and artillery support for troops advancing in depth. Success in this phase of fire support, distinctly designed for this attack, determines the achievement of the artillery in the subsequent phases.²⁰

Artillery preparation for the attack begins at a set time and, as a rule, with the approach of a motorized rifle company to the line of deployment in battalion columns. At this time, the mortar battery, at the signal of the senior commander, begins its missions.

Artillery preparation for the attack begins with sudden heavy fire strike by all artillery on planned targets, and above all on personnel and means of fire on the front line, artillery batteries, and other important targets. Artillery preparation ends at the appointed time with a fire strike on the strong points of the first echelon companies and anti-tank weapons. Covering fire is carried out against artillery and mortar batteries. It usually begins before the end of the artillery preparation and ends with the arrival of motorized rifle subunits on the front edge of the enemy's defense, coinciding with the attack time on the front line.²¹

Artillery support for the attack begins when the motorized rifle companies reach the line of transition to the attack and continues until the motorized rifle subunits capture the first echelon areas of a brigade (regiment). The transition to artillery support is carried out without any interruption in firing. Artillery support can be carried out by various methods — single or double successive fire concentrations, fire barrages, concentrated fire, fire against a single target, and combinations thereof. There may be other methods as well. An expedient method of fire support is one that provides a greater degree of simultaneous destruction of direct fire weapons, especially anti-tank guided missiles, at the greatest distance possible. Calls for fire and shift fire, in addition to the command to start fire support for the attack, may be given by the battalion commander.²²

Fire accompaniment of troops in the depth is carried out as the offensive develops throughout the depth of the enemy defense. It begins after the end of artillery support for the attack

and continues until the motorized rifle subunits complete their combat missions. During artillery accompaniment, the mortar battery can perform the following tasks: ensure the entry into battle of the second echelons, repulse counterattacks by the enemy reserve, support subunits when crossing water obstacles, and pursue retreating enemies. During this period, the mortars, as a rule, perform on-call fire missions. The battery can conduct fire against an individual target, fire concentration, standing barrage fire, and massed fire.²³

The preparation of a mortar battery for an offensive begins with receiving a mission from the battalion commander. After receiving the mission from the battalion commander at the set time, the battery commander is obliged to support the company commander, for whose support the battery is assigned or supporting, and report the composition, position, condition, and security of the battery; the missions received and the established ammunition consumption; the battery's fire capabilities; the assigned areas for firing positions and location of the command post; the time and order of their occupation; the order of movement during the battle; and the required time needed to open fire. He must be ready to answer the company commander's questions regarding the use of the battery in battle.²⁴

In order to support the motorized rifle battalion (company) commander, the battery commander arrives at the indicated place to conduct reconnaissance and receive the mission and coordinating instructions. When providing the combat missions for the mortar battery, the battalion commander indicates the following in the combat order: the targets for destruction and/or suppression during the period of fire preparation of the attack, with the time of the start of the attack and whom to support, the tasks of ensuring the entry into battle of the second echelon and repelling enemy counterattacks, firing positions, route and order of advance, time of readiness to open fire, and order of movement during the battle.²⁵

At the set time and at the signal (command) of the senior commander, the battery opens fire and performs tasks according to the artillery support plan. The battery commander controls the execution of his subordinate platoons' fire missions and monitors the results of the fires, correcting them if necessary. At the beginning of the attack, the battery suppresses and/or destroys the planned and newly identified enemy targets. As tank and motorized rifle subunits approach the line of fire, the mortar battery commander, at the direction of the motorized rifle battalion (company) commander, transfers fires to the next line in the sequence to ensure a safe distance from the exploding mortars for friendly troops. When new targets are discovered, the battalion commander sets tasks for their suppression and/or destruction.²⁶

The movement of the mortar battery is carried out by order of the battalion commander. It begins after the companies of the first echelon have taken possession of enemy platoon strongpoints on the front line of the enemy's defenses. Depending on the nature of the actions of the enemy and

friendly subunits, the battery can move as a whole battery or by individual platoons. The battery commander is obliged to move the command post in a timely manner and maintain contact with the battalion (company) commander. The second echelon of the battalion is brought into action under artillery cover. The battery suppresses the enemy's firepower, as a rule, with a heavy fire lasting 8-10 minutes. During this time, enemy direct and indirect firepower should diminish as the second echelon moves to the line of engagement. During the offense, subunits must be constantly prepared to repel enemy counterattacks. Upon detection of advancing enemy reserves, the battery commander adjusts the firing line, taking into account the change in the direction of the enemy's counterattacks. Artillery repels a counterattack by enemy tanks and infantry with moving barrage fire and standing barrage fire. When the enemy retreats, the mortar battery often moves and deploys in combat formation. Firing positions are usually located near roads.²⁷

