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Translation

WARTIME OPERATIONS IN 1941-1945:

THE BREAKTHROUGH

By

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WARTIME OPERATIONS IN 1941-1945: THE BREAKTHROUGH

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INTRODUCTION

Penetration as a mode of offensive actions aimed at breaking up a fortified frontage occupied by defending enemy troops by means of forming a breach (breaches) in the defense, for subsequent maneuver to depth or toward the flanks, began to be employed in the wars of the era of imperialism in connection with the establishment of continuous static fronts.

The absence of exposed enemy flanks and the impossibility of outflanking or enveloping the enemy compelled attacking troops to seek to accomplish the mission by means of a direct frontal attack.

The need to penetrate a defense first appeared in the Russo-Japanese War of 1904-1905, but as a consequence of the newness of the problem and heavy casualties inflicted in a frontal attack, in this war neither side succeeded in accomplishing penetration.

Bourgeois military theory, other than perceiving the difficulties of penetration, was unable to see its laws and patterns, ways and means of accomplishment. Shortly before World War I, military theorists concluded from an analysis of the enormous destructive power of rapid-fire weapons that a frontal attack was out of the question. By virtue of this, the strategic war plans of the opposing sides were constructed on the basis of improving outflanking and enveloping maneuvers. But the battles fought at the beginning of World War I showed that the rate of advance of flanking troops did not exceed the rate of buildup of the defensive frontage by the opposing side by virtue of engaging additional combined units and large strategic formations. When the flanks of the steadily expanding combat front impinged onto natural obstacles which were insuperable to ground forces -- seas, mountain ranges, as well as neutral countries -- the failure of strategic war plans became obvious.

The art of warfare of the armies of all countries was faced with the problem of penetration of a strategic front. Without accomplishing penetration, it was no longer possible to conduct offensive operations and to capture important strategic, industrial and administrative centers, without which it was impossible to win a war or to achieve those objectives for the sake of which a war was initiated.

All warring armies proved to be unprepared -- theoretically, technically, and materially -- to accomplish penetration.

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The search for a solution to the problem of penetration of a deliberate defense continued throughout World War I, by attacking in a single narrow (12-15 km) sector, on a continuous wide (40-80 km) frontage, and simultaneously in several sectors; artillery densities (up to 180 guns per kilometer of breakthrough sector), degree of delivery of effective fire, depth and degree of saturation of combat dispositions with men and weapons increased from one campaign to the next. Nevertheless attacking forces were unable to penetrate the defense to a depth where they could shift to fluid actions. The cause lay primarily in the slow rate of advance. Endeavoring to penetrate the defense, attacking troops would mount one assault after another, spalling off one piece after another from the solid core of the defense, as it were. But the defending enemy, moving reserves to the endangered point, would build up the depth and strength of the defense more rapidly than the attacking force could wear it down. And operations usually would stall.

The appearance of tanks on the battlefield created realistic preconditions for rapid penetration of a static defense. But bourgeois art of warfare failed to find ways to realize their potential. By war's end the only problem which had been basically solved was that of penetrating a tactical defense by means of massed employment of artillery, tanks, infantry and aircraft in selected sectors. The problem of exploiting and developing tactical into operational penetration, however, remained unresolved.

During the civil war in the USSR, when cavalry armies were established, in a number of operations Soviet troops succeeded not only in penetrating a tactical defense but also in exploiting the attack to considerable depth, which constituted a decisive condition for devastating defeat of the enemy and liberation of vast areas of the Soviet Republic.

Synthesis of the experience of World War I and the civil war, as well as correct determination of the combat capabilities of new weaponry enabled Soviet art of warfare to formulate a theory of the offensive operation in depth. It consisted essentially in penetration of an enemy defense to full tactical depth, breaching and smashing of the enemy's defense frontage in a sector where the enemy could not deliver effective artillery fire from adjacent sectors onto friendly troops in the penetration sector. Engagement of the breakthrough exploitation force, which contained mechanized as well as airborne troops, sought to achieve rapid penetration of offensive forces to operational depth, destruction of approaching reserves, command and control facilities and supply depots, and sought to deprive the enemy of the opportunity to establish a defense along a new line.

Close teamwork and coordination between frontally-advancing troops, the breakthrough exploitation force and air should lead to completion of the defeat in detail of the enemy's main forces in the zone of advance of the army or front and offensive exploitation to the planned depth.

The forward operational echelon, which contained reinforced rifle corps, was supposed to advance to a depth of up to 20 kilometers on the first day of the offensive. The breakthrough exploitation force, entering the breach in the area of the enemy's main artillery positions or beyond the main defensive zone, was to penetrate the second defensive zone without a halt in attack position and, routing advancing enemy reserves, to capture areas and positions at operational depth, ensuring rapid achievement of the operation objective.

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When penetrating a hasty defense, it was recommended that the attack be mounted at a weak point or unoccupied sector, with subsequent offensive exploitation to depth or toward the flanks.

Penetration was to be accomplished with the approach of troops to the enemy's defense or from close contact with the enemy.

The Great Patriotic War demonstrated that our prewar views on penetration were essentially correct. Modes and method of preparing for and executing penetration experienced considerable development in the course of the war, however, which was dictated by changes in the conditions of conduct of warfare, the capabilities of our forces, the character of the enemy's defense, plus other factors. This volume is devoted to an investigation of this process.

The investigation is broken down by periods of the war, and in each period by campaigns, in which the general situation conditions for the majority of operations were approximately identical. Within campaigns we investigated penetration of the enemy's defense not in all offensive operations, but only in those which revealed the characteristic features of its preparation and conduct, making it possible to trace progress in achieving a practical solution to the problems of penetration in a concrete situation and general development trends in theory and practice of penetration.

This volume is based on a study of materials from the Central Archives of the Ministry of Defense, military historical works, war memoirs and reminiscences of war veterans published in the periodical press. The author also utilized his personal combat experience in analyzing penetration in those operations in which he participated.

CPSU Central Committee General Secretary Comrade L. I. Brezhnev stated in his speech at the 16th Trade Union Congress: "We perceive the past as a rich reservoir of experience, as material for reflection, for critical analysis of our own decisions and actions. We draw from the past inspiration for present and future deeds."¹ This statement also applies in full measure to military-historical experience.

Synthesis of the wealth of combat experience of the Soviet Army in matters pertaining to penetrating an enemy defense in the Great Patriotic War and assimilation of this experience by our command cadres will promote more successful accomplishment of the tasks facing us today.

The author would like to express his profound gratitude to Maj Gen B. V. Panov, Col A. A. Sidorenko, and Col N. F. Naumov for assistance rendered in working on this volume.

FOOTNOTE

1. PRAVDA, 22 March 1977.

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Chapter One. PENETRATION IN OPERATIONS OF THE FIRST PERIOD OF THE GREAT PATRIOTIC WAR

1. Experience of Penetration in the Operations of the Summer-Fall Campaign of 1941

Soviet troops gained their first experience at penetration in the Great Patriotic War in the July 1941 offensive in the Western Sector. It was carried out in a very complex situation. As a result of the treacherous attack by fascist Germany on the USSR, our troops sustained heavy casualties in frontier battles. Their combat capabilities were diminished, and they were forced to fight savage defensive battles. The need for rapid deployment of new combined units and large strategic formations, with a shortage of command personnel, command and control equipment facilities led to a change in the organization of forces. Mechanized and rifle corps were abolished, and the fighting strength of combined-arms armies was reduced by 50 to 67 percent.

Headquarters, Supreme High Command (Hq SHC) established four army groups of 2-4 divisions each for mounting an offensive in the Western Sector, and instructed them to attack along axes converging on Smolensk (Diagram 1). Each army group was to advance in a zone 30-50 km in width to a depth of up to 100 km from assembly areas situated 12-30 km from one another, while Gen V. Ya. Kachalov's army group was 150 kilometers distant.

Command authorities of the Western Sector noted a significant flaw in the plan proposed by Hq SHC: "A weak point of this operation lies in the fact that the army groups are isolated from one another by a considerable distance and, since each army group is small, therefore they can be separately enveloped."¹ This deficiency was not corrected, however, due to haste in turning the troops to the offensive.

Scattering of the efforts of the front was aggravated by decisions made by the army commanders, who were endeavoring, although the army groups were of limited numerical strength, to advance on several axes and, as a rule, with an approach march. In Gen V. A. Khomenko's army group, for example, each division was assigned a zone of advance approximately 10 km in width. A common breakthrough sector was not designated. In the zone of advance of the forces under the command of Gens S. A. Kalinin and K. K. Rokossovskiy (50 km in width), three assault groups were formed, each containing one or two divisions, separated from one another by a distance of 12-15 km.²

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The troops under the command of Gen V. Ya. Kachalov were to advance in a more compact force -- all three divisions were in flank contact with each other.

As a result of planning the offensive operation by the army groups on several axes, with limited artillery availability, there were on the average not more than 4 to 6 guns and mortars per kilometer of offensive frontage. The Western Front also had extremely little air support -- 186 bombers and 102 fighters, only 39 of which were of new types; 60 percent of the aircraft were under the command of the 20th, 21st, and 22d armies. The offensive by the army groups could be supported by a maximum of 118 bombers and 48 fighters. Air efforts were further scattered by the fact that airstrikes were planned against numerous enemy targets, as a rule selected deep in the enemy's operational dispositions. Such a limited number of weapons not only failed to break up the defense to full tactical depth (1-4 km), but also resulted in failure to neutralize the enemy's fire plan at the forward edge of the battle area.

By decision of command authorities of the Western Sector, the army groups were to turn to the offensive on 23 July, executing a forced march of 70-180 km. Such a task was beyond the capabilities of divisions which had just been deployed. The differing distance of the divisions from the battle line and attempts to initiate an attack from an approach march led to their engagement at different times, which weakened the force of the attack to an even greater extent. In General Kalinin's group, for example, the 91st Rifle Division commenced the attack on the morning of 25 July, while the 89th Division began the attack at midday.³ Because of all these reasons, no deep breach in the enemy's defense was achieved on a single axis, and the army and front operations failed to reach the exploitation phase.

A second offensive at Smolensk was undertaken in mid-August. Many of the deficiencies of the first offensive were corrected during preparations for and execution of this offensive. Armies of 5-6 divisions each were formed on the basis of the army groups. The axes of advance of the 19th and 30th armies were brought closer together, which made it possible more clearly to delineate the front's main axis of advance.

Breakthrough sectors were assigned to the armies as follows: 10 km to the 30th, 12 km to the 19th, and 5 km to the 16th.⁴ This made it possible to narrow the division zones of advance to 1.3-3 km. In the 30th Army a support echelon was formed of the 107th Tank Division and the 45th Cavalry Division, which to some degree expressed the intention to execute the offensive on the basis of the tenets of the theory of the operation in depth. Artillery densities increased to 20 pieces per km. There were improvements in massing of air support and organization of teamwork and coordination.

But the enemy, concerned for his strategic center, reinforced troops in the Smolensk area, strengthened his defenses, and dug in a large number of tanks. Therefore the battle groups formed of the divisions, which had been advancing almost continuously from 25 July to 14 August, were unable to achieve even the minimally required superiority in relative strengths in men and weapons. In addition, the troops lacked ammunition for massive preliminary bombardment. As a result our combined units, when turning to the offensive, were able to penetrate 6-12 km deep into the enemy's defense only in a few sectors, but they were unable to open a breach and exploit to the planned depth.

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At the end of August-beginning of September the troops of the Western Sector launched a third offensive in order to pin down the forces of Army Group Center and to defeat Guderian's forces in detail. The Reserve Front, which routed the enemy's Yel'nya force and liberated the town of Yel'nya, achieved the greatest success.

The principal result of the offensive operations of the armies of the Western Sector in the Battle of Smolensk, in spite of limited advance, was the fact that they forced the German-fascist command authorities, for the first time in World War II, to shift to defense on their main axis of advance.

At the same time the offensive operations of the Soviet forces at Smolensk in the summer of 1941 demonstrated that an army of a new composition, particularly an army group, was not capable of penetrating to operational depth even of a hastily taken-up defense which, thanks to the employment of tanks and swift construction of strong defensive works, acquired rather good stability. Penetration required, as Hq SHC had concluded, establishing "striking forces of 7-8 divisions." But no practical ways had been found to implement this conclusion. While at the army echelon a concentration of effort in a single sector, narrowed 3-4-fold, was mapped out fairly clearly, in the front a battle group was still broken down into separate army groups, while on the whole a front operation did not have a clearly marked front main attack. The requisite superiority over the enemy in men and weapons was not established in the breakthrough sectors. Delivery of fire on the enemy's defense proved weak, as did artillery and air support of the infantry and tank attack.

2. Penetration in the Operations of the Winter Campaign of 1941/42

The most important events of the winter campaign of 1941/42 were the counteroffensive at Moscow and the Soviet Army's general offensive.

The counteroffensive at Moscow began in a difficult situation for the Soviet Union. A number of this country's economically most important regions had been captured by the enemy. That part of the USSR which had been temporarily seized by the German-fascist forces by November 1941 had accounted for 63 percent of the nation's pre-war coal production, 68 percent of its pig iron and 58 percent of its steel, and produced 60 percent of the Soviet Union's aluminum, 38 percent of its grain, and 84 percent of its sugar.⁵ The situation was complicated to an even great extent by the fact that a large number of industrial enterprises had been evacuated eastward, including from areas adjacent to the front. Production of arms and munitions had declined by December 1941. The troops at the front were short of both. The enemy was blockading Leningrad, had broken through to Tikhvin, was advancing on Moscow, and by December had enveloped the Moscow industrial area in a half-ring and had captured Khar'kov and the Donbass.

Under these conditions Hq SHC made the decision to shift to a counteroffensive at Moscow.

Organization and execution of penetration of a hasty defense in turning to a counteroffensive at Moscow. The Hq SHC plan for the counteroffensive at Moscow called for mounting simultaneous attacks by the forces of three fronts at the enemy

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forces threatening Moscow, in order to inflict a decisive defeat on them and to push them back as far as possible from the city.

At the moment our forces turned to a counteroffensive, the enemy was attempting to continue the advance only at Solnechnogorsk, Naro-Fominsk, and Tula. He was stopped in the other sectors of the front and in the span of several days was able to establish a defense in the form of separate strongpoints and centers of resistance in populated localities, at road junctions and on tactically important high ground. The strongest defense was to the north of Moscow. On the approaches to Tula gaps between centers of resistance in places ran as much as several kilometers.

In a directive Hq SHC assigned the following missions to the fronts: to the Kalinin Front: concentrating a battle group in the course of the next two to three days, it was to frontally attack Kalinin and Sudimirka in the direction of Mikulino-Gorodishche and Turginovo. Advancing to the rear of the enemy's Klin force, it was to assist the troops of the Western Front in destroying that force.

Western Front: attack on the Klin-Solnechnogorsk and Istra axes, defeat the enemy's northern force on the right side of the front; attack in the direction of Uzlovaya and Bogoroditsk, into the flank and rear of the enemy's 2d Panzer Army, crush the enemy's southern force on the left side of the front.

The armies of the right side of the Southwestern Front were to rout the enemy's Yelets force and, exploiting in the direction of Orel, assist the troops of the left side of the Western Front in defeating the 2d Panzer Army.⁶

Thus the general plan formulated by Hq SHC for the counteroffensive by the forces of three fronts called for mounting four front attacks in a zone more than 600 kilometers wide. From 2 to 4 armies were designated for each of these, which was a significant step forward in the art of concentrating forces for an attack on selected axes.

Hq SHC directives for the counteroffensive required decisive massing of manpower and equipment on the part of the fronts. Hq SHC noted that individual assaults in different sectors were ineffective, and ordered the commanding general of the Kalinin Front to establish a battle group consisting of not less than 5-6 rifle divisions, including the most battleworthy combined units, a large percentage of Reserve SHC artillery, all rocket launcher systems and tanks.

This idea was not convincingly incorporated, however, in preparations by the fronts for these operations. Front attacks continued to be broken up into several army attacks mounted on separate axes (Diagram 2). The offensive strike by the Kalinin Front was in fact executed by the forces of the 29th and 31st armies in disconnected sectors 20 km distant from one another. On the right side of the Western Front attack forces included the 30th Army, 1st Assault Army, 20th, 16th and subsequently 5th Army. The distance between army attacks was as follows: 30th Army and 1st Assault Army -- 30 km; 1st Assault Army and 20th Army -- approximately 15 km; 20th and 16th armies -- approximately 10 km. Distances were even greater between the main attacks of the armies of the left side the Western Front (up to 50 km) and the right side of the Southwestern Front (90 km).

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The complex conditions of shifting the fronts to a counteroffensive predetermined the number of offensive strikes in the army operations and the density of troops on their axes (Table 1).

Table 1. Some Figures on Organization for Breakthrough in the Armies at the Shift to a Counteroffensive at Moscow

Army	Fighting Strength (figured divisions)	Width of Zone of Advance, km	Number and Width of Breakthrough Sectors, km	Number of Figured Divisions in At- tack Echelon in Breakthrough Sectors	Width of Division Breakthrough Sector, km	Densities in Breakthrough Sector	
						Artillery	Tanks
29th	5	150	3-15	3	5	9	-
31st	5	40	1-6	3	2	2	-
30th	8	80	3-27	6	3-5	Up to 15	1-3
1st Assault	6	30	1-11	5	2.1	16	4-5
20th	3.5	30	1-6	2	3	16-20	1-10
16th	7	25	1-7.5	2	3.5-4	16-43	8-10
50th	7.5	140	3-32	5	4-7	4-6	-
10th	9.5	100	3-56	7	5-10	9-10	-
Kostenko Group	4	31	2-21	2	9-12	-	1-3
13th	7	50	1-20	2	10	-	-

The tactical order of battle of the fronts and armies, with few exceptions, was single-echelon, with designation of meager reserves. The combined units and units were formed for the most part into two echelons. Artillery groups were established only in certain armies, as a consequence of a shortage of artillery. In the divisions, APP (artillery in support of infantry) groups, consisting of one or two battalions, were formed, one for each attack-echelon regiment. ADD (long-range artillery) groups were formed in the independent divisions, from RVGK [Reserve of the Supreme High Command] artillery, to suppress and neutralize enemy artillery and reserves. The meager availability of artillery in the 10th Army forced the command authorities to attach it primarily to subunits for joint actions as close support guns.

The troops were extremely short of ammunition. As of 6 December they had from 1 to 1.4 basic combat loads, and somewhat more only for the 82 mm mortars and 152 mm howitzers. This made it necessary to limit ammunition consumption from one fifth to one third of a basic load, and for RVGK artillery -- to 4-5 rounds per gun on the first day of the offensive.

In the majority of the armies artillery preparation was limited to a brief bombardment lasting 10-15 minutes. The preparatory bombardment ran 30-60 minutes only in the armies of the Kalinin Front and in the center of the Western Front. Artillery support of infantry and tank assault and combat deep in the defense was essentially not scheduled.

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The main air forces consisted of Moscow air defense zone aircraft and long-range bombers. Of a total of 1,170 aircraft, Frontal Aviation claimed 515, including 381 bombers and ground-attack aircraft. As of 6 December the Western Front had only 177 aircraft in operable condition.

Air support of the breakthrough was to involve hitting the enemy at strongpoints at immediate tactical depth and artillery in fire positions. On the night of 6 December preliminary airstrikes were scheduled forward of the forces on the right side of the Western Front, with aircraft to attack headquarters, communications centers and enemy reserves on the armies' main axes of advance. Airfields in the Klin and Vatulino areas were hit simultaneously. The great number of targets which were hit led to a scattering of air efforts.

Low artillery densities, poor massing of air, and difficulty in organizing coordination between ground troops, Moscow air defense aircraft and long-range bombers made it impossible to achieve a powerful, unified delivery of artillery fire and airstrikes in the breakthrough sectors. Therefore infantry bore the main burden of breaking through the enemy's defense.

Execution of penetration of the enemy's defense was rather difficult in the majority of armies, although defense depth was shallow at the commencement of the counteroffensive. The divisions of the 29th Army, for example, crossing over on the ice to the south bank of the Volga on 5 December, were pushed back to their initial position of 6 December.

The combined units of the 31st Army, by massing manpower and weapons in a single sector, advanced 4-5 km on the first day. But on succeeding days, in connection with the approach of enemy reserves, the advance slowed and assumed a protracted character. The city of Kalinin was finally enveloped by the 10th day of the operation, and was subsequently liberated by Soviet forces.

The troops of the 30th Army shifted to the offensive just before dawn on 6 December. Prior to commencement of the assault, only in certain sectors did rocket batteries fire several salvos at enemy-occupied towns and villages. As soon as the infantry commenced the assault, artillery proceeded to provide supporting fire. A considerable number of close support guns were mounted on sledges, which made it possible to advance them behind the infantry.

The surprise attack produced good results. The enemy, taken unawares, was unable to offer organized resistance. The strongpoints on the first line were taken by dawn. Favorable conditions had been created for advancing to depth. Deep snow and a lack of roads, however, made it impossible to speed up the pace of advance. That afternoon the enemy succeeded in moving up reserves and, together with retreating troops, forming a new defensive line. Nevertheless, however, by evening depth of penetration had reached 5 km on the main axis of advance, and the frontage had been enlarged to 12 km.

The army commander engaged his reserves in order to complete the breakthrough and crush the approaching reserves. By evening on the third day depth of penetration was 6-10 km, and the offensive involved a zone 35 km wide. Enemy resistance had collapsed, and the enemy began to retreat.

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The successful advance of the 30th Army helped the 1st Assault Army. It captured several villages, and by the evening of the third day had advanced to a depth of 10 km.

Penetration of the tactical defense had created the requisite conditions for an advance at a faster pace. The lack of offensive exploitation echelons, however, made it impossible to take advantage of this favorable moment. Such an echelon was formed in the 30th Army in the course of the operation, consisting of a motorized rifle and cavalry division, a motorized regiment and a tank battalion. Its engagement immediately boosted the pace of advance. In 3 days the mobile group advanced 36 km, thus facilitating the advance of the army's main forces.

After the 30th Army and the 1st Assault Army captured a stretch of the Leningrad Highway, the tactical breakthrough was exploited to operational penetration. They were able to shift to operational pursuit of the enemy.

Breakthrough in the zone of advance of the 20th Army took place more slowly, since a shortage of artillery and ammunition prevented reliable neutralization of the enemy.

The 331st Rifle Division, reinforced by a tank battalion, an RVCK gun artillery regiment and a rocket launcher battalion, began the offensive on 4 December in a zone 4.5 km in frontage. As a consequence of hasty preparation for the attack, it failed to achieve appreciable success, but suffered 20 percent casualties and lost 30 percent of its tanks.

Preparations for a new attack were made on 5 December. Following a brief bombardment, on the following morning units of this division once again shifted to the attack, together with all the army's troops. The attack was developing slowly. It was accelerated by a bold dash by an assault force on four tanks. This force fought its way into the village of Gorki and brought confusion into the enemy's defense. The regiments took advantage of this and captured the village, which opened up the approaches to Krasnaya Polyana.

In the 8 days of occupation, the enemy had transformed the village into a very strong center of resistance. Upon reaching the village, the division's units were halted. On the first day the enemy also succeeded in fighting off assaults by other of the army's combined units.

The assaults on Krasnaya Polyana resumed on 7 December. One hundred artillery pieces were diverted from the Moscow defensive zone, as well as some of the SHC aircraft, in addition to army and front weapons, to support the advancing combined units.⁷ Difficulty of coordinating with them via several levels of command, however, made it impossible to utilize their capabilities in full measure. Units of the army penetrated the village, but assaults within the village were of an extremely savage nature. It was necessary to dislodge the enemy by force from practically every house. That afternoon units of the enemy's 106th Infantry and 2d Panzer divisions mounted a strong counterattack. It was beaten back, and during the night of 7-8 December units of the 331st Rifle division, working in coordination with the 28th Rifle Brigade, captured Krasnaya Polyana.