Mortar Battery in the Defense

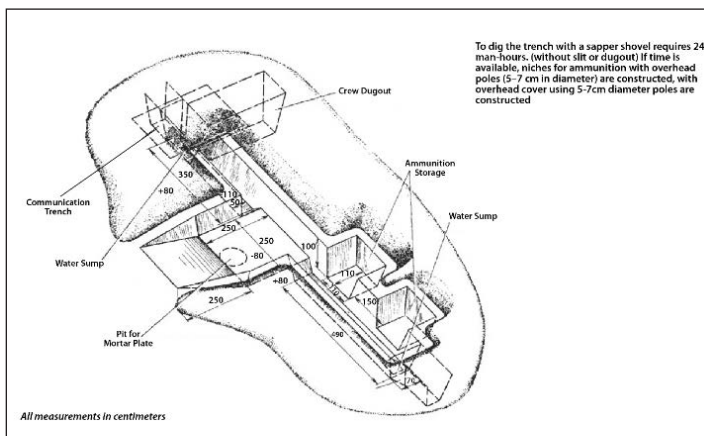
In the defense, mortar batteries usually occupy positions away from tank avenues of approach, prominent local features, and on low ground.²⁸ The mortar firing position can be dug by hand, but the major excavation is usually done by the brigade's engineer battalion equipment.

The battery in the defense carries out fire engagement of the enemy in cooperation with other means of destruction and the following tasks:

- Using artillery for interdicting and attacking the deployment areas of enemy troops;
- Using artillery to repulse an enemy attack;
- Conducting artillery support of troops defending in depth; and
- Using artillery to defeat the enemy during friendly counterattacks.²⁹

In order to perform firing missions in the defense, the battery selects at least two firing positions so it can maneuver during the battle. The nearest avenues of approach to the firing positions are mined. The main firing positions of a mortar battery are usually assigned within the battalion defensive area, behind the companies of the first echelon.

Figure 9 — Fighting Position for the 2S12 Sani Mortar³⁰



Reserve firing positions are selected on the flanks of the main area and in the depths of the defense. Command observation and observation posts of artillery (mortar) subunits are usually deployed within the battalion defensive area in order to create a system of continuous observation of the enemy in front of the forward edge of the line of defense, and to ensure survivability, they are scattered along the front and in depth. In order to defeat the enemy effectively in the defense, an artillery fire system will be created, which consists of the advance preparation of concentrated and defensive fires to defeat the enemy on the avenues of approach to the defense, in front of the forward edge of the front line and in depth, as well as the concentration of fire on any threatened axis.³¹

A battery's fire capabilities will determine its ability to perform tasks in defense. The preparation of a battery for combat in defense depends on the conditions for the transition to defense, the mission received, the nature of the enemy, and available time. During the transition to the defense in conditions of direct contact with the enemy, the battery commander, in accordance with the decision of the battalion commander, sets the task of preparing the fire for capturing and securing the specified line, providing flanks and gaps, and repelling possible attacks by the enemy. Subsequently, all the necessary measures are taken to prepare for the defense. When organizing the defense when not in contact with the enemy, the battery commander receives missions, as a rule, from the battalion commander during reconnaissance.

Regardless of the conditions for the transition to defense, the battery commander participates in the reconnaissance and coordination activities, contacts the company commander to whom he is assigned and reports the following: the composition, position, condition, and security of the battery; tasks received from the battalion commander; the locations of the firing positions; ammunition status; fire capabilities; and location of the command post. The battalion commander coordinates the actions of the companies and batteries to defeat the enemy in the course of refining the plan of battle and also clarifies the methods of target designation, warning signals, control, and coordination. After the reconnaissance, the battalion commander will issue a combat order, including assigning artillery tasks.³²

During the advance and deployment of the enemy, the battery lays fire concentrations and fire against individual targets, attempting to inflict defeat on the advancing enemy. When the enemy transitions to the attack, the battery conducts standing barrage fire or moving barrage fire on the combat formations of the advancing enemy subunits. During this time, the artillery fires with the greatest intensity. The battery uses barrage fire to defeat tanks and other armored vehicles, to disrupt the combat formations of enemy units, and to cut off the infantry from the tanks. Calls for fire are directed by the commanders of the company and battalion. In the event of a penetration of the enemy into the defensive area of the battery, the battery lays fire concentrations,

Mission	Ammunition Expended Basic Load/Rounds	Potential Enemy Suppression
Artillery denies enemy advance and deployment	0.3 26x8=208	Fire concentration on mechanized infantry platoon in two columns – 120 rounds; 1-2 separate targets – 90 rounds
Artillery defeats enemy attacks	0.5 40x8=320	Moving barrage fire – 2-3 lines – 160 rounds; 2nd Moving Barrage Fire – 110 rounds; 1 target – 50 rounds
Artillery supports defending units in depth	0.5 40x8=320	Fire concentrations – 2 mech infantry platoons in combat formation – 110 rounds; Standing Barrage Fire – 3 sites – 160 rounds; 1 target – 50 rounds
Fire destruction of enemy counterattack	0.4 32x8=256	Fire concentrations – 2 mech infantry platoons in combat formation – 110 rounds; 1 mortar platoon – 110 rounds; 1 target – 40 rounds

Table 4 — Mortar Rounds Expended for Defense Fire Missions³³

standing barrage fire, or moving barrage fire in an attempt to prevent the spread of the enemy into the depth of the defense and towards the flanks.

When the friendly second echelon conducts a counterattack, the battery can be assigned to support it. When the command post moves to a new location, the battery commander establishes contact with the battalion commander. The battery supports the battalion by laying fire concentrations and fire against individual targets. Priority firing targets are enemy artillery and mortar batteries, anti-tank weapons, tanks, personnel, and direct-fire weapons that must be suppressed in the direction of the friendly counterattack.

Conclusion

Mortars or gun-mortars will remain a vital part of the Russian motorized rifle battalion. They provide responsive, increasingly accurate fire support and masking particulate-smoke cover to the maneuver force. However, as unmanned aerial vehicles and high-precision fires become common on the battlefield, mortar crew mortality should rise. Further, combat in the Arctic and Far North is difficult for mortar crews in the open for extended periods of time. The Russians are field testing the 82mm automatic mortar mounted on a small Kamaz truck chassis (the Drok) [Gorse] and the 120mm gun howitzer mounted on a large truck chassis (the 2S40 Floks [Phlox]) or the Magnolia articulated tracked Arctic vehicle. Russians engineers are investigating the development of 82mm robot-mortars which will operate separately from the firing crew.³⁴ These efforts — combined with the improvements in the mobility, accuracy, and rate of fire of artillery battalions and brigades — should continue to enable

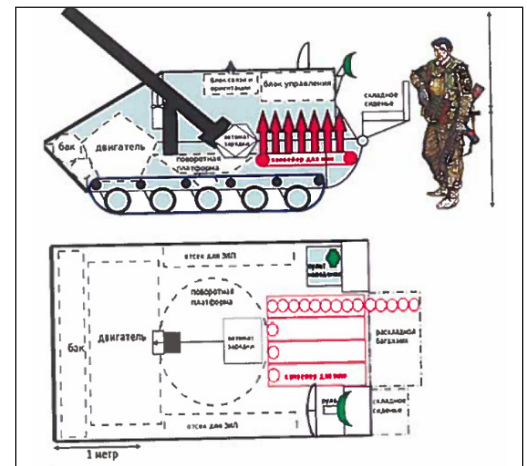


Figure 10 — Conceptual drawing of Russian 82mm automatic robot-mortar³⁵

maneuver for the Russian ground combat units.

Notes

¹ O. Leonov and I. Yl'yanov, *Регулярная Пехота: Боевая Летопись, Организация, Обмундирования, вооружение, Снаряжение 1698-1801* [Regular Infantry: Military Annals, 1698-1801] [Regular Infantry: Military Annals, Organization, Uniforms, Armaments, Supply 1698-1801], Moscow: TLO "ACT", 1995, 24-25.

² Lester W. Grau, "The Soviet Combined Arms Battalion — Reorganization for Tactical Flexibility," *Soviet Army Studies Office*, 1989, 3, accessed from <https://apps.dtic.mil/sti/pdfs/ADA216368.pdf>. There are also brigades mounted on tracked MTLB armored carriers operating in boggy, marshy or Arctic areas that are organized like BTR-equipped brigades.

³ Lester W. Grau and Charles K. Bartles, *The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces*, Foreign Military Studies Office, 2016, 211, accessed from <https://community.apan.org/wg/tradoc-g2/fmso/p/fmso-bookshelf>.