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These combined units advanced 4.5 km on 8 December, thus completing the breakthrough of the enemy's defensive line. The commanders of the combined units took measures to execute tactical pursuit of the enemy, who had begun to retreat, intending to advance 30 km in 2 days. But a lack of skis prevented them from forming outflanking detachments. There were not enough tanks or troops on the roads to neutralize the enemy by fire, in order to smash aside the enemy's strong road-blocks. Therefore by the evening of 10 December the troops of the 331st Division and the 28th Brigade had advanced 10-12 km.

Thanks to the successful actions of the brigades advancing on the army's flanks, a breach formed in the enemy's defense. The army's combined units accelerated its advance on Solnechnogorsk.

The 16th Army commenced penetration on 7 December with the forces of the 8th Guards Rifle Division and the 44th Cavalry Division, following a 13-minute preliminary bombardment. After capturing trenches, emplacements and structures adapted for defense on the outskirts of Kryukovo, the subunits encountered heavy enemy resistance. The advance was particularly hampered by emplaced tanks. An effort was being made to destroy them with assault teams and direct-fire artillery. The fighting assumed a protracted character. That afternoon the divisions' support echelons were engaged, and the 17th Rifle Brigade was added to the assault. Presenting a threat of encirclement, they mounted a night assault and drove the enemy out of Kryukovo and neighboring villages. Penetration of the defense on the main axis of advance enabled the army's other combined units successfully to commence the attack. The enemy's defense was breached practically throughout the entire zone of advance.

Capture of Krasnaya Polyana, Kryukovo, and the preceding capture of villages in the zones of the 31st, 30th and 1st Assault armies disrupted the enemy's defense and exerted a strong psychological effect on the German-fascist troops, which were expecting an early capture of Moscow, or at least a substantial breather from the fighting, cold and illness which had exhausted them. The unexpected attack shook them. The resistance of the defending enemy troops in the zones of the 20th and 16th armies diminished considerably. They began a disorganized retreat, as captured officers and enlisted men acknowledged, without control by their command personnel.⁸

The troops of the 16th and 20th armies now had a real opportunity swiftly to exploit tactical into operational success and to break through without a halt the defensive line occupied by the enemy along the Leningrad rail line. But the 20th Army did not have an exploitation echelon. In addition, the restricted nature of off-road maneuver through deep snow and frontal assault on villages held by enemy rear guards made it impossible to increase the rate of advance sufficiently to exceed the enemy's rate of withdrawal. The army's rate of advance increased somewhat following the capture of Solnechnogorsk on 11 December.

Exploitation of tactical into operational success took place considerably more rapidly in the 16th Army. On 10 December Gen K. K. Rokossovskiy formed three mobile groups: under the command of Gen F. T. Remizov (145th Tank Brigade, 44th Cavalry Division, and 17th Rifle Brigade); General A. P. Beloborodov (9th Guards Rifle Division and 36th Rifle Brigade), Gen M. Ye. Katukov (1st and 17th Tank brigades, 89th Independent Tank Battalion, and 40th Rifle Brigade).

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At first the actions of these groups were not distinguished by swiftness or mobility. But the mobile groups of Generals Remezov and Katukov played an important role in offensive exploitation aimed at breaking through the Istra defensive line. Swinging around the reservoir from the north and south, they threatened with encirclement the enemy force which had taken up position on the west shore of the Istra Reservoir, which predetermined its capture and a subsequent advance to the defensive line along the Lama and Ruza rivers.

An important role in the defeat in detail of the Istra force was also played by the mobile group of the 5th Army, containing the 2d Guards Cavalry Corps. This corps executed a march to the vicinity of Kubinka Station, from which it was engaged northward on the third day of the offensive. Crushing the main forces of the 78th Infantry Division in the area of Safonikha, it wheeled abruptly westward, advancing toward the Ruza River.

By 15 December the armies of the right side of the Western Front, having broken through two defensive lines, had advanced 40-50 km, inflicting heavy losses on the combined units of the 3d and 4th Panzer groups.

On the left side of the Western Front the main attack was mounted by the 10th Army. Commencement of the offensive was preceded by advance of combined units from depth to assembly areas. In a 24-hour period the divisions traveled 30 km or more along snow-clogged roads, into the teeth of a blizzard, while the 326th Rifle Division was proceeding at a forced-march pace, covering 45-50 km per day. The 322d Rifle Division, traveling approximately 50 km in 36 hours, reached the town of Serebryanyye Prudy by the morning of 7 December. Following a brief artillery bombardment and delivery of fire by direct-fire guns, the regiments launched an assault from the north and east, taking the enemy by surprise. In the course of the engagement one regiment executed a maneuver to the southern edge of town and immediately commenced an assault, without delay. The surprise attack from three directions threw the enemy troops in the town into a state of confusion. While offering resistance, the enemy desperately sought a way to escape. Nevertheless after 3 hours of fighting two battalions of an enemy infantry regiment were routed and the town captured. The division's losses totaled only 7 dead and 19 wounded.⁹ Repulsing scattered enemy counterattacks, the division continued advancing toward Venev.

Of decisive significance for the army was a breakthrough in the center of the zone of advance, where they were to capture the town of Mikhaylov, in which a strong enemy garrison was stationed. This mission was successfully accomplished by a night assault by the 330th Rifle Division, working in coordination with the 328th Rifle Division.

The rout of the enemy at Serebryanyye Prudy and Mikhaylov led to formation of a 50-km breach in his defenses.

The army command attempted to exploit through this breach. Forward detachments were sent forward. Sledge teams were mobilized to speed their movement. But nevertheless they did not possess the necessary mobility to outflank the enemy's rear guard off roads.

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The divisions' main forces, advancing on the road, were frequently halted by air-strikes; frontal assault on enemy centers of resistance led to protracted engagements.

The rate of advance was also slower than that of the first day because the enemy, having recovered from the surprise attack, began hastily closing the breach which had formed in his defenses. The 10th Army did not have a mobile group which could split the enemy's front more deeply: the 41st Cavalry Division, dispatched in the direction of the town of Yepifan', engaged the retreating enemy, turned from the designated direction and was unable to accomplish the mission of capturing the town.¹⁰

The 50th Army shifted to the offensive on the morning of 8 December. In spite of the fact that the enemy force facing it was somewhat weakened, penetration of the defense was accomplished slowly, for the army's divisions were weak and fatigued by defensive engagements. By 17 December they had managed to advance only 8-12 km, and captured the town of Shchekino. Since the army was unable to breach the enemy's defense, it was unable to advance to the rear of the enemy's 2d Panzer Army and, working in coordination with the 10th Army, to encircle part of its forces.

On the right side of the Southwestern Front the troops of the 13th Army launched an attack on 6 December, hitting the enemy's Yelets force from the north. General Kostenko's force was advancing from the south. One feature of the breakthrough and penetration deep into the enemy's defense lay in the fact that in the enemy's strongpoint-type defense, attacks would be launched for the most part between strongpoints and centers of resistance. The 1st Guards Rifle Division, for example, attacking a weak point, had penetrated 14 km by evening. The 5th Cavalry Corps initially engaged to capture built-up areas, but subsequently changed its direction of attack and drove between enemy strongpoints, which enabled it swiftly to advance to depth. On 8 December the corps advanced 10 km, 12 km on 9 December, and 20 km on 10 December.¹¹ The corps got behind the enemy's Yelets force. It was only the slow rate of advance of the 13th Army's assault group which prevented encirclement within a few days of the main forces of the 34th Army Corps south of Yelets. In the course of offensive exploitation, however, the troops of the right side of the Southwestern Front encircled its main forces and defeated them in detail north of the town of Livny, which made it possible to consolidate two army breakthroughs into a single front penetration and to create some preconditions for developing the breakthrough into operational pursuit.

Penetration of prepared defensive lines in the course of a counteroffensive and general offensive of Soviet forces. Seizure of the strategic initiative by the Soviet Army in the counteroffensive at Moscow forced the enemy to shift to the strategic defense for the first time in World War II. On the Moscow strategic axis he undertook considerable efforts to establish defensive lines on the Lama, Ruza, Don and Shat rivers.

The 10th Army was the first to encounter the advance-fortified defensive line in the counteroffensive at Moscow. Guderian had issued the order to prepare this line at the end of November, subsequently making the decision to shift to the defense on the night of 6 December, that is, on the eve of our counteroffensive.

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In 10 days time the enemy was able, using local citizens pressed into service, to construct trenches and emplacements, dugout shelters with from one to three layers of logs, earth-and-timber emplacements, had adapted masonry buildings for defense, had covered the sloping river banks with a sheet of ice at many points, and had constructed barbed wire entanglements in places.

For a number of reasons, front and army intelligence had not been able immediately to discover the enemy's shift to defense and construction of defensive lines to the rear, which prevented the commanding generals from making a decision while still approaching these lines and thus preventing the occurrence of scattered, disconnected assaults by the combined units.

For example, the commanding general of the 10th Army made the decision to break through the defense on the Don River on 9 December, that is, after several combined units had already launched assaults to take this defensive line. This decision (Diagram 3) consisted essentially in the following: pinning down enemy troops with part of his forces in the Stalinogorsk (Novomoskovsk) area, he would disengage the army's main forces and redeploy them southward, with the objective of launching the main attack on the Yepifan'-Bogoroditsk axis.¹²

As a consequence of redeployment of the divisions southward, the 10th Army launched the offensive two days later than the designated time. On 12 December a hastily organized assault, with weak artillery support, proved unsuccessful. Subsequent assaults launched that same day also failed to produce the desired results.

On the night of 13 December the efforts of the combined units were concentrated on breaking through in the gaps between centers of resistance. Thanks to the extensive employment of artillery for direct fire at strongpoints on the flanks of the breakthrough sectors, the enemy was neutralized and the attacking troops began enveloping and bypassing his centers of resistance, threatening them with encirclement. The result was immediate. In the course of 13 December the defense was penetrated in several sectors.

The army's rate of advance increased appreciably with penetration of the defensive line on the Don River. In two days the troops of the 10th Army advanced 20-35 km. The army's mobile group -- the 41st Cavalry Division -- penetrated to a depth of more than 50 km, but this division, weak in composition, was unable to accomplish operational missions. A more powerful mobile group was needed. Such a force had been formed by the evening of 16 December, consisting of three cavalry divisions and one rifle division, with the objective of advancing swiftly to the town of Plavsk, and capturing it without a halt. Unfortunately the army cavalry group was displaying insufficient mobility, and it lacked striking force, since it contained no tanks. In addition, execution of maneuver was complicated by deep snow. As a result, the cavalry force failed to drive to the enemy's rear and failed to become the spearhead of the army's operational attack. On 20 December the armies on the right side of the Western Front reached the line on the Lama and Ruza rivers, which had been fortified by the enemy as a system of strongpoints set up in villages and on hilltops. The strongpoints contained a large number of earth-and-timber pillboxes, dugout shelters, emplacements, trenches, and were girdled by "Bruno" type barbed wire entanglements.

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Western Front intelligence was unable to establish in a timely manner that the enemy intended to halt the advance of our forces at this line. In connection with this the offensive was launched in the formation in which pursuit was conducted, that is, without establishing battle groups in the armies. Attempts to break through the enemy's defense on the Lama River without a halt in attack position, undertaken on 20-22 December, were unsuccessful.

On 23 December the command authorities of the Western Front, convinced that success could not be achieved by advancing on a wide front, issued an order to the armies "to narrow the spearhead of attack at a specified point, break through the enemy's defense on a narrow front with concentrated forces, and exploit by engaging fresh forces."¹³

An attack based on instructions from the commanding general of the front was launched 24 hours later. It was impossible in such a short time appreciably to alter the force groupings of the armies, and their attack inevitably assumed the character of assaults along a broad front with the objective of capturing individual strongpoints. By 1 January the troops of the 20th Army had succeeded in capturing only seven strongpoints.

The armies of the Kalinin Front, due to linearity of formation, were also advancing slowly. By 20 December they had reached approximately the same line as the armies of the right side of the Western Front.

By decision of Hq SHC, at the end of December the main effort of the Kalinin Front was shifted to the right side of the front in order to attack Rzhev from the north and capture it. Toward this objective it was planned to establish a battle group of divisions from the 39th, 22d, and 29th armies. But time-uncoordinated actions by the armies along a wide front, with poor artillery support, was leading to protracted engagements. The divisions of the 39th Army, for example, operating in the army's entire zone of advance, were able to advance only 1-3 km in the first three days. Only by narrowing the sector of active efforts to 20 km and establishing a density of 40 guns and mortars per km in this sector was the Kalinin Front able finally to penetrate the enemy's defense to a depth of 15-20 km and to open a wide breach.

Similar deficiencies also characterized the armies of the other fronts. They attested to the fact that the enemy's shift to defense on prepared, fortified lines with a well-organized fire plan and obstacles, required a sharp rise in the level of preparation for and conduct of defensive operations.

Massing of men and weapons on the axes of advance and delivery of effective fire on the enemy, formulated in an Hq SHC directive letter dated 10 January 1942, proved to be the root items, successful resolution of which determined the success of offensive operations.

Changes which had occurred in the character of the enemy's actions were noted at the beginning of the letter: "In order to stem our advance, the Germans have shifted to the defense and have proceeded to build defensive lines with emplacements, obstacles, and other field fortifications." It further stated: "In order to ensure penetration of the enemy's defensive line to its full depth... at least two

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conditions are essential: first, it is necessary to replace actions by individual divisions disposed in a line, presently practiced by our armies and fronts, with actions by assault groups concentrated in one sector; second, it is essential to replace so-called artillery preparation with artillery support for the attack." The makeup of the assault group of the armies was specified at three or four divisions, and in the front -- several armies. In addition to massing the forces of combined-arms large strategic formations, the directive letter also specified concentration of artillery: 60-80 guns in an army assault group sector, and 150-200 in a front assault group sector.

Execution of the instructions of the Hq SHC directive letter caused a sharp change in preparation for and execution of offensive operations. This can be seen in the experience of the Rzhev-Vyaz'ma Operation, conducted by the troops of the Western and Kalinin fronts in January-April 1942, and in particular in the advance of the 20th Army of the Western Front.

In view of unsuccessful attempts to break through the enemy's defense, which had been fortified in advance, on the Lama River at the end of December-beginning of January by the uncoordinated efforts of the 1st Assault Army, 20th and 16th armies, Hq SHC ordered the commanding general of the Western Front to form a battle group of troops of the 20th Army, transferring to it part of the forces of the adjacent 1st Assault Army and 16th Army. By 10 January the 2d Guards Cavalry Corps, a cavalry division, a tank brigade and four rifle brigades, five ski battalions, five artillery regiments, and two rocket artillery battalions had been transferred over to the 20th Army.

The breakthrough sector -- 8 km -- comprised less than half of its 20 km zone of advance. The army's main forces and weapons were concentrated in this sector: both rifle divisions, six of the eight rifle brigades, all tank brigades, and 77 percent of artillery. To achieve better command and control, the army's troops were organized into three groups, each of which comprised a reinforced rifle division. The 2d Guards Cavalry Corps comprised a mobile group. A decisive concentration of men and weapons in the breakthrough sector made it possible to establish densities which were fairly high for that time: approximately 3.5 rifle battalions, 60 guns and mortars, and 12.5 tanks per km of breakthrough sector,¹⁴ and to achieve an almost threefold superiority over the adversary. In the counteroffensive the rifle divisions had been penetrating the defense in a zone of 3.5-4.5 km, while on the Lama River the 352d Rifle Division, for example, was penetrating the defense in sectors only 1.5 km wide.

Substantial changes in comparison with the counteroffensive occurred in the deployment of the 20th Army's artillery. An APP group was established in each combined unit, consisting of 2-3 battalions. In the divisions 1 or 2 battalions would be designated to support the attack-echelon regiments, and in the brigade -- the attack-echelon battalions. An army ADD group, consisting of two regiments, was formed in the army. Rocket artillery battalions were placed directly under division commanders. Twenty-five percent of all regimental and antitank artillery was set up for direct fire.

Artillery preparation for the attack was to run 1.5 hours. It was preceded by a period of demolishing enemy installations. For the period of artillery support

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of infantry and tank assault, the battalions were instructed to deliver fire on request by rifle battalion commanders and at newly spotted targets. Airstrikes were to be employed to neutralize and destroy the enemy during the offensive.

According to the operation plan, on the first day the enemy's defense was to be penetrated to a depth of 10-12 km.

The troops of the 20th Army launched the attack on 10 January 1942. It was snowing heavily, which worsened conditions for the artillery. All aircraft were grounded.

At 0930 the army launched the attack. The 352d Rifle Division was attacking on the main axis of advance (Diagram 4). Since the artillery groups contained few heavy guns, they were unable to demolish and neutralize the earth-and-timber emplacements and weapon emplacements in structures. The first assault was unsuccessful. Finally at 1130 the regiments entered the village of Timonino, which had been transformed by the enemy into a strong center of resistance. Its troops had resisted with the stubbornness of the doomed.

Storming one earth-and-timber bunker after another, the division's subunits slowly advanced. Due to a shortage of ammunition, artillery provided little support of the attacking infantry and tanks. In spite of all this, on the first day the regiments of the 352d Division advanced 2-3 km, and an additional 6-7 km on the following two days. This created conditions for engaging the army's mobile task force -- the 2d Guards Cavalry Corps, reinforced by the 20th Cavalry Division, the 22d Tank Brigade, and 5 ski battalions. On 13 January the army's mobile group entered the breach. The army's rate of advance picked up.

The achieved success enabled the 1st Assault Army, the 16th and 5th armies to join in the offensive. The offensive frontage broadened, which made it difficult for the adversary to localize the threat of deep penetration. Our rate of advance, however, did not exceed the enemy's rate of withdrawal, which was due to a number of factors. The mobile group did not possess sufficient striking power, since it had an insufficient number of tanks, and it was having considerable difficulty maneuvering through the very deep snow. The troops were critically short of ammunition. Frequently units and combined units would advance primarily along roads, mounting only frontal attacks on the enemy. By 25 January the armies of the right side of the Western Front had fought their way forward 50-70 km and were forced to halt for an extended time at the Gzhatsk defensive line.

Analysis of preparation for and execution of penetration in the operations of the winter campaign of 1941/42 indicates that penetration of the enemy's defense contained a number of specific features which were determined by the general nature of the armed struggle, by our force's shift to a counteroffensive, and by its development, without pause, into a general offensive.

Preparation of all armies for the counteroffensive at Moscow was accomplished on a tight timetable, which prevented the enemy from establishing a deliberate defense. The fact that the enemy was considerably under strength in troops prevented him from establishing high densities in the defense, while the low morale and physical tiredness of the troops diminished their combat efficiency.

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In turning to the counteroffensive, only the troops of the armies (and not all of them) began penetration simultaneously. Subsequently penetration broke down into a number of sequential attacks mounted on the scale of combined units, units, and even subunits, which diminished the force of the attack and affected the rate of advance.

In view of the low tank densities, the main burden of the breakthrough effort was shouldered by the infantry and artillery. A lack of mobile groups in the armies prevented them from rapidly exploiting to depth. In a number of armies such forces were established in the course of the operation and played an important role in boosting the rate of advance.

When the enemy shifted to a strategic defense, it became necessary to break through a defense prepared in advance, which required a greater massing of men and weapons and improved coordination of efforts. Advance establishment of mobile groups in the armies accelerated exploitation of tactical to operational penetrations and increased the rate of advance.

3. Penetration in Operations of the Summer-Fall Campaign of 1942

The most characteristic features of preparation for and execution of penetration of the enemy's defense in the summer-fall campaign of 1942, which on the whole was a defensive campaign for our forces, can be seen in the example of the Khar'kov and Rzhev-Sychevka offensive operations.

The general plan of the Khar'kov Operation (Diagram 5) specified launching two attacks: one from the Volchansk area and the other, the main attack, from the Barvenkovo salient, on converging axes toward Khar'kov.

Forces attacking from Volchansk included the 28th Army and part of the forces of the 21st and 38th armies, which were attacking on adjacent flanks. The northern battle group contained 18 rifle divisions, 3 cavalry divisions, 7 tank brigades, and 2 motorized rifle brigades. Ten divisions were assigned to the forward echelon, 8 divisions of which comprised the main forces and were to break through the enemy's defense in a 26 km sector.

A mobile group, consisting of the 3d Guards Cavalry Corps, reinforced by a motorized rifle brigade, was formed only in the 28th Army. It was to be engaged at a depth of 15-16 km on the third day of the operation.

The southern battle group contained the 6th Army and Gen L. V. Bobkin's army group. It contained 10 rifle divisions, 3 cavalry divisions, 11 tank and 2 motorized rifle brigades.¹⁵ 5.5 divisions were assigned to the first operational echelon, 3 of these to the main axis of advance.

The breakthrough exploitation echelon in the southern group included 2 tank corps in the 6th Army and a cavalry corps, reinforced by a tank brigade, in Gen L. V. Bobkin's army group. The tank corps were to move into the breach on the third day, and the cavalry corps on the second day of the operation, at a depth of 10-12 km.

The reserves of the commanding general of the front on the main axis of advance comprised two rifle divisions and the 2d Cavalry Corps.

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The armies designated to conduct this operation were able to establish the troop densities specified in Table 2.

Table 2. Densities of Men and Weapons in the Breakthrough Sectors of the Armies in the Khar'kov Operation

Army	Width of Zone of Advance, km	Width of Breakthrough Sectors, km		Densities in Breakthrough Sector	
		Army	Division	Artillery	Direct Infantry Support Tanks
21st	120	14	2-4	23/60	3.5
28th	15	15	2.5-4.5	45/60	12
38th	100	26	5.9	14/20	5
6th	75	25	4-10	30/51	6.4
Army group of General Bobkin	26	11	5-6	19/27	4

Note: Average artillery densities are given in the numerator, and maximum densities in the denominator.

The enemy's defense in the breakthrough sectors consisted of a system of platoon strongpoints linked into centers of resistance, with gaps between them. Strongpoints at the forward edge were linked by communication trenches, which essentially comprised the first fighting trench, continuous over considerable stretches. A large number of earth-and-timber emplacements were constructed in important sectors, especially in villages. Emplaced tanks were positioned in the gaps between strongpoints. The enemy made extensive use of barbed-wire entanglements. The main defensive zone, 8-12 km deep, contained two positions. In some sectors the enemy prepared a second and third defensive zones. The enemy's total depth of defense was 25-30 km.

This defense was to be broken up with a one-hour preliminary artillery bombardment, with ammunition consumption of 0.5-0.8 basic load. On the first day of the operation the armies distributed from 0.6 to 1.5 basic loads for the various artillery and mortar systems. The command authorities of the Southwestern Front, well aware of the limited fire capabilities of the artillery, issued special instructions which stated that in view of the low densities of artillery and limited issue of ammunition, massing of fire was exceptionally important.¹⁶ Therefore almost all fires were to be delivered only on well-reconnoitered targets. All battalion and regimental artillery -- 4 to 6 guns from each infantry support group -- were set up for direct fire, which increased artillery fire results.

Support of the assault phase was to be in the form of a rolling barrage, while support of infantry and tanks at depth was to be by fire on request. Planning of these periods of offensive artillery support was assigned to the division artillery commanders, which could not help but introduce lack of coordination in the employment of available artillery.

We should note that planned artillery capabilities differed substantially from actual capabilities. This is due to the fact that front and army artillery

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headquarters had not drawn up detailed plans for redeployment of artillery units and had failed to consider the fact that many artillery regiments lacked the minimum requisite means of transport, as a consequence of which only 17 of the 32 reinforcement regiments were able to reach their fire positions by the evening of 11 May; 11 regiments were still en route and did not take part in artillery preparation, while 4 regiments did not arrive until the offensive was in progress.¹⁷

For a number of reasons the front's air forces were unable appreciably to make up for the lack of artillery fire capabilities to soften up the enemy's defense. In the Southwestern Front they had not yet been unified into an air army, and 337 combat aircraft (about 50 percent) were at the disposal of the armies. If one considers that 70 percent of the bombers were PO-2 light night bombers,¹⁸ the extremely limited capabilities of the air forces of the Southwestern Front to suppress the enemy's defense will be obvious. In addition, their main efforts were directed toward neutralizing targets deep in the enemy's defense.

The main points contained in the Hq SHC directive letter of 10 January 1942 were put more fully into practice in the Khar'kov offensive operation than in preceding operations. The battle groups contained two or three armies apiece, and they were assigned a common breakthrough sector. The battle groups of the armies contained up to 8 rifle divisions, while mobile groups were additionally formed in the armies advancing on the main axes. The breakthrough sectors were still very wide, however, which made it impossible to achieve greater superiority over the enemy and substantial force densities, especially artillery.

On 12 May, following an hour of artillery preparation, the northern and southern battle groups launched the attack. The troops, which were in good spirits and well prepared politically, simultaneously attacked the enemy's forward positions and, destroying the defending troops, immediately created conditions in a number of sectors for a swift advance to depth. The success of the breakthrough was also influenced by the fact that the morale of the enemy troops, which had been adversely affected by our winter offensive, had not yet been fully restored.

In the northern battle group, the combined units of the 21st and 38th armies succeeded on the very first day in breaking through the enemy's entire main defensive zone, advancing to a depth of 6-10 km. The divisions of the 28th Army, which were attacking on the main axis of advance, moved forward only 1-3 km that morning, that is, were able to penetrate only the first position, while in front of the second position they encountered heavy fire from the reserves of the infantry regiments and subunits which had withdrawn to the second position from the forward edge of the battle area. All the deficiencies in preparing for the operation affected the actions of the 28th Army. The infantry and tank assault began at different times, as a consequence of lack of coordination of their movement toward the enemy's forward positions and the fact that the combat engineers had done a poor job of clearing lanes through the minefields. On the first day 22 tanks were disabled by enemy landmines.¹⁹ The combined units of the 28th Army advanced only 2-4 km that day.

The fact that the 28th Army had fallen behind adjacent units led to a unique jam in the vicinity of Ternovaya, which threatened to disunite the efforts of the assault group. The situation had to be rectified immediately, which could be

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achieved by attacking frontally and on the flanks with fresh rifle troops following massive airstrikes and artillery fire, or by exploiting to depth in the sectors where a successful advance had been achieved. Engagement even of one division of the two divisions comprising the 28th Army's support echelon would make it possible to complete penetration of the main defensive zone and to create favorable conditions for engaging the mobile group. We should note that conditions of its engagement had already been created in the zone of the 21st Army. The command authorities of the 28th Army, however, failed to take advantage of this. By evening the divisions of the army's support echelon had just begun advancing closer to the troops of the attack echelon, while the mobile group remained in its position, 30-35 km from the battle line.

The attack-echelon troops, weakened by casualties and by the fact that part of their forces had been diverted to cover the flanks, had slowed the pace of advance by evening. The enemy, taking advantage of this fact, began to move up to the breakthrough sector tactical reserves and forces from sectors not under attack and to establish force groupings for mounting counterthrusts.

Thus the first opportunity to develop tactical into operational penetration was not utilized.

On 13 May the northern force achieved the greatest success on the flanks. The divisions of the 21st Army and the right-flank divisions of the 28th Army advanced 6-10 km, enveloping the enemy at Ternovaya. Divisions of the 38th Army advanced an additional 6 km deeper into the defense by noon. But the stability of the enemy's defense in the breakthrough sector was not completely broken, as a consequence of the fact that the enemy was still holding in the center and on the flanks. That afternoon the enemy mounted a counterthrust in the zone of the 38th Army with two panzer divisions and approximately an infantry division.

Repelling the counterthrust was requiring more and more forces with each passing day, especially tank forces (6 tank brigades were brought into action), for the divisions of the 38th Army had very few antitank weapons. Since this was being done with attack-echelon troops, the offensive capabilities of the force which was attacking on the main axis of advance began dropping off sharply, which affected the pace of exploitation of the breakthrough. On 14 May the rate of advance dropped to 5-6 km, and on 15 May very little progress was made. Prospects for engaging the support echelon and mobile task force for offensive exploitation had essentially disappeared.

Penetration by the troops of the southern battle group was developing much more successfully. By evening on the first day the attack-echelon divisions of the 6th Army not only had broken through the main defensive zone but had reached the second zone on a 20 km frontage.²⁰ Gen L. V. Bobkin's army group advanced to a depth of 4-6 km that morning. But the enemy's defense proved to be disorganized, and General Bobkin engaged his mobile group, which reached and seized a bridgehead on the Orel' River by evening. The army group had advanced approximately 12 km.

Penetration of the enemy's defense on a frontage of more than 40 km and advance by the troops of the southern battle group to a depth of 12-15 km made possible and urgently demanded engagement of the 6th Army's mobile group -- 2 tank corps (approximately 300 tanks), for the enemy had begun hastily redeploying to the area the

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reserves of the army corps and his 6th Army. But the combined units of the mobile group had not even been brought close to the attack-echelon troops and were now 35 km distant from them. Nor was the army's support echelon engaged.

The following day the troops of the southern battle group completed penetration of the second defensive zone, but their advance amounted to only 3-5 km in the 6th Army and as much as 10 km in General Bobkin's army group. The sharp decrease in the rate of advance of the 6th Army attested to the need to build up efforts, and particularly to engage the tank corps. In addition, the troops had actually reached the previously designated point at which they were to be brought into the breach. On the night of 14 May, however, the point of engagement of the tank corps was extended to beyond the enemy's rear defensive line, which was established at a depth of 30 km.²¹ The commanding general of the front switched all aircraft supporting the 6th Army to support of the northern assault group, into the flank of which the enemy had launched a counterthrust. Nor was the commanding general of the 6th Army engaging his support echelon. Thus in the southern sector favorable conditions for decisive development of tactical into operational penetration were not utilized for a second time.

In the meantime the enemy's situation was becoming increasingly more critical. Colonel Selle, former chief of engineer troops of the German 6th Army, writes: "The events of the following day took on a threatening cast. Russian forward units were approaching Krasnograd.... On the Orel' River the front of the 8th Corps, which was being defended by rear security units, was breached, and Russian tanks with cavalry had begun advancing unopposed in a westerly direction. The 113th Infantry Division, which had launched a counterattack from the Yefremovka area, following initial success was encircled on the east bank of the Orel' River by enemy tanks and, sustaining heavy casualties, was thrown back several kilometers.... The 6th Army's casualties and equipment losses were heavy.... The mood was somber at the 6th Army's command post in Poltava. Preparations began for defense of the city. Measures were taken to ensure the safety of Kiev."

Penetration of the defense south of Khar'kov forced the commanding general of Army Group South, Field Marshal von Bock, to waver. He now considered it impossible to mount Operation Friedericus (code-name of an operation with the objective of encircling Soviet forces south of Khar'kov -- A. R.) and was inclined toward an attack launched from the Lozovaya area in the direction of Merefa, as safer for his army group and at the same time less dangerous for our southern assault group, for the support echelons and reserves of our 6th Army were positioned on this axis, and tank corps of the mobile group could be redeployed here more rapidly when being engaged, if a critical situation developed here. It was only an order by Hitler which forced von Bock to undertake a counteroffensive northward from the Kramatorsk area.

There is no doubt that the operational results could have been much greater if the tank corps had been expeditiously engaged. But the command authorities of the Southwestern Front were endeavoring to complete penetration of the enemy's rear defensive area by attack-echelon troops and only after this to engage the mobile task force and support echelon of the 6th Army. This led to protracted fighting for strong centers of resistance.

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The advance achieved on 14 May totaled 6-8 km.²² Only the 6th Cavalry Corps of General Bobkin's group, taking advantage of freedom of maneuver, exploited at a more rapid pace and drove 40 km deep into the enemy's defense.

The enemy hastily began redeploying reserves to threatened sectors. In addition to the 113th and 108th Infantry divisions, the 305th Infantry Division was proceeding from Khar'kov. Gradually the enemy achieved a balance of forces and, supported by a system of fortified deep positions and providing his troops with air support by aircraft transferred from the Crimean sector, began to stabilize the situation in the rear defensive area. Prospects for engaging tank corps into the breach began diminishing sharply. The entire operation was also losing steam. The command authorities of the Southwestern Front, however, had a different assessment of the situation. On 15 May they reported to Hq SHC that the offensive was developing well and that conditions had been created for the troops of the Bryansk Front to shift to the attack and for further offensive exploitation by the assault groups. "Judging from the enemy's actions, we conclude that he has not yet figured out the general plan of our operation (pincer drives on Khar'kov), and he has directed his main offensive effort toward a secondary sector of our front (38th Army), giving freedom of action to our battle groups..." And further: "We have the impression that at the present time the enemy not only is unprepared for aggressive actions on the Kursk-Voronezh or Oboyan'-Oskol axis but does not even possess strong forces in order firmly to hold the Kursk-Oboyan' Front."²³

This was the situation estimate made by the front's command authorities two days before the enemy launched a counteroffensive. It attests not only to excessive optimism on the part of the front's command authorities and poor knowledge of the enemy's force grouping and intentions, but also indicates an endeavor to convince Hq SHC to bring the forces of the Bryansk Front into the initiated operation and to conduct it on a large scale.

On 15 May the attack echelon of the 6th Army succeeded by aggressive actions in capturing a number of positions in the rear defensive area and thus for the third time created conditions for engaging the tank corps. But by evening the tank corps were 25-35 km from the battle line and were unable to enter the breach by 0300 hours on 16 May, as required by the order issued by the commander in chief of the Southwestern Sector and the commanding general of the 6th Army.²⁴

Their engagement was postponed another 24 hours, that is, to the morning of 18 May, when the enemy himself launched an offensive. Now their engagement was not only tardy but dangerous as well, for the southern group of forces was faced with an ominous threat, which demanded immediate eastward redeployment of the tank corps in order to prevent encirclement of the entire southern group of forces.

On the morning of 17 May, that is, on the sixth day of the operation, the tank corps engaged. But it was a belated move. The enemy succeeded in completing redeployment of his forces and that same day launched strong attacks, with the element of surprise, on the troops of the southern and southwestern fronts. On 19 May our offensive ground to a halt, and the troops were ordered to shift to the defense along the entire Barvenkovo salient, to repulse enemy attacks and to reestablish the situation.

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Without going into the reasons for the unsuccessful outcome of the Khar'kov Operation as a whole, we should note that penetration of the enemy's defense was accomplished only by the armies' first operational echelon. Engagement of the support echelons of the armies and the tank corps was unwarrantedly delayed. Reconnaissance of the enemy was poorly organized, and air engagement of the enemy's reserves was conducted very feebly. The offensive of the Southwestern front proved to be isolated and unsupported by aggressive actions by the adjacent fronts. This permitted the enemy freely to maneuver his forces and to mount powerful attacks on our troops.

The breakthrough in the Rzhev-Sychevka Operation merits attention. This operation was conducted in the summer of 1942 with the objective of immobilizing the enemy's forces in a passive sector of the strategic front; it embodied those methods of penetration which experienced further development in subsequent campaigns of the Great Patriotic War.

Proceeding from the stated objective, the general plan of the operation (Diagram 6) consisted in mounting attacks by adjacent flanks of the Kalinin and Western fronts, clearing the enemy from the Rzhev and Zubtsov, Karamzino and Pogoreloye Gorodishche area, advancing and consolidating along the Volga and Vazuza rivers.

The Western Front mounted the main attack with the 20th and 31st armies in a sector 20 km wide, to a depth of only 35 km. A subsidiary attack was to be mounted somewhat south of the main attack, with the forces of approximately a rifle division. Three days later, that is, when the enemy's reserves were diverted to the axis of advance of the main force, the 5th Army was to launch an attack, followed by the 33d Army.²⁵ The time difference in launching the offensive by these armies was due to the necessity of transferring artillery support initially to the 5th and subsequently to the 33d Army.

Concentration of the efforts of two armies and the front's forces in a single breakthrough sector made it possible to establish densities which were high for 1942: one division every 2-2.5 km, approximately 100 guns and mortars of 76 mm and larger and 15-23 infantry-supporting tanks per kilometer of breakthrough frontage.

The combat formations of the divisions and regiments were as a rule arranged in two echelons. In addition to a support echelon, a mobile group was formed in each army, containing three tank brigades, and in the front -- a mobile group consisting of 2 tank corps and 1 cavalry corps.²⁶

Duration of artillery preparation was specified at 90 minutes. Since M-30 heavy rocket-propelled projectiles were employed for the first time in this operation, they were expecting fairly good neutralization of the enemy's defense, in which there was clearly noted a shift to a trench system with construction of solidly-built weapon emplacements in strongpoints and centers of resistance. In addition, they established high densities of artillery designated for direct fire -- 15-20 pieces per km. Guns up to 152 mm were employed for this purpose. Support of the assault was to be provided with a rolling barrage.

Two air armies were assigned to provide air support of the operation. Initially they were to support breakthrough by the armies of the Kalinin Front, and subsequently the Western Front.

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On the Kalinin Front the main attack on Rzhev was mounted by the 30th Army, which in composition had been strengthened to an assault army of prewar organization -- 13 rifle divisions, 3 rifle and 8 tank brigades.²⁷ The front's subsidiary attack was mounted by the 29th Army 15 km from the main attack, employing 3 reinforced rifle divisions.

The armies, proceeding from prewar views, also launched main and secondary attacks. Thus four attacks were planned in the front operation, which extended approximately 50 km in frontage and less than 20 km in depth. Since two armies of the Western Front were mounting a powerful attack only 16 km from the Kalinin Front's secondary attack and were to advance toward Zubtsov, that is, where the 29th Army was aimed, the need for it to attack on an independent axis seems little justified.

Secondary army attacks by the forces of one or two divisions, with very weak artillery support, failed to penetrate a strongly fortified defense. Elimination of secondary attacks and unification of the efforts of the 30th and 29th armies in a single breakthrough sector would have made it possible to have a frontage of at least 18 km instead of 12.5 km on the main axis and 6 km in the secondary sectors, which would have made it difficult for the enemy to close the breach with immediate operational reserves. Forces supporting the penetration on the flanks would be almost cut in half. One must agree here with the opinion of Gen L. M. Sandalov, former chief of staff of the 20th Army, who writes: "It is very probable that if the Kalinin Front had combined its forces for penetration in a single sector, its actions at Rzhev would have resulted in earlier and more substantial success."²⁸

Artillery densities on the main axis of advance, although high for that time -- 113 guns and mortars per kilometer of breakthrough sector, were not fully in conformity with the character of the enemy's defense. Approximately 50 percent of the tubes were 82 mm mortars, while defense of the Rzhev bridgehead constituted a field fortified area consisting of two strong defensive areas and a large center of resistance established in Rzhev.²⁹ On the secondary axis artillery density was 67 guns and mortars and 50 rocket launchers.

We should note that the Kalinin Front had the capability to increase artillery density and improve its qualitative composition in the breakthrough sector. Only 50 percent of the front's artillery was assigned to participate in the breakthrough.³⁰ The front's 4 armies which did not take part in the operation contained 22 artillery and mortar regiments,³¹ at least half of which could have been assigned to the operation.

Densities of tanks providing close support of infantry were fairly high for 1942 -- 32 tanks per km of breakthrough sector on the main axis and 16 on the secondary. But few tanks were assigned to the 30th Army's mobile group -- a tank brigade and a tank regiment -- a total of only 80 tanks. This force also included two rifle brigades and an antitank artillery regiment.³²

The command authorities of the Kalinin Front limited themselves to a comparatively narrow range of measures in order to gain the element of surprise. Preparations were made for a feint attack in the narrow gap between the breakthrough sectors of the 30th and 29th armies. From an operational point of view it was inadvisable, because the enemy, taking preparations for the diversionary operations for the real

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thing and moving reserves to the northeast from Rzhev, could use them to oppose the forces both of the 30th and 29th armies, since his reserves were not more than 8-12 km from the actual breakthrough sectors. Preparation of a diversionary front operation from an area south of the town of Belyy toward the feint attack being prepared (and which proved highly effective) by the Western Front at the junction of the 43d and 49th armies, to repel which the enemy established a force consisting of 3 tank divisions and 1 infantry division, could have been more effective.

The offensive by the forces of the Kalinin Front began on 30 July 1942 in unfavorable conditions. The enemy, having determined the day when the offensive would be launched, brought his troops into a state of combat readiness. A solid overcast and pouring rains made preliminary artillery bombardment and airstrikes difficult. During the entire day only 86 sorties could be flown.

Launching a number of assaults, the 30th Army's battle group succeeded in penetrating the first defensive position. The commanding general of the army engaged his mobile group to build up the offensive effort. This force consisted primarily of light tanks. They advanced slowly along the roads and cross-country routes, which had been washed out by the heavy rains and were pockmarked by shell craters; some of the tanks bogged down. Artillery support of engagement of the mobile task force proved ineffective due to the small numbers of long-range artillery and delay in displacing the APP groups.

As a result its attack proved weak and insufficiently coordinated with the efforts of the attack-echelon divisions.

As a result of the first day of the offensive, an indentation had been formed in the enemy's defense, 9 km wide and 6 km deep at the center. The enemy moved reserves to the threatened sector and not only stabilized the front but at the end of the day launched a number of counterattacks. Attempts to deepen and widen the breach on the second and third days of the offensive led to an extremely modest advance by the army's forces. On the following day, after some redeployment of forces and change in the direction of attack, the troops of the 30th Army succeeded in reaching the Volga east of Rzhev. Under threat of being outflanked by the forces of the 31st and 30th armies, the enemy began to withdraw his troops from in front of the 29th Army. As a result of stubborn, heavy fighting which lasted more than a month, the troops of the Kalinin Front advanced from 8 to 20 km, but were unable fully to accomplish the assigned missions.

The offensive by the forces of the Western Front was delayed from 31 July to 4 August due to heavy rains. Following a 90-minute preliminary artillery bombardment, assault battalions and forward units crossed the Derzha River on river-crossing equipment and, accompanied by tanks, launched an attack. Sequential engagement of the support echelons of the subunits, supported by artillery fire and airstrikes, made it possible to build up efforts and make the attack almost continuous, without a halt, to the depth of the entire first position.

The fighting for the town of Pogoreloye Gorodishche, which had been transformed into a particularly strong center of resistance, assumed a more stubborn character. At about 1400 hours the right-flank troops, having enveloped the town, finally fought

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their way into it and wiped out the garrison defending the town. This made it possible to link up the breakthrough sectors of the 31st and 20th armies and to push the advance further.

The assault on the second position began that afternoon, following heavy artillery bombardment and a massive airstrike. Units of the 161st Infantry Division again sustained heavy casualties and were essentially wiped out. Arriving reserves of the 27th Army and 46th Panzer corps halted the further advance of the rifle divisions, while the tank groups, due to delay on the Derzha River crossings and in advancing along the roads, which were still wet following the lengthy rains and had been chewed up by the attack-echelon troops, were unable to engage on the first day. Finally on the morning of 5 August they attacked together with the forward-echelon troops and completed penetration of the main defensive zone. The breach created in the enemy's defense was 30 km in frontage and 25 km in depth.³³

The commanding general of the front decided to engage the front's mobile group. It again began to rain, however, which hindered movement of the tank corps across the river and their advance to the points where they were to enter the breach. They did not enter battle until 6 August, reaching the Vazuza River on the following day.³⁴ But by this time the enemy had brought up his operational reserves -- 3 panzer divisions and an infantry division, intending to reestablish the situation with two counterthrusts. The fighting took on a protracted character. Our troops not only repelled counterthrusts but also captured bridgeheads on the Osuga and Vazuza rivers.

The success achieved by the troops of the Western and Kalinin fronts was important. The initiative had temporarily been seized in the western sector, and the enemy had been deprived of the opportunity to redeploy 3 trained and prepared panzer and several infantry divisions to the Southern Front³⁵ to carry out their principal strategic missions assigned for the summer of 1942.

* * *

Analysis of penetration of the enemy's defense in the offensive operations of the summer-fall campaign of 1942 indicates that a trend toward decisive massing of men and weapons in breakthrough sectors was clearly evident in Soviet art of warfare. This was expressed in assigning a common breakthrough sector for 2 to 3 armies or in increasing the strength of 1 army. Concentration of a substantial number of rifle combined units in a single breakthrough sector made it possible to double-triple their operational density, which improved preconditions for penetrating the enemy's defense and achieving deep exploitation. Most fully embodied in this was an important point contained in the Hq SHC directive letter of 10 January 1942 and its practical implementation.

Artillery densities in breakthrough sectors became double or triple those in the winter campaign of 1941/42, reaching 100-150 guns and mortars per km. Mortars comprised the bulk of this density, however, which did not permit reliable delivery of suppressive fire deep in the enemy's defense, thus creating conditions for penetration of the defense without a halt, at least to the enemy's principal artillery position areas.

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Establishment of air armies in the fronts expanded capabilities of massed employment of air. At the same time they contained extremely few bombers, as a consequence of which aviation could not appreciably supplement artillery fire during preliminary bombardment.

Tank densities also increased appreciably, especially in the operations of the Western Front. Fairly strong mobile groups began to be formed in the armies, and in certain instances even in the front. For a number of reasons, however, their engagement was not always accomplished expeditiously and with precision. The experience of combat employment of armored troops was summarized in People's Commissar of Defense Order No 325, dated 16 October 1942, which laid out the basic principles of employment of tank and mechanized combined units and units.

In spite of a clearly evident trend toward massing men and weapons in breakthrough sectors, it was not accomplished to the degree which was possible and necessary. An endeavor to mount secondary, blocking attacks in addition to the main attack was leading to the scattering of forces.

The experience of offensive operations conducted for the purpose of pinning down and immobilizing the enemy demonstrated that the best result was achieved when a small number of attacks would be mounted, but of a force sufficient to ensure breaking through the defense and penetration by the attacking troops to a considerable distance (the Western Front in the Rzhev-Sychevka Operation). In the endeavor to immobilize as many enemy troops as possible right at the outset, that is, by launching several attacks of little power along a broad front, the battle groups, especially with hasty preparations for an offensive, as a rule failed to penetrate the enemy's defense, to create a threat of reaching operational objectives, and thus to force the enemy to move substantial reserves to the threatened sector. Consequently, in preparing for offensive operations the main objective of which is to immobilize enemy forces, penetration must be planned on a general basis, limiting only the depth of thrust, and planning employment of mobile groups and support echelons in conformity with this.

On the whole, during conduct of offensive operations in the first period of the war, which was essentially a defensive phase, the art of organization and execution of penetration was improved taking into account change in the material foundation and conditions of conduct of warfare. Trends toward massing men and weapons in breakthrough sectors, increasing reliability of suppressive fire on the enemy's defense, increasing the rate of penetration, and development of tactical into operational success by engaging mobile groups, support echelons and reserves, became clearly defined. Soviet troops acquired certain experience in conducting penetration to the entire tactical defense depth.