⁴ Jack Watling, "The Future of Fires: Maximising the UK's Tactical and Operational Firepower," *RUSI Occasional Paper*, Royal United Service Institute for Defence and Security Studies, London, November 2019, 18. Other consequences of the increase in range are the ability of a smaller number of guns to bring a higher proportion of the groups fire to bear in support of a specific maneuver brigade and the extent of the "last-mile resupply" of ammunition, food, and fuel is extended over 50 kilometers behind the FLOT, 19.

⁵ Petyr Nikolaev, "You Don't Joke with the Sanis. The Reliable Mortar Acquires a 'Second Breath' and Remains a Serious Threat to the Enemy," *Armeyskiy Standart* [Army Standard], <https://armystandard.ru/>, 26 April 2021.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ N. N. Novichkov, V. Ya. Snegovskiy, A. G. Sokolov and V. Yu. Shvarev, *Rossiyskie vooruzhennyye sily b chechenskoim konflikte: analiz, itogi, vyvody* [Russian armed forces in the Chechen conflict: analysis, results and outcomes], Moscow: Holweg-Infoglobe-Trivola, 1995, 131.

¹⁰ Nikolaev.

¹¹ Ibid.

¹² Murat Rafikhovich Toekin, *Минометная Батарея в Основных Видах Боя* [The Mortar Battery in the Basic Types of Combat],

Almaty: Kazakhstan University, 2002, 6.

¹³ Ibid.

¹⁴ Fire planning section derived from Toekin, 6-9, and Grau and Bartles, 243-250.

¹⁵ Toekin.

¹⁶ Ibid, 12.

¹⁷ Ibid, 10.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid, 12-13.

²¹ Ibid, 13.

²² Ibid.

²³ Ibid, 13-14.

²⁴ Ibid, 14.

²⁵ Ibid, 15.

²⁶ Ibid.

²⁷ Ibid, 16.

²⁸ With the introduction of the “Gran” precision firing system, high elevation positioning of part of the battery may be ideal when using laser-beam target identification.

²⁹ Toekin, 17.

³⁰ Ground Forces Combat Regulations: Part 2 Battalion and Company [Боевой устав сухопутных войск: часть 2 батальон роты], Moscow: Ministry of Defense of the Russian Federation, 2014.

³¹ Toekin, 17.

³² Ibid, 17-18.

³³ Ibid, 18.

³⁴ D. Pervykhin, G. Mitrofanov, V. Del’ros and I. Kruglov, Совершенствование Артиллерии: Внедрение научно-технических решений—залог успешного выполнения огневных задач артиллерии [Perfecting artillery: Inculcating scientific-technical decisions — securing the successful accomplishment of artillery fire missions], Армейский Сборник [Army Digest], February 2021, 63-71.

³⁵ Ibid, 71.

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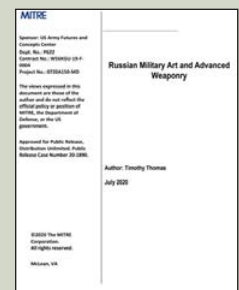
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From the Foreign Military Studies Office Bookshelf

Russian Military Art and Advanced Weaponry by Timothy Thomas

Russian General Staff Chief Valery Gerasimov has continually requested that the Academy of Military Science provide him with ideas about new forms and methods of warfare. One source defined “methods” as the use of weaponry and military art. Weaponry is now advanced and is characterized by new speeds, ranges, and agilities, which introduce new ways for Russian commanders to apply force. Military art takes into consideration advanced weaponry’s contributions to conflict along with a combination of both old and new combat experiences, the creativity and innovative capabilities of commanders, and new ways for considering or adding to the principles of military art (mass, surprise, etc.).

<https://community.apan.org/wg/tradoc-g2/fmsom/fmsom-books/352075/download>



The Russian Way of War: Force Structure, Tactics, and Modernization of the Russian Ground Forces by Dr. Lester W. Grau and Charles K. Bartles

Russia’s 2014 annexation of the Crimean Peninsula, activity in Eastern Ukraine, saber rattling regarding the Baltics, deployment to Syria, and more assertive behavior along its borders have piqued interest in the Russian armed forces. This increased interest has caused much speculation about their structure, capabilities, and future development. Interestingly, this speculation has created many different, and often contradictory, narratives about these issues. At any given time, assessments of the Russian armed forces vary between the idea of an incompetent and corrupt conscript army manning decrepit Soviet equipment and relying solely on brute force, to the idea of an elite military filled with special operations forces who were the “polite people” or “little green men” seen on the streets in Crimea. This book will attempt to split the difference between these radically different ideas by shedding some light on what exactly the Russian ground forces consist of, how they are structured, how they fight, and how they are modernizing.

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