Synthesis of the experience of conducted operations and critical analysis of errors which occurred made it possible by the end of the first period of the war to formulate the principal points pertaining to matters of preparation for and execution of penetration, which played an important role in successful resolution of this problem in the subsequent periods of the war.

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FOOTNOTES

1. Central Archives of the USSR Ministry of Defense, Fund 208, List 2511, File 20, Sheet 353.
2. Ibid., File 746, Sheet 1.
3. See S. A. Kalinin, "Razmyshleniya o minuvshem" [Reflections on the Past], Moscow, Voenizdat, 1963, pp 139-140.
4. Central Archives of the USSR Ministry of Defense, Fund 208, List 2511, File 46, Sheet 36.
5. See N. Voznesenskiy, "Voyennaya ekonomika SSSR v period Otechestvennoy voyne" [War Economy of the USSR During the Great Patriotic War], Moscow, Gospolitizdat, 1948, page 42.
6. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], Fund 202, List 9, File 11, sheets 164, 165.
7. See L. M. Sandalov, "Na moskovskom napravlenii" [In the Moscow Sector], Moscow, Nauka, 1970, page 257.
8. TsAMO SSSR, Fund 373, List 6631, File 4, Sheet 7.
9. Ibid., Fund 1380, List 4774, File 3, sheets 7, 8.
10. Ibid., Fund 353, List 5866, File 605, sheets 32-34.
11. See I. Kh. Bagramyan, "Tak nachinalas' voyna" [How the War Began], Moscow, Voenizdat, 1977, pp 496-498.
12. See F. I. Golikov, "V Moskovskoy bitve" [In the Battle of Moscow], Moscow, Nauka, 1967, pp 68-69.
13. TsAMO SSSR, Fund 373, List 6631, File 21, sheets 11, 12.
14. Ibid., Fund 343, List 6631, File 31, sheets 29, 30, 38, 39.
15. See "Istoriya vtoroy mirovoy voyny" [History of World War II], Vol 5, Moscow, Voenizdat, 1975, page 127.
16. See "Sovetskaya artilleriya v Velikoy Otechestvennoy voyne 1941-1945 gg." [Soviet Artillery in the Great Patriotic War, 1941-1945], Moscow, Voenizdat, 1960, pp 128-129.
17. TsAMO SSSR, Fund 229, List 170, File 45, sheets 131-135.
18. Ibid., Fund 251, List 646, File 145, sheets 145, 238.
19. Ibid., Fund 382, List 8452, File 45, Sheet 26.

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20. Ibid., Fund 229, List 161, File 836, Sheet 449.
21. Ibid., Fund 229, List 161, File 836, sheets 480, 481.
22. Ibid., File 120, Sheet 331.
23. Ibid., File 17, sheets 311-317.
24. Ibid., File 88, Sheet 27.
25. See L. M. Sandalov, "Pogorelo-Gorodishchenskaya operatsiya" [The Pogoreloye-Gorodishche Operation], Moscow, Voenizdat, 1960, page 14.
26. TsAMO SSSR, Fund 208, List 2511, File 1468, Sheet 26; File 1087, sheets 45-71.
27. Ibid., Fund 213, List 2002, File 422, Sheet 16.
28. Sandalov, op. cit., page 117.
29. TsAMO SSSR, Fund 213, List 2002, File 121, sheets 1, 2.
30. Ibid., Fund 208, List 2511, File 1044, Sheet 187.
31. Ibid., Fund 213, List 2002, File 422, Sheet 67.
32. Ibid., File 65, Sheet 23.
33. See "Istoriya vtoroy..," op. cit., Vol 5, page 245.
34. TsAMO SSSR, Fund 208, List 2511, File 1466, Sheet 10.
35. See K. Toppel'skirkh, "Istoriya vtoroy mirovoy voyny" [History of World War II], Moscow, Izd-vo Inostr. Lit., 1956, page 241.

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Chapter Two. DEVELOPMENT OF THEORY AND PRACTICE OF PENETRATION IN WORLD
WAR II

1. Penetration in the Winter Campaign of 1942/43

By the beginning of the winter campaign of 1942/43 the Communist Party and Soviet Government had done an enormous job of mobilizing material and manpower resources, increasing production of war materials and strengthening the Soviet Armed Forces. And although this country's economic situation still remained difficult, and the situation at the front was tense, thanks to the heroic efforts of the Soviet people we had been able not only to replenish the losses sustained in the summer of 1942 but also to increase the quantity of military equipment at the disposal of the fronts and armies.

Increased production of arms and combat equipment made it possible to adopt new tables of organization and equipment for the rifle divisions, additionally to deploy several tank and mechanized corps, and to begin forming SHC Reserve artillery, antiaircraft artillery and rocket artillery divisions. Unification of all air forces into air armies was completed in the fronts. In the first period of the war command personnel acquired combat experience, going through a difficult school of combat against a powerful adversary. All this expanded the capabilities of the Soviet Army to conduct operations in depth.

In spite of the fact that in the summer of 1942 the enemy achieved large-scale military successes on the Eastern Front, he failed to achieve his ultimate objectives. The Hitlerite command authorities were forced to shift to a strategic defense in mid-October. The troops of the Soviet Army were faced with a complex task -- to crush the enemy's strategic defense and to initiate a campaign to liberate the occupied areas. To achieve this, it was planned to conduct a number of offensive operations. Each of these had its own specific features. The most characteristic features of penetration in the winter campaign of 1942/43 were manifested in the counteroffensive at Stalingrad and in the operations on the Upper Don.

Preparation for and execution of penetration in the counteroffensive at Stalingrad. Hq SHC began planning the counteroffensive at Stalingrad in September 1942. As we know, this plan consisted essentially in launching attacks by three fronts -- the Southwestern, Stalingrad, and Don -- breaking through the enemy's defense in several sectors and, exploiting toward Kalach along converging axes, encircling and annihilating the enemy's main force grouping in the Stalingrad area. The defeat in detail of the Stalingrad force created an enormous breach in the enemy's defense,

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which presented the opportunity to crush the entire southern side of the enemy's strategic front.

From the standpoint of execution of operational-strategic breakthroughs and their exploitation, the plan of the counteroffensive is notable in the fact that the axes of attack were selected with consideration of possibilities of establishing battle groups primarily where the enemy's defense was weaker and where the line was defended by less stable Romanian and Italian troops. At the same time the battle groups were made strong enough so that they were capable of successfully accomplishing a breakthrough and exploiting it at a rapid pace to the area where the troops of two fronts would link up and form a sufficiently strong outer perimeter of encirclement. As a rule the efforts of two or three armies of one or two fronts would be linked on the axis of advance (Diagram 7). The 5th Tank Army and part of the forces of the 1st Guards and 21st armies, for example, were to attack on the main axis of advance of the Southwestern Front. A second powerful attack was to be launched from the Don River by the adjacent flanks of the Southwestern and Don fronts, with the forces of the 21st and 65th Armies. The gap between the two breakthrough sectors was approximately 20 km, was defended by approximately 1.5 infantry divisions and did not possess more than tactical importance. Penetration by the battle groups beyond the enemy's main defensive zone would make it possible to isolate these forces, subsequently to annihilate them and to form a single inter-front breakthrough sector.

The Stalingrad Front was to mount its drive toward the Southwestern Front. It would involve the efforts of three armies. Each of them, however, was to penetrate in a separate sector. Under those specific situation conditions such a form of offensive drive by the front was warranted. The opposing Romanian 6th Corps was defending on a wider front than the enemy troops opposite the Southwestern and Don fronts, which facilitated penetration of the defense and deep exploitation of the breakthrough. In addition, with separate army offensive drives there would be a smaller volume of operational redeployments, which was of great importance for gaining time and the element of surprise.

The selected form of operational breakthrough made it possible to soften up the enemy defense on a 400-kilometer front simultaneously in several sectors, which made it difficult for the enemy to maneuver reserves for the purpose of closing breaches.

Another characteristic feature of penetration was the fact that it was essentially undertaken with an equality of forces between the opposing sides. In order to achieve the requisite superiority over the enemy in the breakthrough sectors, the Soviet command authorities displayed a high degree of skill in massing men and weapons. In the Southwestern Front, for example, 50 percent of the rifle divisions, 3 tank and 2 cavalry corps, approximately 80 percent of the artillery of the SHC Reserve, all rocket artillery and a large portion of available aircraft were concentrated in the breakthrough sectors, representing a total width of 22 km. In the Stalingrad Front two thirds of the rifle divisions of the armies carrying out the penetration, all mobile combined units, and the bulk of artillery and air were concentrated in breakthrough sectors representing a total frontage of 40 km. This made it possible to establish a two to one and three to one superiority on the main axes of advance of the fronts. The superiority was even greater in the breakthrough

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sectors of a number of armies. In the 5th Tank Army, for example, it was as follows: 2.5:1 in personnel, 5:1 in artillery, in tanks -- an absolute superiority within the tactical zone of defense and 2.8:1 in the zone of advance.¹

The densities indicated in Table 3 were achieved as a result of decisive massing of men and weapons in the breakthrough sectors.

Table 3. Average Densities of Men and Weapons in the Breakthrough Sectors in the Counteroffensive at Stalingrad²

Front, Army	Width of Zone of Advance, km	Width of Break-through Sector, km	km per rifle division		Guns and Mortars per km of Break-through Sector	Tanks per km of Break-through Sector
			In the zone as a Whole	In the Break-through Sectors		
Southwestern Front						
5th Tank Army	35	16	6	4.5	68	13/37
21st Army	40	12	6.6	2.4	62	5/25
Don Front						
65th Army	80	6	9	1.5	71.5	15
Stalingrad Front						
64th Army	36	12	5	4	47	3-4
57th Army	35	15	14	6	33	6/12
51st Army	110	12	24	6	30	3/12

Note: Density of infantry-supporting tanks is indicated in the numerator, and operational density in the denominator.

It is evident from the table that average densities of rifle troops in the breakthrough sectors in the armies of the Southwestern Front were 2 to 4 times those in the overall zone of advance. Artillery densities in the armies of the Southwestern and Don fronts as a whole were in conformity with the Hq SHC instructions issued to the Don Front on 15 October -- to have 60-65 pieces per km of frontage, not including rocket launchers. On the Stalingrad Front they were half that, and therefore the front scheduled the armies to launch the offensive at different times, in order to maneuver artillery from one breakthrough sector to another, but this plan did not succeed because there was insufficient time for maneuver.

The tactical order of battle of the fronts was single-echelon, with up to two rifle divisions assigned to the reserve. The armies which were executing penetration contained two echelons. Mobile groups were formed in the majority of the attacking armies. Their composition varied. In the 5th Tank Army, the mobile group contained 2 tank corps and 1 cavalry corps, the 21st and 51st armies -- 1 tank (mechanized) and 1 cavalry corps, and the 24th and 57th armies -- 1 tank (mechanized) corps.

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The tank and mechanized corps were to engage on the first day of the operation, 3-4 hours after initiation of the attack, at a depth of 3.5-5 km, that is, to complete penetration of the main defensive zone. By evening they were to penetrate to a depth of 40-50 km on the main axes of advance. In view of an insufficient number of infantry-support tanks in the armies, part of the forces of the tank and mechanized corps were to be used in the close infantry-support role.

Thus penetration and its exploitation were to be accomplished solely by the forces of the forward-echelon armies, with tactical air support. Unfortunately, due to insufficient forces and the absence of powerful mobile offensive weapons at the immediate disposal of the commanding generals of the fronts, they were unable to move the operations at a more rapid pace.

The infantry combat formations were based on People's Commissar of Defense Order No 306, dealing with maximum and simultaneous participation of infantry and infantry weapons in combat, from the beginning to the end of an engagement. That same order prescribed the following: "In order to avoid excessive bunching of battlefield dispositions, and hence heavy casualties during the advance of an average-strength division (7-8 thousand men), a zone of about 4 km in frontage, and in no case less than 3 km in frontage, shall be assigned to the army battle group." The division zones of advance on the main axes ran 4-5 km, which made it possible to have a tactical density of approximately 2 rifle battalions per kilometer of frontage.

The combat missions assigned to the rifle divisions for the first day were specified to a depth of 11-20 km, and in certain instances to 28 km.

Planning of artillery combat actions was performed according to the principles of artillery support for the attack. Artillery preparation was to run 80 minutes in the Southwestern and Don fronts, and 40-75 minutes in the Stalingrad Front. From 15 to 20 minutes, or approximately 25 percent of artillery preparation time, was allocated for neutralizing the enemy's defense with concentrated fire. The densest suppressive fire was placed on the forward edge of the battle area and the first defensive position. Infantry weapons fire was to be extensively employed in the course of artillery preparation.

Air actions were planned for the first time in the form of an air offensive, which included preliminary airstrikes and close support of ground troops at operational depth. This ensured better coordination of airstrikes and artillery fire with the advancing ground troops. Tactical air efforts, however, were still scattered among the combined-arms armies, for the support of which air groups were formed. In planning the air offensive, insufficient forces were assigned to close support of the troops executing the penetration.

Soviet command authorities displayed great skill in gaining the element of surprise in launching the counteroffensive. Measures of a strategic, operational and tactical character were carried out for this purpose.

Penetration of the enemy's defense on the Southwestern and Don fronts commenced on 19 November with massive preliminary artillery bombardment. Adverse weather conditions ruled out the use of air.

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The nature of penetration of the main defensive zone can be traced in the actions of combined units of the 5th Tank Army (Diagram 8).

During the final artillery bombardment, infantry approached the enemy's forward positions and, at the moment artillery fire was shifted to deeper targets, initiated the assault phase together with infantry-supporting tanks. The infantry and tanks swiftly penetrated the enemy's forward positions. In a number of sectors the attacking subunits succeeded in penetrating deep between the front-line strongpoints. The single-echelon disposition of the regiments, however, prevented them from exploiting. In the 124th Rifle Division, for example, a successful advance was achieved at the junction of the 622d and 406th Rifle regiments, but there was essentially nothing with which they could exploit. Mounting repeated assaults, by 1100 hours the division nevertheless succeeded in breaking through the first position in the center of the zone of advance and reaching the strongpoint on Hill 223.0. Offering a stubborn defense and counterattacking, the enemy held up the division's advance the rest of the day.

The 119th Rifle Division was advancing with greater success. By 1100 hours its right flank had broken through the first position and had reached Klinovoy, where the enemy was hastily digging in with division reserves and thrown-back subunits. The division's left flank was almost 2 kilometers further back.

The 47th Guards Rifle Division was experiencing similar success on the left flank, but its right flank bogged down in fighting for the village of Bol'shoy.

Thus on the main axis of advance the army was presented by 1200 hours with conditions for breaking through the enemy's entire defensive zone, but the fact that the divisions had no support echelons ruled out accomplishing this mission.

A decreased rate of penetration of the main defensive zone demanded building up the offensive drive with the armies' available forces. The commanding general of the 5th Tank Army decided to engage his tank corps, which proceeded to move forward from the assembly areas soon after the attack commenced. This enabled them to catch up with the advancing infantry by 1300 hours.

The simultaneous appearance of great numbers of tanks on the battlefield had a powerful effect on the enemy's morale. By fire and offensive momentum, the tank corps smashed the enemy's resistance and swiftly advanced into the area of the enemy's main artillery positions near Klinovoy-Livestock Unit 1. Mounting an assault from the flanks and frontally, the four tank brigades smashed 2 artillery regiments and an enemy infantry battalion. Only small groups of enemy troops, taking advantage of fog, succeeded in withdrawing. The enemy's defense was penetrated on the 5th Tank Army's main axis of advance. Exploiting, the tank corps advanced 18-20 km by evening.

The 8th Cavalry Corps was engaged following the tank corps, exploiting in the direction of the flank with the objective of establishing an outer perimeter of envelopment.

The success of the army mobile group also enabled the rifle divisions to increase the rate of advance. By evening they had advanced to a depth of 3-19 km.

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Penetration was accomplished in approximately the same manner in the zone of the 21st Army. The 4th Tank Corps was engaged along two routes. Two brigades on the right flank, deployed into combat formation, working in coordination with rifle divisions, completed penetration of the enemy's main defensive zone at midday. By-passing centers of resistance, they proceeded rapidly advancing to depth. The brigades had advanced 30-35 km by evening, capturing Manoylino.³ Forces on the left flank advanced 12 km.

The 65th Army was able to penetrate only 3-5 km into the enemy's defense during the first day. However, it drew the forces of the Romanian 1st Cavalry Division, which facilitated the advance of the 21st Army. There is no doubt that if the 65th Army had had a mobile group, the defense would have been breached on its axis of advance as well.

The element of surprise in launching the offensive by the troops of the Southwestern and Don fronts, the forming of two deep breaches in the enemy's defense and penetration in an additional sector produced confusion in the German-fascist command authorities. This is evident from the missions assigned to the 48th Panzer Corps. Initially it was assigned the mission of attacking the troops of the 21st Army, who in the opinion of the enemy command authorities were mounting the main attack. At midday the direction of the offensive drive was shifted to the zone of the 5th Tank Army. The Romanian 1st Tank Division was to advance in a westerly direction, while the German 22d Panzer Division and the Romanian 7th Cavalry Division were to advance toward the northeast. The enemy was planning to use the offensive thrusts of the combined units to close the breach which had formed in the defense. Our tank and rifle troops, however, successfully repelled the counterthrust, which created the prerequisites for a swift advance toward the designated lines.

On 20 November the 26th Tank Corps, skillfully employing battlefield maneuver and flank thrusts at the enemy, began advancing swiftly. Capturing Perelazovskoye, it opened up an avenue for the army's troops to operational depth. But the fact that the brigades were dispersed along a large front, that there was only one radio set at corps headquarters, and that the rifle divisions had fallen far behind led to a delay in the advance of the corps toward Kalach. Finally at noon on 21 November it proceeded to sweep toward the Don, with the 1st Tank Corps advancing in echelon behind it.

Penetration in the armies of the Stalingrad Front began on 20 November and also took place in adverse weather conditions and without air support. Artillery preparation began at different times: at 0730 in the 51st Army, at 0815 in the 57th Army, and not until 1350 hours in the 64th Army. In spite of the difficult conditions of delivering fire, the enemy's defense nevertheless was for the most part neutralized, which was promoted to a considerable degree by the element of surprise. In short order the troops of the 51st and 57th armies had broken through the first defensive position. Due to shattered morale, and weakness of his reserves, the enemy was unable to take effective measures to close the breaches in his defense. This enabled our rifle troops to reach the enemy's main artillery position areas and to create favorable conditions for engaging the armies' mobile groups. By evening the 4th Mechanized Corps had advanced 10-15 km, and the 13th Mechanized Corps -- 16-17 km.

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The success of the troops of the 64th Army was considerably less, since little daylight remained for the attack, and it did not have a mobile group.

The armies resumed the attack on the morning of 21 November, following brief artillery preparation. Repelling counterattacks by arrived enemy reserves, the 51st and 57th armies, completed the breakthrough on the main axes, consolidated it into a single front breach, and cut the Stalingrad-Kotel'nikov rail line, thus opening up the road to Sovetskiy, where the troops of the Southwestern and Stalingrad fronts linked up at 1623 hours, closing the perimeter of envelopment.

Analysis of the breakthrough in the November operation at Stalingrad indicates that success was ensured by correct selection of main axes of advance, by decisive massing of personnel and weapons in the breakthrough sectors, by achieving the element of surprise, by skillful employment of artillery and armored troops, and by a high degree of aggressiveness by the troops.

Experience in penetrating the enemy's defense in the Stalingrad area was further developed in Operation "Malyy Saturn," conducted on the Middle Don in the latter half of December 1942 by the troops of the Voronezh and Southwestern fronts. On the main axis of advance, an attack mounted by the adjacent flanks of two fronts, an even larger battle group was formed -- 12 rifle divisions, 4 tank corps, and 2500 guns and mortars.

The breakthrough sectors of the rifle divisions were narrowed to 2.2-3.5 km. Changes occurred in the tactical order of battle: the rifle divisions in the 1st Guards Army contained two echelons, with one echelon in the remaining armies, but all regiments formed up in two echelons. This was a consequence of the influence of the experience of the November operation, in which the regiments and divisions began employing a two-echelon formation from the very first days of the offensive.⁴

Penetration of the enemy's defense was preceded by reconnaissance in force, conducted on 14 December 1942, that is, two days before the offensive began. Although it had also been employed previously, in this instance reconnaissance in force was assigned more specific missions, defined by instructions issued by the Supreme Commander to the Southwestern and Voronezh fronts at the beginning of December 1942. Regarding preparations for an operation, the instructions stated: "...Since the Germans know about our M-30s, which blast the entire forward edge of the battle area, they have adopted the following tactic: they leave only security at the forward edge of the battle area, while withdrawing forward positions to a depth of 4-5 km. We should counter this German tactic with our own counter-tactic, which consists in the following: before commencing an attack, combat reconnaissance should be conducted in order to locate the enemy's forward positions, and we must reach the enemy's forward positions at all costs. A number of aggressive reconnaissance forays are to be mounted, taking prisoners and obtaining enough information from them so that we do not waste ammunition. Reconnaissance in force shall be conducted, by independent battalions, two days before an operation commences."⁵

The offensive on the Middle Don once again confirmed that massing personnel and weapons in breakthrough sectors is one of the most important prerequisites for successful penetration. Increasing the strength of the defense also requires higher densities of men and weapons, particularly artillery.

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Some new elements in development of the art of penetrating the enemy's defense were revealed in the operation to defeat in detail the enemy force encircled at Stalingrad. They were dictated by the fact that the troops of the Don Front had to break through a deliberate defense organized by the enemy along earlier Stalingrad defense perimeters. The efforts of three armies were joined on the main axis. The main battle group, deployed in a 16-kilometer sector, consisted of 13 rifle divisions and various reinforcement units. Thirty-three percent of the front's rifle divisions, 50 percent of its artillery, 57 percent of rocket launcher and 75 percent of tank brigades and regiments were concentrated in this battle group.⁶

Narrowing the width of the front's offensive thrust and additional reinforcement of the Don Front with artillery of the SHC Reserve made it possible to establish an artillery density which was very high for the beginning of 1943. It amounted to 135.6 guns and mortars per kilometer in the breakthrough sector of the 65th Army, which was 12 km wide, and 160-165 guns and mortars per kilometer in the zones of some divisions. In addition, two rocket launcher divisions were concentrated in the army's breakthrough sector. The high artillery densities made it possible to establish a 6:1-8:1 superiority over the enemy, and a 10:1 superiority on the main axis of advance of the 65th Army, although overall artillery superiority was 1.7:1.

During artillery preparation a special time was allocated for delivering fire by direct-fire guns, the density of which was 37 guns per km of frontage in the breakthrough sector of the 65th Army. Another advance was made in organizing artillery support of the assault phase, which involved a moving barrage to a depth of 1.5 km.⁷

The offensive was launched on 10 January 1943. The infantry and tank attack was preceded by close airstrikes and massive artillery preparations. The high degree of massing of artillery made it possible to soften up the enemy's deliberate defense. Overcoming savage resistance by the encircled enemy troops, the motorized rifle combined units advanced 6-8 km on the first day of the offensive in a number of sectors.

Artillery density increased as the offensive frontage narrowed. In breaking through the former inner Stalingrad defense perimeter, for example, artillery density increased to 186 guns and mortars per km in the battle group's breakthrough sector, and 222 guns and mortars per km in the breakthrough sector of the 21st Army. By the end of January artillery density in the sector of the 27th Guards Rifle Division had been boosted to 338 guns and mortars per kilometer of frontage.⁸

The increased power of artillery fire led to a significant reduction in friendly casualties and increased enemy casualties. On the first three days of the breakthrough, the most difficult, casualties ran to 4 percent of the army's strength,⁹ while on the final days of the assault, in spite of combat in a built-up area, casualties did not exceed 2 percent.¹⁰ Casualties among the defending enemy troops exceeded 100,000 in the first 16 days of operation "Ring," amounting to almost one third of the numerical strength of the encircled force.

In the counteroffensive at Stalingrad the art of penetration and exploitation to full operational depth was raised to a new, higher level. Experience in penetration once again demonstrated that success is achieved not only by possessing overall

superiority over the enemy in personnel and weapons but also by the ability to establish superiority on selected axes by strict economy of forces in secondary sectors, as well as by gaining the element of surprise.

Penetration of the enemy's defense at Stalingrad was not immediately exploited to strategic depth, since considerable efforts were required to repel enemy attempts to relieve the encircled force and to annihilate it. A lull which occurred in the conduct of offensive operations enabled the enemy to strengthen the weakened sector of the front by bringing up forces from his strategic reserve and from other sectors, and thus to prevent the formation of a strategic breach in his defense.

Foreseeing this, the Soviet Supreme High Command provided for the conduct of a series of operations to immobilize enemy forces in other sectors and to achieve final collapse of the enemy's strategic defensive front on the southwestern axis. They include the Soviet operations on the Upper Don and the operation of the Western and Kalinin fronts to eliminate the enemy's Rzhev salient (Operation "Mars"), and the operations of the Transcaucasian Front to rout Army Group A.

Preparations for the Ostrogozhsk-Rossosh Operation began in the last 10 days of December 1942, when a solid ring had formed around the encircled enemy force at Stalingrad, while an attempt to relieve it ended in defeat for Army Group Goth.

An Hq SHC directive called for the Voronezh Front to conduct an offensive operation with the objective of defeating in detail enemy forces on the Upper Don and to liberate from the enemy a section of the Liski-Kantemirovka rail line. Support of the operation from the south was assigned to the 6th Army of the Southwestern Front.

The enemy's main efforts were concentrated on holding the tactical zone of defense, which consisted of a main defensive zone 6-8 km in depth and a second fortified zone 12-20 km from the forward edge of the battle area. The enemy worked on improving these defensive positions over a period of 6 months, with the exception of a sector south of Pervomaysk, where he had just consolidated and where his defense was weak.

By the end of December the Voronezh Front had 18 rifle divisions, 5 rifle and 9 tank brigades -- more than 243,000 officers and men, about 4000 guns and mortars 76 mm and larger, 909 tanks, and 208 aircraft.¹¹ It enjoyed a 2.2:1 superiority over the enemy in artillery and 3:1 in tanks, but was inferior in personnel and air forces.

The Soviet command authorities considered in detail all the features of the prevailing situation in the forthcoming zone of advance and made a bold decision: to break through the enemy's defense with three battle groups concentrated on bridgeheads at Pervoye Storozhevoye and Shchuch'ye, as well as in an area northwest of Kantemirovka and, exploiting along converging axes, to encircle and annihilate the enemy force.

The selected form of operational penetration (Diagram 9) was most in conformity with the operation objective assigned to the front, the situation of our troops (possession of bridgeheads on the Don) and the situation in which the enemy forces found themselves. In contrast to the counteroffensive at Stalingrad, only army attacks were mounted here, while a cleaving drive was mounted by an independent

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rifle corps. Since the defense was better fortified than at Stalingrad, the offensive thrusts seemed weaker. But in conditions where Soviet forces possessed the strategic initiative and enemy troops were suffering low morale, their strength was sufficient not only to penetrate the defense but also to exploit to operational depth.

Since an enemy offensive thrust in the front's zone was improbable, the Soviet command authorities very boldly weakened secondary axes to form battle groups capable of independently penetrating the enemy defense and exploiting to operational depth.

Five rifle divisions, one rifle brigade and three tank brigades were concentrated in the 40th Army in a breakthrough sector 10 km wide. Various subunits and units totaling 8 rifle battalions, 57 guns, or 1 battalion for every 10 km and less than 1 gun per kilometer of frontage, were left on the remaining 75-kilometer frontage of the army's zone of advance.¹²

In the 18th Independent Rifle Corps 3 rifle divisions and 1 rifle brigade with support weapons were concentrated in an 8-kilometer breakthrough sector. One rifle division and independent subunits up to 12 battalions in strength remained to defend sectors stretching 156 km.¹³

The 3d Tank Army formed the most powerful battle group. Three reinforced rifle divisions were assigned to its attack echelon, and 2 tank corps were designated for breakthrough exploitation. On this army's left flank, the 7th Cavalry Corps was to be engaged into the breakthrough gap.

The attack-echelon rifle combined units of the battle groups were disposed in one or two echelons, and the rifle regiments -- in two echelons.

As a result of decisive massing of men and weapons on the main axes, somewhat greater densities were established than when launching the counteroffensive at Stalingrad, which ensured superiority over the enemy (Table 4).

Table 4. Average Densities and Relative Strengths in Personnel and Weapons in Breakthrough Sectors in the Ostrogozhsk-Rossosh Operation

Battle Group	Break-through Sector, km	Densities in Breakthrough Sector			Relative Strengths in Personnel and Weapons		
		km per rifle division	Guns and Mortars	Tanks	In-fantry	Artillery	Tanks
40th Army	10	1.8	92	13.3	3.7:1	8.2:1	1.3:1
18th Independent Rifle Corps	8	2.3	83	15	3.5:1	8.0:1	1.2:1
3d Tank Army	16	5	52	$\frac{10}{26}$	2.3:1	5.1:1	3.7:1

Note: Density of infantry-support tanks is indicated in the numerator, and operational density in the denominator.

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In spite of the fact that the enemy troops were in a shattered state of morale, the command authorities of the Voronezh Front did a great deal to achieve a maximum element of offensive surprise, which was complicated by the limited extent of the bridgeheads from which the 40th Army and 18th Independent Rifle Corps launched the attack. Deception measures and dissemination of false information played an important role in this. During the period of preparation for Operation "Saturn," the 40th Army feigned preparations for an attack from the Storozhevoye bridgehead, at the same time utilizing this simulation for preparing for its own offensive operation. When the enemy's attention abated as a result of the offensive thrust on the Middle Don, the command authorities of the 40th Army took a number of concealment, camouflage and deception measures. All troop redeployments were carried out only at night; a substantial portion of the artillery was deployed beyond the river, in order to prevent the enemy from spotting it from ground observation posts; Concentration and readying of troops for an offensive action were feigned south of Voronezh.

Penetration of the enemy's defense was preceded by reconnaissance in force by forward battalions, conducted 48 hours prior to commencement of the offensive. In the 40th Army the attack by the forward battalions was supported by a one-hour preliminary artillery bombardment, involving approximately half of all artillery. Their actions were successful. By engaging the main forces of two divisions, they succeeded in penetrating the enemy's defense on a 6-kilometer frontage to a depth of 3.5 km. Reconnaissance in force in the 18th Rifle Corps and 3d Tank Army made it possible only to determine precisely the enemy's forward positions and fire plan.

The commanding general of the 40th Army, evaluating the results of the reconnaissance in force, made the decision, with the approval of the commanding general of the front, to launch the offensive on the morning of 13 January, that is, 24 hours prior to the scheduled time. Forward of the divisions which had already softened up the enemy's defense, artillery preparation was replaced by shelling of enemy centers of resistance, headquarters and batteries. The army's troops swiftly completed breakthrough of the main defensive zone across the entire sector and advanced to a depth of 10 km.

On the following day the army's troops were compelled to repulse strong enemy counterattacks, which led to some delay in exploiting penetration. The army commander engaged his support echelon: a division on the main axis of advance and a rifle brigade to enlarge the breakthrough sector toward the right flank. By evening they had succeeded in penetrating to a depth of 17 km and widening the breakthrough sector to 50 km. Only on certain axes, however, did the divisions reach the second zone, which was defended by arrived enemy reserves. This made it necessary to engage an additional division, handed over to the army from the front reserve. Penetration of the tactical defense was not fully completed until the third day.

The reasons for delay in breaking through the tactical zone of defense, in spite of a highly successful beginning, were that the 40th Army had launched the attack alone, a day before the general offensive, which drew operational reserves; as a result of delayed arrival of the 4th Tank Corp from the Southwestern Front, it was without an exploitation echelon; it was seriously threatened by an exposed right flank, which the commanding general was forced to secure by detailing substantial

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forces. But the defeat in detail of the enemy's operational reserves within tactical defensive depth opened up extensive opportunities for the troops of the 40th Army to advance swiftly to the withdrawal routes of the main forces of the Hungarian 2d Army for the purpose of encircling it, which was completed on 18 January 1943.

The troops of the 18th Independent Rifle Corps attacked on 14 January following a 2-hour artillery preparation, and broke through the main defensive zone on the first day. The enemy, however, aware that Soviet troops were launching an attack from the bridgehead in the Shchuch'ye area, moved up two divisions -- a panzer and an infantry division -- from the operational reserve against the corps. The relative strengths equalized, and the corps advance was slowed for 3 days. Although the corps proved unable to exploit the penetration on an independent axis, its actions played an important role in the overall course of the operation. Immobilizing large enemy operational reserves, it prevented the enemy from offering significant opposition to exploitation of penetration on the axes of advance of the 40th and 3d Tank armies.

The commanding general of the 3d Tank Army, receiving additional information on the enemy, decided to extend artillery preparation to 90 minutes.¹⁴ This decision was unquestionably correct. Mistakes made in the hasty planning of the artillery bombardment, however, led to insufficient fire effect. In addition, a five-minute lull occurred between the termination of artillery preparation and the attack, enabling the enemy to recover and prepare to repel an assault. The supporting tanks, which had become bogged down in a snow-choked ravine, were also delayed in launching the assault. As a consequence of this the first assault was unsuccessful. Undertaking new efforts, the rifle divisions with attached tanks were finally, after 3 hours, able to penetrate the defense to a depth of 1-3 km.

The commanding general of the 3d Tank Army was forced to engage his tank corps. Their thrust decided the outcome of the breakthrough. By the end of the first day they had penetrated the entire tactical zone of defense, outstripping the infantry by 6-8 km. The opened breach was 23 km deep and 10 km wide. The two right-flank divisions, however, advanced 2-4 km. Thus operational-tactical errors led to a situation where the opportunity swiftly to penetrate the shattered defense was not fully exploited.

The end results of the Ostrogozhshsk-Rossosh Operation proved substantial: the Hungarian 2d Army, the Italian Alpine Corps, the German 24th Panzer Corps, and a large part of the operational reserve forces of Army Group B had been routed; the rail line had been captured on the stretch between Liski and Kantemirovka, which was essential for the conduct of an operation to capture the Khar'kov industrial area; a substantial area was liberated between Don and Oskol rivers. This created favorable conditions for conducting the next operation -- the Voronezh-Kastornoye.

This operation had many features which were similar to the Ostrogozhsk-Rossosh Operation: the enemy was shattered to an even greater extent on the left flank of the zone in which the new offensive was to develop; the enemy's defense ran along a hastily occupied line, on bolstering which the enemy had expended all his reserves.

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An influx of forces from other sectors would be limited in the immediate future; the Voronezh and Bryansk fronts were driving toward one another.

At 1300 hours on 24 January 1943, following a 30-minute preliminary artillery bombardment, the 40th Army launched the offensive. The enemy, who had been little neutralized, proceeded to pour heavy artillery-mortar and machinegun fire on the advancing troops. Fighting along the army's front assumed a protracted and stubborn character from the very beginning of the attack. The rifle divisions were able to advance only in the center, penetrating 0.5-3 km by evening.

The 4th Tank Corps, which was advancing in the attack echelon together with the rifle divisions, was having success. In 2 hours it advanced 6-8 km, but took substantial casualties. That day it was unable to penetrate to operational depth. Its total advance amounted to 16 km instead of the planned 35 km. Of all the rifle divisions only one, exploiting the successful advance of the 4th Tank Corps, advanced 5-6 km, while the 2 rifle divisions and the brigade spent all day fighting for the enemy's forward positions. As a consequence of this, coordination between the tank corps and rifle combined units, which had been hastily organized in any case, was disrupted, which was strongly reflected in exploitation to operational depth. On the following day the troops advanced 10-18 km. It was only a lack of fuel in the tank corps which prevented the capture of Kastornoye on 25 January.

Penetration assumed a protracted character in the 60th and 38th armies. In the 13th Army, however, where superiority over the enemy was 4.7:1 in infantry, 9:1 in artillery, and 5:1 in tanks, by 1500 hours the enemy's well-fortified defense was penetrated to a depth of 6-7 km, which accomplished the day's mission. This made it possible to engage the army's mobile task force and two rifle divisions. By evening on the second day the army had penetrated the enemy's defense to a depth of 20 km and had widened the breakthrough frontage to 25 km, which opened up the road to Kastornoye.

The breakthroughs accomplished in the course of the Voronezh-Kastornoye Operation and their exploitation to depth led to encirclement and defeat in detail of more than 11 enemy divisions, which created an operational breach about 160 km wide in the enemy's defense. Together with the zones of advance of the 3d Tank Army and the 18th Rifle Corps, the breakthrough frontage was about 300 km.

During the same days the offensive mounted by the forces of the Southwestern Front into the Donbass and the Southern Front toward the lower regions of the Don was progressing well. The strategic breach in the enemy's defense was growing day by day. By the beginning of February it amounted to 540 km, and 900 km including the sector from the Don to the Kuma, where small enemy forces were hastily retreating.

Collapse of the enemy's defense in the Southwestern Sector created favorable conditions for further advance in the Western Sector and in the Northern Caucasus, which made it possible to widen even more the strategic breakthrough, exploitation of which by means of operational pursuit could lead to even greater strategic results. Unsuccessful actions by the Kalinin and Western fronts in mounting Operation "Mars," however, and the insufficiently decisive offensive by the troops of the Transcaucasian Front made it impossible, as noted, to reach the Desna and Dnieper in the spring of 1943.

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The failures of these fronts were based on serious mistakes made in preparing for and executing penetration.

The general plan of Operation "Mars" (Diagram 10) was as follows: the defense in the area of the Rzhev salient was to be split up by 8 thrusts mounted by the Western Front and 4 offensive thrusts by the Kalinin Front; wiping out the forces defending this salient, they were to advance toward Smolensk. At the same time the 3d Assault Army of the Kalinin Front was fighting its way toward Velikiye Luki and Novosokol'niki.

By virtue of the fact that a total of 13 battle groups were formed, the majority of these, with the exception of the Zubtsov battle group of the Western Front and the Olenino battle group of the Kalinin Front, were small in strength -- two to three divisions with a mechanized or tank corps. The great many separate offensive thrusts, more than half of which were aimed at immobilizing the opposing force, led to a scattering of firepower. Although artillery densities were 70-85 and even 100 guns and mortars per km of breakthrough sector in some battle groups, half of these weapons were mortars, which could deliver fire only on the first position.

Also unresolved was the problem of gaining the element of offensive surprise in conditions when it was necessary to feign preparations for a large-scale operation, in order to deceive the enemy regarding the main axis of advance in the campaign.

The offensive commenced in a snowstorm. As a consequence of poor visibility, artillery preparation produced poor results, especially in the breakthrough sectors of the 20th and 31st armies.

Long before the operation commenced, the enemy pinpointed the deployment areas of the battle groups, beefed up forces opposite them, especially artillery, and moved operational reserves close to the flanks. When our artillery preparation began, the enemy opened heavy return fire. The movement forward of infantry and tanks from a distant assembly area was disorganized to a considerable degree, and coordination at the moment of assault on the enemy forward positions was disrupted, for some rifle subunits were late or wandered off course in the snowstorm. Only certain subunits of the 31st Army's divisions succeeded in overrunning the enemy's front-line trench.¹⁵ The regiments and divisions had nothing with which to exploit. It was necessary to engage a division from the army's support echelon, which required considerable time, during which the attack echelon divisions were under intensive enemy artillery fire. When the fresh division was engaged, they poorly supported its attack, and it advanced only 1 km.

On the first day combined units of the 20th Army advanced from 1 to 3 km. The holding forces advanced even less.

On the second day the front command repeated artillery preparation, which resulted in expending more ammunition than was allocated for the entire operation.¹⁶ But success was achieved only in the zone of one of the 20th Army's divisions. Here a tank corps was engaged, mounting a headlong assault, smashing its way through to the Rzhev-Sychevka rail line, and cutting it. Advancing without infantry support, it lost 70 of its 120 tanks. Taking advantage of the gap which formed between the 6th Tank Corps and the rifle divisions, the enemy recaptured a number of villages.

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The Soviet command was unable on this and the following day to engage a cavalry corps behind the tank corps. Finally on the night of 28 November 2 cavalry divisions drove through to the tank corps, but without driving open a breach through which the successful advance of the entire army could be exploited. Cut off from the main forces, they were subsequently compelled to take up partisan actions.

Penetration was proceeding somewhat better on the Kalinin Front. Breaches were driven into the defense to full tactical depth in the zones of the 22d and 41st armies. But this required engaging mechanized corps, for the armies' weak attack echelons were unable to accomplish their assigned missions.

The 3d Mechanized Corps was engaged in the zone of advance of the 22d Army on the second day of the operation, when the enemy's defense had not yet been broken, while his operational reserves had just begun advancing toward the breakthrough sector. This led to protracted fighting in the tactical zone of defense. The corps was taking heavy casualties and advancing slowly. A rifle division, engaged from the army reserve, failed to alter the operational situation on the 22d Army's axis of advance. The penetration stalled.¹⁷

The 1st Mechanized Corps was engaged on the first day, when the offensive capabilities of the 41st Army's attack-echelon combined units were still substantial. Reinforcing their offensive thrust, it completed penetration of the enemy's tactical zone of defense and on the third day reached a depth of 33 km. It would be dangerous to continue pushing the drive, for large enemy operational reserves began to approach the exposed flanks and gaps which had formed between the mechanized corps and the lagging rifle combined units.

The commander of the 41st Army was unable to close the gaps with his weak reserve. The enemy attacked through these gaps with 2 panzer divisions and 1 infantry division and restored the situation.

Two more attempts were made in January to eliminate the Rzhev salient, both without success.

The enemy's failure to end 1942 with a decisive victory and his acknowledgement of the inevitability of a protracted war forced him to shift to a static defense in the Northwestern and Western sectors. Operations connected with penetrating this defense indicated that in order to break through, massive delivery of firepower would be required, achieved by establishing high artillery densities, improving the accuracy of shelling, and by good coordination of movement of fire and combat formations.

Penetration of a static defense in depth also required that the attacking forces be disposed in depth. The single-echelon formation of regiments and divisions, mandated by People's Commissar of Defense Order No 306, deprived advancing rifle troops of the capability of exploiting through weakened sectors in the enemy's defense and of building up the force of the offensive drive in order to achieve continuity of attack. In the course of the campaign the forces proceeded to dispose the units and combined units in depth. A primarily single-echelon formation was retained in the subunits.

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Tank and mechanized corps were a decisive means of developing tactical into operational penetration; the most advantageous moment to engage them was on completion of breakthrough by infantry of the strongest defensive line -- the first position, and even better -- enemy regimental defended areas. Their earlier engagement would lead to considerable casualties.

Penetration of a less stable defense took place with lower troop densities. The experience of operations indicated, however, that certain mistakes are inevitable when preparing for penetration on a tight timetable, mistakes which lead to diminished effectiveness of fire and coordination of troop actions. In order to achieve definite penetration of defense and at an adequately rapid pace, troop densities in breakthrough sectors should be close to those established when penetrating a deliberate defense.

In the winter campaign of 1942/43 the element of surprise remained one of the most important factors in preparing for and executing penetration both of a static defense and an insufficiently developed enemy defense.

The diversified experience in penetration obtained in the course of this campaign formed the basis of preparations for offensive operations in the summer-fall campaign of 1943.

2. Penetration of a Static Defense in the Operations of the Summer-Fall Campaign of 1943

By the summer of 1943, thanks to the selfless labor of the Soviet people, guided by the Communist Party, output of war materiel had increased substantially. There was also an appreciable increase in production of new military hardware. The numerical strength of the army in the field had increased slightly in comparison with the commencement of the preceding campaign -- by 24,000 men -- but the number of guns and mortars had increased by 28 percent, tanks and self-propelled guns by 26 percent, and combat aircraft by 140 percent.

By the beginning of the campaign the transition by rifle troops over to corps organization was basically completed, which helped improve troop control and utilization of troops in combat. Army and corps artillery were established. Breakthrough artillery corps, gun artillery divisions, etc were formed in SHC Reserve artillery. This greatly increased the capabilities of operational maneuver of large masses of artillery and their concentration in breakthrough sectors.

Increase in the production of armored vehicles made it possible to form 5 new-organization tank armies and to increase the number of independent tank and mechanized corps, independent tank brigades, tank and self-propelled artillery regiments.

Following the defeat at Stalingrad and in the Caucasus, the German-fascist leaders came to the conclusion that "there is no longer a possibility of bringing the war in the East to an end by means of an offensive."¹⁸ Having commenced preparations for a large offensive in the area of the Kursk salient, they took all measures to establish a strong defense along the entire Eastern Front. Wehrmacht headquarters

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operational Order No 5 of 13 March 1943 stated that "in some sectors of the front the task boils down to wearing down the advancing enemy by attrition. Here we should establish in advance a particularly strong defense, by employing heavy weapons, improving fortification of positions, placing minefields where needed, setting up rear-area strongpoints, establishing mobile reserves, etc."¹⁹

This order bolstered the German army's shift to a static defense disposed in depth, as a rule consisting of two zones with two or three positions in each, fortified with the extensive employment of fighting trenches, communicating trenches, various obstacles, and solidly-constructed fighting bunkers and shelters.

At the end of 1942 Soviet command authorities noted a trend on the part of the enemy to shift from a center-of-resistance type defense to a static defense and took measures in advance which ensured successful penetration of such a defense. This was expressed in purposeful guidance of qualitative and quantitative development of weaponry, especially artillery, improvement in the organizational structure of troops, and in methods of planning and executing penetration in operations and the campaign as a whole.

In view of the fact that by the summer of 1943 the Soviet Army did not yet possess the capability to overwhelm the enemy simultaneously along the entire Soviet-German front, the Soviet Supreme High Command, on the basis of a thorough analysis of the military-political situation, proceeded to plan in advance a number of sequential operations on a wide front. This made it possible more extensively and purposefully to maneuver reserves, especially SHC Reserve artillery, armored troops, air forces and materiel, and to establish battle groups capable of smashing and breaking through a static defense and exploiting each operation to considerable depth.

Hq SHC, having made the decision to exhaust the enemy in a deliberate and stubborn defense in the area of the Kursk salient, made plans for a shift to a counteroffensive with the objective of routing the enemy's largest forces in the Orel, Belgorod, and Khar'kov areas. After this, offensive operations were to be launched to push toward the Dnieper in the entire Southwestern as well as Western Sector.

In contrast to the two preceding Soviet offensive campaigns, the general plan of the summer-fall campaign of 1943 clearly contained the idea of developing a number of operational-tactical breakthroughs into strategic penetration, that is, formation of a wide breach in the enemy's strategic front, in which mobile actions could be undertaken by large forces and in order to close which the enemy would be forced to bring in his strategic reserves and weaken other sectors of the front.

Advance planning of development of a number of operational-tactical breakthroughs into strategic penetration signaled the beginning of a qualitatively new stage in the evolution of penetration in Soviet art of warfare, which experienced its fullest embodiment in the final campaigns of the Great Patriotic War.

Breakthrough in the counteroffensive at Kursk. Hq SHC detailed large forces to conduct the counteroffensive: 132 rifle, 13 artillery, 3 mortar and 19 antiaircraft artillery divisions, 17 tank corps and a large number of independent brigades, regiments and battalions. Numerical strength totaled 1,396,000 men, 19,100 guns, and mortars, more than 3,400 tanks and self-propelled guns, and 2,172 aircraft.²⁰

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This comprised approximately 30 percent of the Soviet Army's total forces. They were concentrated in a sector slightly exceeding 10 percent of the entire Soviet-German front. Such a concentration of men and weapons enabled the operational command authorities to establish powerful offensive forces and to choose decisive forms of penetration and conduct of operations as a whole (Diagram 11).

The general plan of the Orel offensive operation called for mounting four powerful attacks: from the north -- by the troops of the left side of the Western Front; from south -- by the troops of the Central Front with the aim of advancing west of Orel; from the east -- two splitting attacks by the Bryansk Front directly toward Orel.

A different mode of operational penetration was selected in the Belgorod-Khar'kov Operation; a powerful splitting attack, supplemented by several subsidiary attacks, with the objective of splitting the opposing enemy force into two parts, enveloping and defeating the enemy in detail in the Khar'kov area.

By defeating in detail enemy forces in the Orel salient and in the Khar'kov area, a breach was to be formed in the enemy's strategic front, through which military actions could be pushed directly toward the Dnieper.

The importance of each operational sector in the strategic zone of advance predetermined the composition of the battle groups. At the same time Hq SHC and the command authorities of the fronts determined the composition of each, to ensure that it would be capable of successfully breaking through an enemy static defense disposed in depth and of pushing the operation to the planned depth. Table 5 shows the composition of the battle groups in the operations.

Table 5. Composition of the Battle Groups of the Fronts When Commencing the Counter-offensive at Kursk

1	2	3	4	5	6	7	8	9
Battle Group	Combined-Arms Armies	Rifle Divisions	Tank Armies	Independent Tank Corps	Air Armies	Artillery and Mortar Divisions	Artillery and Mortar Brigades	Artillery and Mortar Regiments*
Orel Operation								
Battle group on the left side of the Western Front (11th Guards Army, 50th Army)	2	14		3	1	3	7	21
Main battle group of the Bryansk Front (63d and 3d armies)	2	12		1	1	3	3	12
Auxiliary battle group of the Bryansk Front (61st Army)	1	6		1		2	1	9
Battle group of the Central Front (48th, 13th, 70th armies, 2d Tank Army)	3	22	1	2	2	3	11	16

* (excluding rifle division artillery regiments)

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Table 5 (cont'd)

1	2	3	4	5	6	7	8	9
Belgorod-Khar'kov Operation								
Main battle group of Voronezh and Steppe fronts (5th and 6th Guards armies, 53d Army, 1st and 5th Guards Tank armies)	3	20	2	2	2	4	3	4
Auxiliary battle group of the Voronezh Front (27th and 40th armies)	2	9		3		2		4

As is evident from the table, each battle group contained principally 2-3 combined-arms armies, 1-2 tank armies, 1-3 tank corps, and from 2 to 4 artillery and mortar divisions. Their operations were supported by one to two air armies.

In addition to these forces, Hq SHC specified that the following should be added to the force groupings: to the left side of the Western Front -- a combined-arms army and a tank army; to the Bryansk Front -- a tank army; to the main axis of advance of the Voronezh Front -- two combined-arms armies. Unfortunately the 11th Combined-Arms Army, the 3d Guards and 4th Tank armies had not yet completed forming by the commencement of the counteroffensive and joined the fronts while the operations were in progress, which had a substantial effect on their development.

The power of the battle groups of the fronts was also increased because by the summer of 1943 the combined-arms armies contained 2-3 and sometimes 4 rifle corps and 7-12 rifle divisions instead of the 5-6 in the preceding campaign. They were 50-100 percent greater in numerical strength and equipment than armies without corps organization, they were reinforced by 1-3 breakthrough artillery divisions, by tank brigades and regiments, and were supported by large numbers of aircraft. Tank armies were now of uniform composition. According to the table of organization and equipment, they were to contain 800 tanks and self-propelled guns, and approximately 700 guns and mortars. The strength of the battle groups was greater than in the battle of Moscow, as follows: 50 percent in personnel, 360 percent in guns and mortars, 500 percent in tanks, and 150 percent in aircraft. Battle groups possessed 50 to 100 percent more equipment than in the counteroffensive at Stalin-grad.

Powerful battle groups were formed by transferring troops to the fronts in advance from SHC Reserve, as well as by maneuver between fronts and armies. During preparations for the Belgorod-Khar'kov Operation, for example, three breakthrough artillery divisions and a rocket artillery division were transferred from the Bryansk Front to the Voronezh and Steppe fronts. This made it possible to increase artillery density by almost 20 percent in the 5th Guards, 27th and 53d armies.

The guns and mortars of rifle divisions in the support echelons, the artillery of mobile groups and part of the artillery of armies operating on secondary axes began

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to be extensively employed in artillery preparation, in order to establish high artillery densities in breakthrough sectors. In the breakthrough sector of the 5th Guards Army, for example, the artillery of the 1st and 5th Guards Tank armies and 4 artillery regiments from the divisions of the 40th army, which was to commence the offensive 2 days later, were used for artillery preparation. In the breakthrough sector of the 6th Guards Army, the artillery of the 5th and 10th Guards Tank corps and 2 divisional regiments of the 27th Army were assigned to artillery preparation, and in the breakthrough sector of the 53d Army of the Steppe Front -- the artillery of the 1st Mechanized Corps.²¹

The art of massing personnel and weapons on the most important axes was raised to a higher level in the counteroffensive at Kursk. At Stalingrad average operational density in the breakthrough sectors was as follows: 1 division for approximately 3 km of frontage, from 30 to 80 guns and mortars and from 12 to 17 tanks per km of breakthrough sector, while at Kursk average operational density was as follows: 1 division for every 1.6 km of frontage, 170-230 guns and mortars and 18-70 tanks and self-propelled guns per km of breakthrough sector (Table 6).

Table 6. Average Operational Densities During Penetration in the Counteroffensive at Kursk²²

Front	Width of Zone of Advance, km	Width of Break-through Sector, km	km per Rifle Division		Guns and Mortars per km		Tanks & Self-Propelled Guns per km	
			Entire Zone	Break-through Sector	Entire Zone	Break-through Sector	Entire Zone	Break-through Sector
Western (left side)	70	20	3.7	1.4	60.1	183.1	8.8	30.7
Bryansk	158	30	8	1.9	40.3	173.7	4.9	18.6
Central	150	36	5.4	1.6	42.0	104.9	8.0	40.0
Voronezh	160	20	5	1.9	53.9	215.8	13.5	70.0
Steppe	90	11	4	1.3	57.5	230	5.5	42.0

Relative strengths were increased sharply in favor of our forces by skilled massing of men and equipment in breakthrough sectors, particularly by boldly weakening secondary sectors.

Special attention in preparing for penetration was devoted to planning delivery of fire on the enemy. In connection with the necessity of penetrating a static defense, duration of artillery preparation in the Western Front was specified at 2 hours and 45 minutes, and at 2 hours and 50 minutes in the Voronezh Front. Depth of delivery of massed artillery fire for effect on the defense ran 3-4 km. A moving barrage in combination with sequential concentration of fire to the depth of the first position in the enemy's defense began to be employed more frequently for supporting the infantry and tank assault.

Our air power had increased by the summer of 1943. The advance of troops in the Orel Operation was to be supported by more than 2000 aircraft of 3 air armies. The Voronezh and Steppe fronts had more than 1300 aircraft. In addition, 200 long-range bombers were assigned. In addition to quantitative growth of air power, air

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efforts were being increasingly focused on supporting the advance of ground troops. In the counteroffensive at Stalingrad 43.6 percent of all sorties were employed for this purpose, and 55.0 percent in the Orel Operation; 80-85 percent of all sorties involved attacking targets in the enemy's tactical zone of defense.

Employment of air was planned in the form of an air offensive. Preliminary airstrikes on the axes of advance of the battle groups were varied. On all fronts with the exception of the Central Front, a large number of aircraft were assigned missions of mounting massive night strikes. Fifteen minutes prior to or immediately before an attack, airstrikes would be delivered into the enemy's main defensive zone.²³ But the main efforts of the air armies were focused on supporting the advance of ground troops, which should be acknowledged as appropriate, for range of artillery fire was insufficient to suppress targets at great depth, especially in the course of an attack, when it became difficult to spot them from ground points. The main targets of airstrikes in the course of an offensive included enemy personnel, artillery and tanks in the first and subsequent defensive zones, as well as enemy reserves moving up toward the breakthrough sector.

The enemy's shift to a static defense dictated the necessity of somewhat reducing the depth of combat missions. And the zones of advance were cut in half, which helped increase tactical troop densities.

Rifle combined units formed up for the most part in two echelons, while regiments formed in two and sometimes three echelons. Stronger artillery groups and reserves were formed. Density of infantry-support tanks increased to 10-18 per km of breakthrough frontage. Self-propelled artillery was included for the first time in infantry-support tank groups; the self-propelled guns were to advance behind the tanks and provide them fire support.

Mobile groups containing one or two tank corps were formed in the combined-arms armies operating on the main axes for exploiting a tactical into an operational breakthrough. Tank armies of uniform composition were first employed in the fronts for this purpose. The Voronezh Front had two tank armies which, for the purpose of maximum concentration of offensive tank power, were to be employed simultaneously on a single axis, in the zone of a single combined-arms army.

Engagement of exploitation echelons was planned differently in each front and in each army, taking account of the specific features of the enemy's defense and other situation data. In the 11th Guards Army of the Western Front, for example, the 5th Tank Corps was to engage on the first day of the operation, after rifle combined units had broken through the main defensive zone, while the 1st Tank Corps was to engage on the second day. Subsequently the 25th Tank Corps as well -- a reserve of the commanding general of the front -- was to be employed in this same army's zone. In the 61st Army of the Bryansk Front it was decided to move the 20th Tank Corps into the breach within tactical defense depth, while in the 63d Army the 1st Guards Tank Corps was to be engaged following penetration through tactical defense depth.

On the Voronezh Front it was decided to engage forward tank brigades -- one from each tank army forward-echelon tank (mechanized) corps (a total of approximately 200 tanks on a frontage of 10 km) -- in the area of the enemy's main artillery positions in order to complete penetration of the main defensive zone. With the support of specially designated artillery, acting in coordination with rifle

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divisions, they were to penetrate the third position in the first defensive zone and create favorable conditions for engaging the main forces of the corps. The main forces of the tank armies were designated for penetrating the second defensive zone without a halt and for offensive exploitation at immediate operational depth. It was planned to engage the support echelons of the tank armies beyond the enemy's army defensive zone.

Concentration of large masses of troops in the breakthrough sectors and the necessity of penetrating a well fortified static defense demanded particularly thorough organization of teamwork and cooperation. Reestablishment of the corps headquarters agencies facilitated this task at the army echelon. In organizing cooperation, teamwork and coordination at all levels of command and control, principal attention was focused on coordinating troop actions in taking up an attack position, conducting preliminary artillery and air bombardment, and performance of combat missions by the troops. Coordination was organized most closely to the depth of penetration of the main defensive zone.

Engineer support of penetration was in large measure organized in a new manner and on a larger scale than in the past. As a rule attack positions would be provided with an elaborate system of trenches. In connection with increase in density of artificial obstacles in the enemy's defense, clearing of lanes through minefields became an important task of engineer troops. Usually two lanes would be cleared per rifle company and three to four lanes per tank brigade.²⁴ An important task of engineer troops was preparation of routes for execution of troop redeployment and maneuver, especially by tank combined units and units. Engineer subunits would be incorporated into forward battalions, and would also be detailed for performing special missions in the capture of particularly tough enemy installations.

Party-political work played an important part in preparing for penetration. The victory at Stalingrad and liberation of considerable territory from enemy occupation was a good foundation for development of this work. The lull between campaigns was utilized -- regular political instruction classes and information sessions were held. At these classes instructors would discuss the advantages of the socialist state and the ever increasing capabilities of the Soviet Army, the enhanced international prestige of the USSR, expansion of the struggle of peoples against fascism, and deepening of the conflicts between fascist Germany and its satellites. Particularly extensive work was conducted with new troop replacements.

Extensive measures pertaining to concealment, deception and camouflage were conducted in the armies of the Western and Bryansk fronts in order to gain the element of surprise. Preparations for penetration in the Sudzha area were feigned in the Voronezh Front. In an operational respect this offensive action looked convincing and drew the enemy's attention and forces. No less effective was accelerated preparation to launch a counteroffensive in that sector where fierce defensive battles had recently been fought. Manstein wrote in his memoirs: "We were hoping to smash the enemy sufficiently in the course of Operation Citadel so as to have a breather on this front. This hope subsequently proved fatal, however, for development of the situation on the group's northern flank, since the enemy began the offensive sooner than we expected."

The rapid shift from defense to a counteroffensive played an important role in gaining the element of surprise, but only on those axes where powerful forces with

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high troop densities had been established (Voronezh and Steppe fronts). The Central Front, which had only 2 days to prepare for the offensive, was unable to establish a strong battle group in a narrow sector of frontage, which affected penetration and the operation as a whole.

In the Orel Operation the troops of the Western and Bryansk fronts began penetration early in the morning on 12 July, when the enemy was still attempting to achieve the objectives specified in Operation Citadel. It was preceded by reconnaissance in force by forward battalions, which the German-fascist command authorities assessed as an unsuccessful attempt to keep available German reserves on the Orel salient from being committed to the drive on Kursk and failed to take the necessary preventive measures.

In the 11th Guard Army, as a result of considerable softening up of the enemy's defense by heavy artillery preparation and airstrikes, in the course of which the forward echelon of the enemy's 211th and 293d Infantry divisions sustained 50-60 percent casualties, penetration began successfully, especially in the zone of the 8th Guards Rifle Corps, where artillery density amounted to 259.4 guns, while immediately prior to the assault phase a strike was delivered by 70 Pe-2 bombers.²⁵ The attacking extended lines of riflemen closed the enemy to a distance of 150-200 meters while the final preparatory fire was still being delivered and, when fire was shifted back to the second trench, attacked the forward positions, capturing them without much enemy resistance (Diagram 12).

Attacking behind a moving barrage, the attack-echelon battalions of the regiments of the 11th and 83d Guards Rifle divisions broke through three trenches of the first position and penetrated 500-700 meters into the enemy's defense. When the moving barrage was raised, the regiment's support echelons were engaged. The first position was penetrated by 0830 hours. The regiments' third echelons were engaged to add to the offensive effort. The corps commander engaged the 43d Tank Brigade -- the corps forward detachment.

While the 11th and 83d Guards Rifle divisions were immobilizing the enemy by fire and assault in strongpoints east of Pochinok and Perestryazha, the 43d Tank Brigade sliced into their point of juncture and advanced to a strongpoint in Otreshka, while the rifle regiments reached the tactical approaches to the second position.

Artillery, part of which had changed gun positions, concentrated fire on the second position, fortified as strongpoints. During the shelling, tanks and infantry approached these strongpoints and attacked when fire was shifted to depth. Following stubborn fighting, the strongpoints in and to the east of Otreshka were captured by the advancing combined units, and by 1200 hours they had reached the third position, set up beyond the Fomina River.

The command authorities of the enemy's 293d Infantry Division, gathering remnants of subunits, launched counterattacks together with reserve units of the 53d Corps, with artillery support, endeavoring to prevent penetration of the third position. Heavy fighting erupted, especially in the zones of 11th and 31st Guards Rifle divisions, which were forced to stand and repel counterattacks.

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Appreciable casualties were inflicted on the counterattacking enemy troops by massed artillery fire and airstrikes, and by 1500 hours penetration of the third position was completed at many points.

The commanding general of the 11th Guards Army gave the signal to engage the 5th Tank Corps (136 tanks). Due to the fact that the roads were heavily damaged by artillery fire and the necessity of crossing two barriers of antitank obstacles and the Polyanka River, the corps did not reach the deployment line forward of the second defensive zone until 2000 hours, that is, 3-3.5 hours behind schedule.²⁶ During this time the enemy had succeeded in bringing the main forces of the 5th Panzer Division up to the second defensive zone and, together with retreated subunits of the 293d Infantry Division, organized a fairly solid defense. Two assaults on this defense, undertaken at 2030 and 2200 hours, resulted only in insignificant advance by the corps and its neighboring units.

Thus the gap which occurred in building up efforts by the 5th Tank Corps prevented penetration of the enemy's second defensive zone on the first day.

Redeployment of troops was accomplished during the night, and all artillery was moved forward. But at dawn on 13 July the enemy once again mounted counterattacks by groups of 15-30 tanks in the sector of the 8th Guards Rifle and 5th Tank Corps. They were busy repelling these counterattacks up to 1200 hours. Thirty-four enemy tanks were disabled, and large numbers of enemy personnel were killed.²⁷

The adjacent corps, engaging their support echelons -- the 1st and 84th Guards Rifle Divisions -- during this time succeeded in penetrating deep into the enemy's second defensive zone. The commander of the 8th Guards Rifle Corps concentrated more than 250 guns in a 2.5 km sector and focused airstrikes on this sector as well.

The simultaneous delivery of artillery fire and airstrikes by the 224th Air Assault Division made it possible to shatter the enemy's resistance. He was able to hold on for a certain time in the Staritsa strongpoint. But outflanking of this strongpoint by the 24th Tank Brigade of the 5th Tank Corps, the 43d Tank Brigade and regiments of the 11th Guards Rifle Division hastened annihilation of the enemy in this strongpoint. This opened up avenues to operational depth.

Penetration in the zone of the 61st Army was progressing less successfully, chiefly as a consequence of inadequate damage inflicted on the enemy during artillery preparation and failure to follow the plan and schedule of support of the assault phase. The divisions took 6-8 hours to penetrate the first position, and by evening had advanced only 3-7 km in a sector 12 km wide.

On the second day the commanding general of the army engaged a tank corps and two rifle divisions from the support echelon to exploit penetration. But during the night the enemy was able to move the 12th Panzer Division to Bolkhov from the Kursk-Orel axis and to offer stubborn resistance to the troops which had resumed the attack. In spite of the fact that artillery density was high in the sector where the fresh forces were engaged (180-220 guns per km), they were unable to neutralize the enemy, since the bulk of the artillery was delivering long-range fire from beyond the Oka River at inadequately reconnoitered targets. On 13 July the troops of the 61st Army, repelling enemy counterattacks, captured several centers of resistance, but were unable to exploit penetration to depth.

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On 15 July the commanding general of the army engaged another rifle division, his reserve, but even this failed to result in a breakthrough. Redeployment of the 16th Artillery Division from the 61st Army to the Voronezh Front greatly reduced this army's artillery force. This made it even more difficult to break through the tactical zone of defense, with penetration finally completed on 19 July, that is, on the 8th day of the operation.

Troops of the 3d and 63d armies swiftly penetrated the first position. But subsequently the advance slowed. The enemy began continuously bombing the troops, especially of the 63d Army, and mounted several counterattacks.

Buildup of the offensive effort was hindered by the fact that a substantial part of the 3d Army's artillery and almost all its observation posts were sited on the high bank of the Zusha River, far to the rear of the infantry combat formations and gun positions of the batteries deployed on the bridgehead. This led to disruption of coordination between artillery, infantry and tanks at the most critical moment in the battle -- during completion of penetration of the enemy's main defensive zone. The greatest advance -- 6-7 km -- was achieved at the boundary of the 3d and 63d armies. The advance ran 3-4 km on the remainder of the front.²⁸

During the night the enemy succeeded in moving up to the breakthrough sector the 36th Infantry Division and forward units of the 8th Panzer Division. By mounting strong counterattacks, with the support of large numbers of aircraft, on 13 July they attempted not only to halt the advance of our forces but also to drive them back to their initial position. Massive fire delivered by the 2d Breakthrough Artillery Corps and airstrikes by the 15th Air Army succeeded in thwarting the enemy's plans. Combined units of the 3d and 63d armies resumed the advance and, capturing several strong centers of resistance, created conditions for engagement of the 1st Guards Tank Corps. But the enemy, discovering the advance of this corps to the deployment line, mounted airstrikes on its tanks. Engagement of the mobile group was delayed until the afternoon. By this time the enemy's 8th Panzer Division had in its entirety reached the breakthrough sector and had closed the gap. They were unable to increase the rate of advance, but nevertheless by evening the enemy's second defensive zone was penetrated. The gap was 25 km in frontage and 15 km in depth.²⁹

The troops of the Central Front commenced the offensive on 15 July. The limited time available for preparing for the operation made it impossible to displace the attack away from the main enemy force, which had just stopped its advance and still had very dense combat formations. The force of delivery of fire, along a wide frontage, proved to be much less than that required by the situation conditions. As a consequence of this the armies on the right side of the front "advanced slowly, overcoming the stubborn resistance of the Hitlerites, who were skillfully utilizing their well fortified positions.... Now and then the enemy would counter-attack with panzer troops, and he had plenty of these left."³⁰

The commanding general of the front engaged the 2d Tank Army to accomplish penetration. Engaging the enemy within his first positions, it took substantial casualties, but was unable to smash a gap in the enemy's defense.

Thus penetration of the enemy's tactical zone of defense in the Orel Operation was successfully completed by the end of the second day of the offensive only on the

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axes of the main battle groups of the Western and Bryansk fronts. Opportunities to exploit tactical into operational penetration developed precisely on these axes.

The Western Front had two additional tank corps at its disposal for accomplishing this mission (one was an element of the 11th Guards Army, and the other was in the front's reserve). In addition, Hq SHC was planning to assign to the front, effective 18 July, the 4th Tank Army, which was completing formation in the Moscow area. The Bryansk Front had no reserve mobile combined units, and the 3d Guards Tank Army, which had been forming in the vicinity of Plavsk, was assigned to it effective 14 July.

The commanding general of the 11th Guards Army, as soon as penetration of the enemy's second defensive zone was completed, engaged on 13 July the 1st Tank Corps with a support-echelon division of the 16th Rifle Corps. An offensive thrust by the two tank corps and rifle division, with artillery and air support, enabled them to advance 25 km. They still were unable, however, to obtain freedom to maneuver. The enemy moved up three panzer divisions and a motorized division to the gap which had been opened. Intensive fighting raged. On the following day the enemy was finally forced to begin a withdrawal. The conditions were right for further offensive exploitation. But the tank corps had sustained losses and no longer possessed the necessary striking power for independent actions at operational depth.

On 18 July, that is, on the seventh day of the operation, the 25th Tank Corps from the front's reserve was engaged. It was successful in its exploitation efforts. Depth of penetration was increased to 70 km. One brigade had even reached Khotynets Station on the Orel-Bryansk rail line. As a result of an enemy counterattack, however, this brigade withdrew toward the corps main forces. The army lacked the forces to cut the rail line. Its zone of advance had widened to 150 km. By moving reserves to the most seriously-threatened sector, the enemy equalized forces and even mounted a number of counterattacks to rout forward units of the 25th Tank Corps. Engagement of fresh forces was necessary in order to build up efforts and reach operational depth.

On 18 July Hq SHC assigned the 4th Tank Army to the Western Front. It could not take the line before 24 July, that is, on the 13th day of the operation, with great delay, when the 11th Guards Army could conduct aggressive actions only with two divisions, since the tank corps had sustained heavy losses in combat with enemy tanks. The adversary, exploiting the lull in the action, strengthened his defensive positions. Therefore the 4th Tank Army would not be entering a breach as planned, but would be commencing combat actions with penetration of a new enemy defensive line.

On the first day of the offensive it was supposed to smash enemy resistance in a sector 14 km west of Bolkhov and to advance 50-60 km to the south of it.³¹ Only 24 hours were given to prepare for executing the breakthrough. Due to the limited time available, coordination was not properly organized. Artillery was not concentrated in the sector where the tank corps engaged. The tank brigades received their mission assignments late in the evening and did not have time to make the necessary preparations for the attack. As a result of all this the tank army, engaging the enemy on 26 July, was only able to advance 2-4 km by evening. Nor did the second day of the offensive produce the desired results. Finally on the third

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day the army forced the enemy to begin a withdrawal. However, as a consequence of the fact that the army had not succeeded in penetrating to full depth of the enemy's tactical order of battle, he was able to carry out an orderly withdrawal, by bounds, 4-8 km per day.³²

On the first few days in August the 4th Tank Army assigned at the end of July to the Bryansk Front, attempted to break through to the Orel-Bryansk rail line near Khotynets, the approaches to which were defended by a particularly strong enemy force, which had previously been applying pressure on the troops of the 11th Guards Army. Penetration on this line was to be initiated by divisions of the 11th Guards Army, while the 4th Tank Army was to enter the gap for offensive exploitation.

On 6 August the 11th Guards Army, following artillery preparation, advanced 3 km into the defense by 1300 hours. It was unable to push the advance further, since its combined units no longer possessed the necessary striking power. But the commanding general of the 4th Tank Army waited until 1530 hours to order the 30th Urals Volunteer Tank Corps to enter the gap. The delay in engaging this tank corps prevented a continuous offensive drive of increasing force. The tank corps offensive thrust was delayed, and engagement of other tank corps proved difficult in the forested terrain. On the first day the tank army advanced 4 km, 5 km on the second, and on 8 August it advanced 14-16 km, but was halted in front of a new defensive line to which the enemy had withdrawn his forces. After penetration of this line the army was delayed in front of the third line, and therefore was unable to break through to operational depth.

Assessing attempts to develop tactical into operational penetration by the forces of the 4th Tank Army, which had just completed formation and therefore was insufficiently smooth and coordinated, one must agree with the view of Mar I. Kh. Bagramyan, at that time in command of the 11th Guards Army, that it would have been more advisable to engage it not on the approaches to Bolkhov, where the enemy had a very strong, fortified defense, but toward Khotynets,³³ where the defense was disrupted to its entire depth. At this point, even with an independent breakthrough of the defensive line at the end of July, it could have penetrated to operational depth and thwarted the enemy's plans of executing an orderly withdrawal to a prepared defensive line to the rear.

The 3d Guards Tank Army, assigned to the Bryansk Front on 14 July, arrived in the concentration area toward evening of the following day, having completed a 150 kilometer march. By this time the enemy had withdrawn to a well-fortified defensive line along the Oleshnya River, while the offensive capabilities of the 63d and 3d armies were already significantly reduced.

The 3d Tank Army also had 24 hours to prepare for the operation. As S. M. Shtemenko testifies, in transferring the 3d Guards Tank Army to the Bryansk Front, the Supreme Commander recommended that it be engaged "as quickly as possible, in order to prevent the enemy from consolidating."³⁴

But this decision inadequately took into account the enemy's capability to organize a defense on new but previously prepared defensive lines, along which the enemy had merely to deploy his troops in their designated areas and to organize a fire plan. This required 24 hours or less, while the tank divisions needed several hours.

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Therefore the attacking force gained little by seeking to break through such lines with limited time to prepare for an offensive, but it lost a good deal. Poor organization of combat actions sharply diminished their combat capabilities, which in the final analysis predetermined either a slow advance or total failure.

A breakthrough sector with a frontage of 16 km was selected for the 3d Guards Tank Army. The following densities were to be established in this sector: guns and mortars -- 43, and tanks -- 50. The enemy also had high densities in this sector: 35 guns and mortars, and 10 tanks. In addition, spotting the advance of the tank army, the enemy called in large numbers of aircraft to attack it, flying 1000 sorties on 19 July.³⁵

With these relative strengths, when the enemy's defense had been poorly reconnoitered, the offensive had been organized hastily, and the element of surprise was lacking, one could hardly count on rapid penetration. In spite of the high tank operational densities, the 3d Guards Tank Army advanced 7-10 km that day, and 20 km only on the southwestern axis. Its corps, however, were unable to reach the Optukha River³⁶ before the enemy had taken up a defensive position there, and therefore were unable to break through to operational depth.

Unquestionably another element in play here was the fact that Hq SHC, receiving information from the command authorities of the Bryansk Front that the enemy had begun withdrawing the Mtsensk force toward Orel and that the path of advance of the 3d Guards Tank Army westward was blocked by strong enemy resistance, issued an order to the commanding general of the Bryansk Front at 0200 hours on 20 July to change the direction of advance of the 3d Guards Tank Army and to initiate an attack on the morning of 20 July with the objective of routing the Mtsensk force.

Between 19 July and 10 August the 3d Guards Tank Army made seven attempts to break through the enemy's defense and penetrate to operational depth, but was unable to obtain maneuvering room. Advancing slowly and penetrating the defense like infantry, it sustained heavy losses, while achieving limited operational results. During the Orel Operation the army lost 60.3 percent of its T-34 tanks and 72.9 percent of its T-70 tanks.³⁷ The army's battleworthiness was substantially diminished,³⁸ and on 11 August it was withdrawn into the Hq SHC Reserve in order to be rebuilt to strength.

The experience of engaging tank combined units and formations on the Western and Bryansk fronts indicated that, without executing expeditious and continuous buildup of offensive power to depth, it is difficult to achieve swift development of tactical into operational penetration; employment of a tank army independently to break through a prior fortified enemy defense, without adequate delivery of firepower, led to heavy losses, in connection with which the front's forces were deprived on a powerful means of offensive exploitation.

The initial experience gained in employing tank armies of the new organizational configuration was taken into consideration in the Belgorod-Khar'kov Operation.

Penetration of the enemy's defense in the Belgorod-Khar'kov Operation began on 3 August (Diagram 13). On the eve of this operation, just as in the Orel Operation, reconnaissance in force was conducted with forward battalions, which confirmed that

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the enemy was strongly defending in the previous positions. Artillery preparation began at 0500. The aircraft of two air armies mounted heavy airstrikes on the enemy. As a result of the massive artillery preparation and airstrikes, the enemy sustained heavy casualties, and his morale was shattered. His artillery was well suppressed.

Infantry and infantry-supporting tanks, launching an attack with the support of a moving barrage, within 2 hours had captured the entire first position and had advanced to a depth of 1.5-2 km. One must acknowledge that the rate of advance in the attack, which was 1 km per hour with massive neutralization of the enemy's defense, was insufficient. The reason was that the moving barrage was provided primarily by SHC Reserve artillery, communications and coordination with which were handled through several echelons of command, as a consequence of which shifting of fire was delayed and the attack was conducted at a slowed pace.

Enemy resistance increased as our troops advanced deeper, but sequential engagement of support echelons made it possible to build up the force of the attack. In a period of 5 hours the troops advanced to a depth of 4-5 km on the main axes of the fronts, breaking through two positions, and reaching the enemy's main artillery position area. Here the advance of the combined-arms combined units began to slow. Due to insufficient long-range artillery, the third position proved to be little-neutralized. In addition, the effect of suppression and neutralization had essentially disappeared 5 hours after artillery preparation had terminated. There was a shortage of weapons which could reliably neutralize during penetration enemy reserves occupying the third position, since a large percentage of the artillery had begun changing position and could not support the advancing troops with massed fire with the previous density. The small number of infantry-supporting tanks, which in addition had taken losses, could not make up for the inadequate fire delivered by artillery, which by this time had expended 73 percent of the day's ammunition allocation.³⁹ In this situation a decisive role in completing penetration of the main defensive zone was played by the forward tank brigades of the 1st and 5th Guards Tank armies.

They proceeded to advance when the attack commenced. At 1200-1300 hours they engaged and, together with the rifle divisions, completed penetration of the enemy's main defensive zone. There was a possibility of advancing swiftly to the second zone and breaking through it without a halt. But the 200th Tank Brigade of the 1st Tank Army, which was operating in the zone of the 66th and 97th Guards Rifle divisions, which lacked close-support tanks, was unable to outpace them, as it was advancing for the most part through villages. The 49th Tank brigade was operating in the zone of the 13th Guards Rifle Division, which was supported by the 93d Independent Tank Brigade. After completing penetration of the main defensive zone, it could proceed swiftly toward the second zone, which for the present was weakly defended by arriving enemy reserves. Ignorant of the situation, however, the commander of the 49th Tank Brigade could not make such a decision. Thus a favorable moment for penetration of the enemy's second defensive zone without a halt on the axis of the 1st Tank Army was not utilized by the forward tank brigades, and advance to the point of engagement of the main forces of the forward-echelon corps was delayed.

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The corps of the 1st Tank Army were advancing in a zone only 3-4 km wide, which permitted only one route per corps. On approaching the forward edge of the battle area, they would have to cross the narrow (5-7 meters), but with a swampy floodplain, Vorskla River, spanned by five bridges. But since approaches to the bridges had not been constructed, they were so damaged following passage of the forward brigades that the rate of advance of the corps dropped from 15 to 2 km per hour. The attack-echelon tank brigades reached the line of the advancing troops as evening was falling rather than at the scheduled 1500 hours. The loss of 5 hours of time permitted the enemy to occupy the second defensive zone with the forces of the 6th and 11th Panzer divisions, which in the final analysis led to incomplete accomplishment of the missions of the first day of the offensive. Finally at dawn on 4 August the 1st Tank Brigade of the 3d Mechanized Corps succeeded in breaking through the second zone at a weak point, thus creating conditions for offensive exploitation to operational depth.

On the axis of advance of the 5th Guards Tank Army, the achieved continuity of penetration exploitation produced results which were excellent for 1943. The forward tank brigades of its corps, overtaking the rifle units, swiftly made their way across the first defensive zone. The main forces of the tank corps broke through the second defensive zone without a halt and had reached a depth of 20-26 km by 1800 hours. It is true that the main forces of the 18th Tank Corps, due to the fact that the troops of the 53d Army had fallen behind, had to be deployed to repel enemy attacks from the east, which subsequently affected the assault on strongpoints in the enemy's army defensive zone. As a consequence of weak artillery support and employment only of frontal attack, they were unable to take these strongpoints, which led to certain failure to achieve the day's objective and affected offensive exploitation at operational depth. Thus in the Belgorod-Khar'kov Operation, on the main axis of advance they were able to break through the solidly defended tactical zone by the end of the first 24 hours and to reach the army defensive zone, although in a narrow sector. This created conditions for offensive exploitation to operational depth. But involvement of the 6th Tank Corps in frontal attacks to capture Tomarovka and the necessity of assisting the 53d Army of the Steppe Front and supporting the flank of the 5th Guards Tank Army against a threat of counterthrust by an enemy panzer division made it impossible to reach operational depth on 4 August. On that day the army defensive line was reached only by the 3d Mechanized Corps of the 1st Tank Army. It was not penetrated until 5 August.

Penetration of the army defensive zone, defeat in detail of the enemy's Tomarovka force, and offensive exploitation by the 27th and 40th armies, reinforced by three tank corps, opened up an operational breach in the enemy's defense on the Bogodukhov axis, to close which the enemy lacked sufficient forces. By evening on 7 August our forces' breakthrough frontage had widened to 120 km. The tank armies advanced to a depth of 100 km, and the combined-arms armies to 60-65 km.

Analysis of the breakthrough in the counteroffensive at Kursk indicates that significant changes took place in its preparation and execution. The numerical strength of the battle groups was increased, as were the troop densities and reliability of delivery of effective fire on the enemy. A deep tactical order of battle made it possible continuously to build up offensive power and to conduct penetration at an increasingly more rapid pace, with immediate development of tactical into operational penetration.

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The modes of penetrating a deliberate defense employed by the Soviet troops, whereby the defense was softened up with heavy artillery fire and airstrikes, while penetration was begun by rifle troops, with subsequent engagement of tank and mechanized combined units and formations, echelon by echelon, proved to be much more effective than the unoriginal method employed by the Hitlerite army, according to which penetration of the defense was assigned primarily to panzer corps, which would form armored spearheads. In Operation Citadel, for example, the 9th Army of Army Group Center, in penetrating a defense which had been in preparation for a period of 2.5-3 months, was able to penetrate only 12 km in seven days, while the 11th Guards Army of the Western Front was forced to penetrate a defense in which improvements had been in progress for more than a year. On the very first day of the offensive it broke through the main defensive zone, on the following day the entire tactical zone of defense, and opened a breach 25 km deep and 28 km wide. In seven days it advanced to a depth of 70 km, or 6 times deeper than the enemy had been able to penetrate.

On the southern flank of the Kursk salient penetration of our defense was being conducted by the enemy's 4th Panzer Army. In the first 24 hours it only broke through the main defensive zone, while the battle group of the Voronezh Front penetrated two zones. The 4th Panzer Army achieved this result only by the fourth day of the operation. By this time the troops of the Voronezh and Steppe fronts had opened an operational breach approximately 90 km deep and more than 100 km wide.

The majority of fronts taking part in the counteroffensive succeeded in opening up deep operational breaches, but an insufficiently rapid rate of advance at immediate operational depth prevented them from exploiting the breakthroughs without a halt, in order to link them up into a single front and interfront breakthrough, which would have provided optimal conditions for the troops to advance to operational depth and for development of a series of operational penetrations into a single strategic breakthrough.

Improvement of the art of penetration in general offensive exploitation in the course of a campaign. The actions of the 60th Army of the Central Front at the end of August 1943 are an instructive example of penetration of the defense in these conditions (Diagram 14).

Development of the Orel Operation led to the retreat of enemy troops opposite the Bryansk and right side of the Central fronts to defensive position Hagen, which contained three to four trench lines and a large number of solid weapon emplacements. The front situation remained unchanged ahead of the 60th Army. The enemy's defense opposite this army had been in preparation since March 1943 and was more strongly fortified than the defense opposite the front's other armies.

On 16 August Hq SHC, having made the decision to launch a general offensive, assigned to the Central Front the mission of attacking in the general direction of Sevsik-Mikhaylovskiy Farm, and subsequently toward Kiev. The main force grouping of the Central Front, consisting of the 48th, 65th, and 2d Tank armies, was to penetrate the defense in a 25 km sector and, exploiting, cross the Desna River without a halt. The 60th Army was to penetrate in a separate sector 10 km wide, at a distance of 15 km from the sector of the front's main force grouping.

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Ten days were allocated for preparing for the operation. Preparations for the attack on the front's main axis were conducted hastily and without strict observance of concealment, camouflage and deception measures. In addition, in connection with postponement of the timetable of the offensive, the force grouping which was standing in attack position for the offensive was for five days in sight of the enemy, who determined the front's main axis of advance and redeployed from less threatened sectors the main forces of the 2d Army -- five of eight divisions.⁴⁰

The enemy's defensive front in the zone of the 60th Army proved to be considerably weakened. In the sector where penetration was to be accomplished, somewhat more than a regiment-size enemy force was defending, and most of its subunits had been stretched out along the forward edge of the battle area. The commanding general of the army deployed in the breakthrough sector the 24th Rifle Corps, two tank brigades, a breakthrough artillery division, and army artillery. This provided only moderate tactical densities: 2.1 rifle battalions, 6 tanks, and 90 guns and mortars per kilometer of frontage.⁴¹

In preparing for the operation, the commanding general of the army took measures to achieve undetected concentration of troops. His staff worked out and executed a plan of concealment, camouflage, deception and disinformation measures, which included feinting actions on the army's left flank in order to give the enemy the impression that preparations were being made for an offensive in that sector.⁴²

The troops of the Central Front commenced the offensive on 26 August. On the main axis the enemy, who was prepared to repel an attack, offered stubborn resistance to the troops of the 48th and 65th armies, resulting in failure to exploit to depth.

Within 24 hours the 60th Army had broken through the main defensive zone and had advanced to the second zone. On the morning of the second day the army's support echelon was engaged -- the 17th Guards Rifle Corps and the 9th Tank Corps, which had been placed at the disposal of the army commander. In spite of the limited capabilities of these combined units, which had taken casualties in preceding defensive engagements, the troops of the 60th Army succeeded in quickly breaking through the second defensive zone and reaching operational depth, where the enemy no longer had reserves.

The commanding general of the front, taking advantage of the successful advance of the 60th army, redeployed the 13th, 2d Tank and 61st armies into its zone.⁴³ Within five days the breakthrough gap had been widened to 100 km and depth of penetration had reached 60 km. Thus success in breaking through the enemy's front was determined not only by the power of the offensive thrust but also by skill, that is, an unexpected attack into a vulnerable point with subsequent buildup of efforts by engaging the support echelon and troops redeployed from other sectors.

Fearing a flank attack in the southern and southwestern sectors, the enemy began withdrawing his troops opposite the Voronezh Front from the Sumy area. Advance of the Voronezh and Steppe fronts in turn presented a threat of deep envelopment of the strong enemy force in the Donbass.

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The troops of the Southern Front broke through a deliberate defense on the Mius River and, attacking the troops of the German 6th Army in the rear, defeated them in detail, which sharply weakened the enemy's southern flank.

The stability of the enemy's strategic front was weakening day by day. The German-fascist command authorities, realizing that it was impossible to hold the Left-Bank Ukraine, hastened to withdraw their troops beyond the Dnieper, in order to prevent their total defeat.

In order to disrupt the enemy's strategic front and to accomplish a hasty crossing of the Dnieper, the Soviet command authorities reinforced the troops of the Central, Voronezh and Steppe fronts with three combined-arms armies and a tank army. The pace of pursuit of the enemy was stepped up. On the tactical approaches to the Dnieper several gaps were formed in the enemy's front, exploitation in which would make it possible to achieve strategic penetration. But the wide Dnieper lay in the path of the Soviet forces. It delayed their advance by 6-8 days, which enabled the enemy to set up a defensive front beyond the river and to avoid strategic penetration.

One of the reasons why strategic penetration was not achieved on the far approaches to the Dnieper is the following: during the fighting on the Kursk salient the tank armies had sustained heavy losses and were unable to chop up the enemy's front so as to beat the enemy to the river and envelop large forces on its left bank. But nevertheless, even in these unfavorable conditions, our troops succeeded in seizing a number of bridgeheads on the right bank of the Dnieper, thus thwarting the enemy's plan to establish an impregnable eastern wall.

The experience in penetrating a static defense which was amassed in the course of the summer offensive of 1943 was vividly embodied in the Kiev offensive operation. The general plan of the operation called for an offensive thrust by the troops of the 38th, 60th, and 3d Guards Tank armies and the 1st Guards Cavalry Corps from the Lyutezhskiy bridgehead in a southwesterly direction (Diagram 15). The 3d Guards Tank Army and the 1st Guards Cavalry Corps comprised the front's mobile group, which was to enter the gap on the second day of the operation in the zone of the 38th Army.

The 38th Army contained 4 rifle corps and was reinforced by the 5th Tank and 7th Artillery Corps. The 60th Army was given a breakthrough artillery division and other reinforcing units.

Defending opposite them were 12 infantry and 2 panzer divisions from the 30 divisions opposing the First Ukrainian Front, that is, almost half their strength. This enabled the enemy to have a division every 4-5 km and 18-40 guns per kilometer of defense frontage, which consisted of a system of powerful strongpoints linked by trenches. The depth of the defense was 14-15 km.

The armies were disposed in two echelons. In the forward echelon the 38th army would be attacking with 2 rifle corps reinforced by 2 tank brigades of a tank corps and an independent tank regiment, and in the support echelon -- also 2 rifle corps. In addition, a mobile group was formed in the army of the remaining forces of the 5th Tank Corps. The powerful attack echelon and army mobile group were to

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penetrate the enemy's tactical zone of defense, and the army's support echelon and front mobile group would be utilized for offensive exploitation to operational depth.

Three rifle corps and a rifle division were advancing in the 60th Army's forward echelon, and 2 rifle divisions and a tank brigade in the support echelon.

In order to establish high troop densities, the commanding generals of the armies narrowed the breakthrough sectors to the maximum possible extent. In the 38th Army it was 6 km, and 13 km in the 60th. In these sectors 2 rifle corps advanced in the forward operational echelon, supported by the bulk of the artillery. This made it possible to establish high troop densities in the 38th Army, comprising 9 battalions, 380 guns and mortars, and approximately 20 close-support tanks (including the army mobile group) per kilometer of breakthrough sector. Operational density of tanks amounted to 70 tanks and self-propelled guns. In the breakthrough sector of the 50th Rifle Corps artillery density ran 416 guns and mortars per kilometer. This was the highest artillery density achieved up to this time in the offensive operations of the Great Patriotic War.⁴⁴

Troop densities were much lower in the 60th Army. While they were almost equal in infantry, in artillery on the main axis they comprised only 74 guns and mortars per kilometer of frontage.⁴⁵ Overall density of tanks on the main axis was only 10-12 per kilometer.

The armies' offensive was supported by all forces of the 2d Air Army.

Decisive massing of personnel and weapons made it possible to achieve a substantial superiority over the enemy, which in the 38th Army's breakthrough sector was 3:1 in infantry, 4.5:1 in artillery, and 9:1 in tanks.⁴⁶

Gaining the element of surprise was also of considerable importance. Preparations for the breakthrough proceeded with strict observance of camouflage, concealment and deception measures. Redeployment of the 3d Guards Tank Army and the 7th Breakthrough Artillery Corps from the Bukrinskiy to the Lyutezhskiy bridgehead, which ensured the element of offensive surprise, was executed skillfully. On the eve of this offensive drive the 27th and 40th armies were to attack from the Bukrinskiy bridgehead, diverting attention to themselves and immobilizing the enemy's forces.

Penetration of the enemy's defense began on 3 November with heavy artillery preparation lasting 40 minutes. No preliminary airstrike sorties were flown due to dense fog. The effectiveness of artillery preparation was so great that infantry and tanks advanced unopposed to a depth of 2 km. Only a few batteries of the enemy's numerous artillery were able to open fire.

The enemy, seeing that our troops were threatening to break through to Kiev, which was only 10 kilometers away, began hastily moving reserves up to the breakthrough sector. That afternoon the 8th Panzer Division appeared opposite the 60th Army, and the 7th Panzer and 20th Motorized divisions in the zone of 38th Army. This delayed the army's advance, but nevertheless by evening the troops had advanced to a depth of 7-12 km.

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At 2030 hours on 3 November Hq SHC, in a telegram addressed to the commanding general of the front, demanded that the initiated operation "not be allowed to drag out, since each additional day merely gives an advantage to the enemy, enabling him to concentrate his forces in this sector, utilizing good roads, while on our side of the front the enemy-demolished roads complicate and limit maneuver." Hq SHC ordered that roads leading to Kiev be cut, and that the city of Kiev be captured no later than 5-6 November. "Make sacrifices to accomplish this mission, bearing in mind that these losses will be many times fewer than those which will occur if the operation drags on."

The front's troops resumed the offensive at 1000 hours on 4 November. The enemy met the troops of the 38th Army with counterattacks. Engagement of the army's mobile group, followed by the 3d Guards Tank Army made it possible to achieve a break in the penetration effort and to advance to a depth of from 3 to 5-6 km. The breakthrough was completed that night, when the 3d Guards Tank Army, supported by combined units of the 38th Army, attacked with headlights on. This stunned the enemy, and he began a hasty retreat. Exploiting, the armies' combined units cut the Zhitomir highway, which ensured the prompt liberation of Kiev.

On 5 November the 60th Army also completed the breakthrough. Kiev was liberated the following day. The front's troops had penetrated 150 km by the end of the operation. They had succeeded in establishing a bridgehead of strategic significance on the Dnieper, which played a decisive role in the liberation of the Right-Bank Ukraine.

* * *

In the summer-fall campaign of 1943 the Soviet forces had the task of penetrating a static defense in depth, which was highly stable. Breaking open a gap in such a defense required the forming of large battle groups, high troop densities, and a 6-10-fold superiority over the enemy in the breakthrough sectors, as well as thorough organization of the combat operations of the troops participating in the penetration.

An important area in development of the art of penetration was a steadily increasing massing of men and weapons in the selected sectors. In the first period of the war penetration in one sector was as a rule accomplished by the forces of a single army, containing 5-7 divisions, while in the second period, especially in the summer-fall campaign of 1943, for the most part the efforts of 2-3 combined-arms armies (15-20 divisions), 1-2 tank armies (or 2-3 tank corps), as much as a breakthrough artillery corps, with the support of an air army, were concentrated in a single breakthrough sector or more than one sector located close to one another. This quantity of men and weapons provided the required superiority over the enemy and high troop densities, which made it possible to deliver massive, effective fire on the enemy's defense and sequentially to build up efforts not only in the course of penetration but during exploitation to considerable depth.

In the summer-fall campaign of 1943, just as in the second period of the war as a whole, the art of achieving the element of surprise experienced considerable development -- a very important factor in penetrating a deliberate enemy defense.

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The task of deception and dissemination of false information was extremely successfully performed by Hq SHC. Achievement of the element of surprise at the front echelon also became an essential element in planning and preparing for an offensive operation.

Employment of tactical and operational echelons which ensured sequential buildup of efforts, maintaining superiority over the enemy and increasing the rate of penetration as troops advanced deep into the enemy's defense was specified and defined in the course of penetration. An important role was played by mobile groups of armies and fronts, engagement of which was accomplished in part or in full when the attacking troops reached the main artillery position area for completing penetration of the main defensive zone and assault of the enemy's second defensive zone without a halt.

In the summer and fall of 1943 the art of developing tactical into operational penetration in conditions where the enemy had shifted to a static defense in depth was perfected. It was achieved by engaging the main forces of tank (mechanized) corps and tank armies and their actions separated from the combined-arms large units and formations which, engaging in offensive exploitation, would increase the rate of advance, seeking to move the battle front as rapidly as possible to operational depth.

An increase in the combat power of battle groups, troop densities, and greater skill in organizing and executing penetration made it possible to increase the number of successful breakthroughs from 50 percent in the first period of the war to 70 percent in the second. The acquired combat experience was utilized and enlarged in the third period of the war.

FOOTNOTES

1. See "Istoriya vtoroy mirovoy voyny" [History of World War II], Vol 6, pp 45, 48.
2. Table prepared on the basis of TsAMO [Central Archives of the Ministry of Defense] Materials, Fund 331, List 5041, File 31, Sheet 16; Fund 375, List 5113, File 122, sheets 15-34.
3. TsAMO SSSR, Fund 335, List 5113, File 124, p 13.
4. Ibid., Fund 242, List 6850, File 10, Sheet 240; File 5, Sheet 184; Fund 227, List 140946, File 1, sheets 1, 2; Fund 266, List 271, File 19, Sheet 18.
5. Cited in K. S. Moskaleno, "Na yugo-zapadnom napravlenii 1941-1943" [In the Southwestern Sector, 1941-1943], second edition, Book 1, Moscow, Nauka, 1973, pp 383, 384.
6. See "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne 1941-1945" [Operations of the Soviet Armed Forces in the Great Patriotic War, 1941-1945], Vol 2, Moscow, Voenizdat, 1958, page 75.
7. See "Istoriya vtoroy...", op. cit., Vol 6, page 78.

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8. TsAMO SSSR, Fund 422, List 12568, File 20, Sheet 64.
9. See "Velikaya pobeda na Volge" [Great Victory on the Volga], Moscow, Voenizdat, 1965, page 455.
10. TsAMO SSSR, Fund 226, List 366, File 16, sheets 176-198.
11. See "Istoriya vtoroy...", op. cit., Vol 6, pp 110, 111.
12. See "Operatsii Sovetskikh...", op. cit., Vol 2, page 113.
13. Ibid.
14. See "Sovetskaya artilleriya v Velikoy Otechestvennoy voyne" [Soviet Artillery in the Great Patriotic War], Moscow, Voenizdat, 1960, page 185.
15. TsAMO SSSR, Fund 208, List 2511, File 1467, sheets 11, 12.
16. Ibid., List 2513, File 1156, sheets 265, 266.
17. Ibid., Fund 213, List 2002, File 179, Sheet 41.
18. "Sovershenno sekretno! Tol'ko dlya komandovaniya!" [Top Secret! For Command Authorities Only!], Moscow, Nauka, 1967, page 458.
19. Ibid., pp 499, 500.
20. See "Istoriya vtoroy...", op. cit., Vol 7, page 144.
21. See "Sovetskaya artilleriya...", op. cit., page 245.
22. See VOYEENO-ISTORICHESKIY ZHURNAL, No 7, 1968, page 88.
23. See "Sovetskiye voyenno-vozdushnyye sily v Velikoy Otechestvennoy voyne, 1941-1945 gg." [Soviet Air Forces in the Great Patriotic War, 1941-1945], Moscow, Voenizdat, 1968, pp 186-190.
24. See "Inzhenernyye voyska v boyakh za Sovetskuyu Rodinu" [Engineer Troops in Battles for the Soviet Homeland], Moscow, Voenizdat, 1970, page 166.
25. See VOYENNO-ISTORICHESKIY ZHURNAL, No 1, 1971, page 20.
26. Ibid., page 22.
27. TsAMO SSSR, Fund 666, List 225565, File 2, Sheet 197.
28. Ibid., Fund 202, List 5, File 1434, Sheet 1.
29. See G. A. Koltunov and B. G. Solov'yev, "Kurskaya bitva" [Battle of Kursk], Moscow, Voenizdat, 1970, page 215.

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30. K. K. Rokossovskiy, "Soldatskiy dolg" [Soldier's Duty], Moscow, Voenizdat, 1968, pp 227, 228.
31. See "Boyevoy opyt bronetankovykh i mekhanizirovannykh voysk v Velikoy Otechestvennoy voyne" [Combat Experience of Armored and Mechanized Troops in the Great Patriotic War], Vol 3, Moscow, Voenizdat, 1944, pp 46-60.
32. Ibid., pp 63-68.
33. See VOYENNO-ISTORICHESKIY ZHURNAL, No 7, 1963, page 94.
34. S. M. Shtemenko, "General'nyy shtab v gody voyny" [The General Staff in the War Years], Moscow, Voenizdat, 1968, page 172.
35. See "Boyevoy opyt...", op. cit., Vol 3, page 14.
36. Ibid., pp 16, 17.
37. Ibid., page 41.
38. D. Rokossovskiy, op. cit., page 228.
39. TsAMO SSSR, Fund 203, List 51354, File 3, Sheet 2.
40. See "Operatsii Sovetskikh...", op. cit., Vol 2, page 351.
41. See P. G. Kuznetsov, "General Chernyakhovskiy," Moscow, Voenizdat, 1969, page 111.
42. TsAMO SSSR, Fund 301, List 14950a, File 4.
43. See Rokossovskiy, op. cit., page 232.
44. See VOYENNO-ISTORICHESKIY ZHURNAL, No 11, 1963, page 9.
45. TsAMO SSSR, Fund 417, List 10501, File 4, Sheets 208, 209.
46. See "Operatsii Sovetskikh...", op. cit., Vol 2, page 384.

Chapter Three. IMPROVEMENT IN THE FORMS AND MODES OF PENETRATION IN THE
THIRD PERIOD OF THE WAR

1. Penetration in the Operations of the 1944 Winter Campaign

As the 1944 winter campaign began, the military-political situation was characterized by further strengthening of the economic, political and military might of the Soviet Union. At the same time the steadily increasing scale of offensive operations and stubborn enemy resistance were causing an increasingly larger expenditure of materiel, a rate of consumption which our industry, in the absence of a lull in military actions on the front, was unable to cover. At the end of 1943 and beginning of 1944, for example, our industry was producing 160,000 tons of ammunition per month. But the consumption of a single advancing front was 40,000 tons. In other words, Soviet industry was capable of supplying from 4 to 5 active fronts, and yet there were 12 of them. There were also difficulties in supplying the troops with fuel and lubricants. Continuous combat operations in the gigantic offensive in the summer and fall of 1943 resulted in considerable casualties and equipment losses. Many divisions needed rest and time for replenishment and combat training.

The autumn season of bad roads deteriorated lines of communication and worsened airfield basing and the capability of extensive maneuver during the conduct of operations.

All these and other situation conditions imperatively demanded a breather for the troops and time to amass supplies, to bring units up to strength, to set up rear services, and for other needs. Crushing defeat of the enemy in the summer-fall campaign, however, created certain preconditions for successful continuation of the offensive. Many enemy divisions, especially in the southwestern sector, were exhausted, operational reserves were chewed up, while the enemy had virtually no strategic reserves, since there were only 8.5 divisions in the strategic reserve on the Eastern Front, and these reserves were under strength.

Continuation of the offensive without a pause in operations would make it possible to thwart the enemy's plans to stabilize the Eastern Front on a line running along the Dnieper and to liberate a substantial portion of Soviet territory by the beginning of spring planting. Reaching the borders of the USSR would make it possible to shift military operations onto the soil of Germany's satellites, which would force them to seek withdrawal from the war.

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A careful analysis of the complex strategic situation existing at the end of 1943 enabled Hq SHC to see realistic possibilities of dealing the enemy a powerful blow in the winter of 1944 without a pause between campaigns. Implementation of these possibilities, however, was a complex matter and demanded a number of revisions in operation plans, missions of the fronts, and modes of conduct of the offensive, especially penetration.

Penetration of the enemy's strategic front in the winter campaign was to be accomplished in the Southwestern Sector. In addition to the political and economic objectives of the planned operations, also taken into account was the fact that in this sector the enemy did not have a well prepared defense disposed in depth, while the Soviet Army had an advantageous configuration of front and a number of large bridgeheads on the Dnieper. The main forces of the Soviet Army were also positioned here, which made it possible to launch an offensive immediately, without strategic redeployment, thus without giving the enemy time to establish a solid defense, to redeploy his forces and rehabilitate previously routed units and combined units. In addition to an offensive in the Right-Bank Ukraine, aggressive missions were also assigned to the fronts operating in the western and northwestern strategic sectors.

Specific features of penetration in the operations in the Right-Bank Ukraine. The strategic operation to liberate the Right-Bank Ukraine was conducted by the troops of four fronts in two stages. The first stage ran from 24 December 1943 to 29 February 1944, as a result of which the enemy's strategic defense in the southwestern sector was shattered; the second stage ran from the beginning of March to 17 April 1944, when the Ukrainian Front accomplished a strategic breakthrough and advanced through the Western Ukraine and to the Romanian border.

Soviet forces in the Right-Bank Ukraine were opposed by a powerful enemy force grouping, which totaled 91 divisions, including 18 panzer and 4 motorized divisions, 1.2 million officers and men, 16,800 guns, 2,200 tanks and assault guns, and 1,460 aircraft.¹ This enabled the enemy to establish very high operational troop densities -- 13 km per division.

At the first stage all Ukrainian fronts were employed in the battle to liberate the Right-Bank Ukraine. The 1st Ukrainian Division was to mount the Zhitomir-Berdichev Operation, the Second Ukrainian Front -- the Kirovograd Operation, and the Third and Fourth Ukrainian fronts -- the Nikopol'-Krivoy Rog Operation. The most characteristic traits and features of preparation for and execution of penetration in these situation conditions were displayed in the Zhitomir-Berdichev Operation, which ran from 24 December 1943 to 15 January 1944. Initially the front contained seven combined-arms armies, two tank armies and one air army. It totaled more than 450,000 men, 5,830 guns and mortars of 76 mm and larger, 1,100 tanks and self-propelled guns, and 750 aircraft.

The forces of this front were opposed by an enemy force totaling 30 divisions, including 8 panzer divisions and 1 motorized division. It contained approximately 300,000 men, 600 tanks and assault guns, approximately 3,500 guns and mortars, and 500 aircraft.² Consequently the troops of this front enjoyed a 1.5:1 superiority over the enemy in personnel, 1.6:1 in artillery, 1.8:1 in tanks, and 1.5:1 in aircraft.

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Preparation for the breakthrough were conducted for a period of 9 days, immediately after repelling the enemy counteroffensive in the Kiev sector.

The general plan of the operation called for launching four cleaving attacks in a 200 kilometer zone, with the front's zone of action extending a total of 490 km (Diagram 16). The main attack was to be mounted on the Brusilov-Berdichev axis by the forces of the 1st Guards, 18th and 38th Combined Arms armies, the 1st and 3d Guards Tank armies. The following subsidiary attacks were to be mounted: to the right of the main attack -- by the forces of the 60th Army, reinforced by two tank corps, in the direction of Shepetovka; to the left -- by the adjacent flanks of the 40th and 27th armies, in the direction of Khristinovka, where they were to link up with the troops of the Second Ukrainian Front and encircle the enemy force defending the Kanev salient. On the northern side of the front, the 13th Army was to attack with the forces of 2 divisions and a tank corps.

Thus all seven of the front's combined-arms armies were being utilized to accomplish the breakthrough. A fairly strong force grouping was established on each axis, with a particularly strong force (30 rifle divisions, 4 tank and 2 mechanized corps) on the main axis of advance.

Although the enemy's defense was shallow and of a focal area type, and the battle groups were fairly strong, nevertheless the front's command authorities, in view of the experience of the preceding operations, assigned narrow breakthrough sectors in order to establish high troop densities in conditions of seriously understrength combined units: 18 km for the main force grouping, 15 km for the 60th Army, 10 km for the 40th and 27th armies, and only 4 km for the 13th Army.

The selected width of breakthrough sectors provided the requisite conditions for engaging the front's mobile groups and armies. At the same time the fact that the breakthrough sectors were close to one another would make it possible, when penetration of the tactical zone of defense had been achieved, and breakthroughs were widened toward the flanks, to join them into a single common breakthrough sector and to form a wide gap in the enemy's defense.

High operational densities were established as a result of skillful concentration of personnel and weapons in the breakthrough sectors: 2-3 km per division, approximately 180-200 guns and mortars, and more than 20 tanks and self-propelled guns per kilometer.³ Density of close-support tanks was light, however -- even on the main axis of advance, and then not in all divisions, it did not exceed 8-9 tanks and self-propelled guns per kilometer of breakthrough sector.

Initiation of the offensive was not to begin simultaneously on all axes, but sequentially -- initially on the main axis, subsequently, on the second day, on the left side of the front, and on the right side of the front on the third day. This would make it possible to employ air assets in massed numbers and more effectively on each of the axes, as well as to maneuver part of the RVGK artillery from the main axis to secondary axes.

Since the enemy's defense was shallow, it was decided to engage the mobile groups during penetration of the main defensive zone or after the rifle combined units captured it. Engagement of the mobile groups after shallow penetration was also due to

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the fact that densities of close-support tanks were low, and many of the rifle combined units were far below T/O strength.

By decision of the commanding general of the front, a uniform procedure of delivering artillery supporting fire was established in all armies. Artillery preparation was to run 90 minutes, while artillery support of the infantry and tank assault was to be conducted by the rolling-barrage method.

The air support plan called for striking enemy headquarters, rail junctions and reserves 48 hours before the operation commenced, while all ground-attack aircraft and bombers were to hit the enemy's tactical defense immediately prior to the assault. As penetration began, the assault by the main forces was to be supported with continuous delivery of fire on enemy strongpoints, and when the tank armies were engaged, the main air effort was to be directed toward supporting them.

Penetration of the enemy defense on the main axis of advance commenced on the morning of 24 December 1943. Actions by the main forces were preceded by reconnaissance in force by the forward battalion. A specific feature of this activity lay in the fact that it was conducted not on the eve of a general offensive, as had generally been the practice up to that time, but directly on the day of the offensive, a few hours before it commenced, which not only eliminated predictable routine in the actions of the troops, but also deprived the enemy of the opportunity to take any measures to strengthen his defense. In addition, this had a certain psychological effect. In case the reconnaissance in force was repelled, the enemy could assume that the offensive, just as had been the case in the past, would not begin in the following day; he would lower his guard, expecting a lull of almost 24 hours.

The reconnaissance in force was followed by heavy artillery preparation and air-strikes. Launching the attack, the troops of the front's main force grouping quickly captured enemy strongpoints and centers of resistance in the first position and assaulted the second position without a halt. Here the fighting took on a more savage character.

In order to complete penetration of the enemy's tactical defense as quickly as possible and to break through to operational depth, both tank armies were engaged at midday: the 3d Guards in the zone of the 18th Army, and the 1st Tank Army in the zone of the 38th Army. As a result of their simultaneous attack, enemy resistance was crushed, and penetration of the tactical zone of defense was completed by the evening of this short December day. The tank armies had advanced to a depth of 15-20 km, and the combined-arms armies -- to 10 km.

On the following day, in spite of a sharp deterioration in the weather (it had started raining), which limited employment of air and made ground troops actions more difficult, the combined units of the battle group were successfully advancing. That same day the troops of the 40th and 27th armies commenced the offensive. By evening the breakthrough had been widened to 80 km in frontage and to 20-30 km in depth. Conditions had been created for operational pursuit of the enemy.

On the third day of the operation, when the enemy's operational defense was severely battered, and the enemy had begun moving up reserves to the threatened sector,

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the weaker forces of the right side of the front commenced to attack. The 60th Army was particularly successful. In the course of the day its troops advanced to a depth of 25 km. Forces were also successfully advancing on the other axes.

Thus penetration of the enemy's tactical zone of defense in all four sectors was accomplished in the span of a single day, while by the end of the third day of the operation all breakthroughs were linked up into a single gap 200 km wide, and the armies proceeded to engage in pursuit of the enemy along a wide front. With their offensive the troops of the First Ukrainian Front, enveloping the enemy's Kanev force, had created realistic preconditions for its encirclement and annihilation, which made it possible to open up a substantial gap in the enemy's operational defense, exploitation in which could lead to a strategic breakthrough. It was up to the Second Ukrainian Front.

A somewhat different form of operational breakthrough was selected on the Second Ukrainian Front. Two attacks, launched south and north of Kirovograd, were to end in encirclement of the enemy, after which drives were to be launched in the direction of Khristinovka, toward the troops of the First Ukrainian Front and toward Pervomaysk. The armies of the right side of the front were to execute independent breakthroughs with the objective of splitting the enemy's encircled Kanev force (Diagram 17).

The Third and Fourth Ukrainian fronts were planning three army thrusts each for conduct of the Nikopol'-Krivoy Rog Operation.

In contrast to the First Ukrainian Front, the battle groups which were to mount the Kirovograd and Nikopol'-Krivoy Rog operations were much weaker, which affected the troop densities established in the breakthrough sectors. In the breakthrough sectors of the battle groups of the Second Ukrainian Front, for example, the greatest artillery density was 120, while average density was 50-60 guns and mortars per kilometer of breakthrough sector. Firepower was diminished additionally by the fact that when the operation commenced the front was short on ammunition -- with 0.6-1.1 basic combat load, as a consequence of which only 0.6 basic combat load was allocated for artillery preparation, and 0.4 basic load for close support of the assault phase. Airstrikes could not compensate for the insufficient artillery fire. There was little air available. In addition, the weather did not favor employment of air.

Infantry and tank densities in the combined units were also low, due to a severe shortage of men and equipment.

Although the enemy's defense was not particularly firm, the first defensive position was quite stable, which required heavy delivery of fire. With low artillery densities and limited ammunition availability, however, it proved impossible to deliver sufficiently effective fire, which affected penetration and the results of the operations as a whole.

The troops of the Second Ukrainian Front commenced the operation on 5 January. The enemy proved to be poorly neutralized in the breakthrough sector of the battle group south of Kirovograd. The enemy had spotted our offensive preparations, and he had well protected personnel and weapons from artillery fire. When the assault

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phase began, the enemy offered fierce resistance. Stubborn attacks by our divisions, one after the other, were unsuccessful. The lack of close-support tanks and air support was having its effect.

In these conditions the commanding general of the front ordered the 5th Guards Tank Army to engage, with the mission of breaking through the enemy defense together with infantry, and accomplishing the day's objective. The tank army had 238 tanks and self-propelled guns, and was engaged in two echelons: the 29th and 28th Tank Corps in the first, and the 8th Mechanized Corps in the second. The tank corps also advanced slowly, however, encountering an organized enemy defense, saturated with tanks and particularly antitank artillery. By evening the joint efforts of the combined-arms and tank large units had succeeded in completing penetration only of the main defensive zone.

Penetration was developing differently on the axis of advance of the northern battle group. The enemy, learning of the concentration of the 5th Tank Army south of Kirovograd, failed to react to the reconnaissance in force in the zone of the northern battle group and did not beef up its combat dispositions opposite it. At 0900 hours infantry, supported by a rolling barrage, launched an assault. In the zone of the 53d army the 5th Guards Mechanized Corps commenced the attack simultaneously with it. At 1100 hours, following penetration of the first position, the 7th Mechanized Corps, containing only 41 tanks, engaged in the zone of the 5th Guards Army. This offensive thrust by the two armies, reinforced by two tank corps, made it possible to open a gap in the defense 18 km wide during the first hours, a gap which the enemy was unable to close with tactical reserves, while his operational reserves were positioned further south. The tank corps penetrated the second position, and subsequently the entire main defensive zone. By evening the 7th Mechanized Corps had driven to a depth of 24 km.

The commanding general of the front had transferred the 8th Mechanized Corps here from the southern force grouping with the mission of offensive exploitation. In spite of the reinforcement, the northern force was unable to reach operational depth: the enemy, in the belief that the main attack was taking place north of Kirovograd, moved his panzer units there.

Weakening of the enemy's defense south of Kirovograd enabled the 7th Guards Army, together with the 5th Guards Tank Army, to break through the second zone and to advance to a depth of 20 km by evening, while forward units reached the southeastern edge of Kirovograd. On the second day the southern force advanced 6-7 km and linked up with the northern force. Penetration reached 70 km in frontage and 30 km in depth. The city of Kirovograd was liberated on the morning of 8 January.

The right-flank 52d and 4th Guards armies advanced 20-30 km in their sectors.

Although the results of the Kirovograd Operation were substantial, the troops of the Second Ukrainian Front failed to break through to operational depth, to reach Khristinovka, and there to close the ring of encirclement behind the enemy's Kanev force.

Penetration on the Third and Fourth Ukrainian fronts failed due to insufficient numerical strength of the battle groups.

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The course of the first operations in the Right-Bank Ukraine showed that the enemy still possessed sufficient forces to maintain the stability of his strategic front. The enemy could be crushed only by launching a number of deep, cleaving offensive drives, as called for by the initial plans, for which the front lacked sufficient forces, or by initially mounting local offensive operations with available forces, in the course of which the enemy's defense could be shaken up, followed by deep offensive thrusts, smashing the enemy's front and accomplishing the missions specified for the winter campaign. Hq SHC, amassing forces for the summer-fall campaign of 1944, chose the second way, for which three operations were designated: the Korsun'-Shevchenkivskiy -- by the forces of the First and Second Ukrainian fronts; the Rovno-Lutsk -- on the right side of the First Ukrainian Front; and the Nikopol'-Krivoy Rog -- by the armies of the Third Ukrainian Front.

The Korsun'-Shevchenkivskiy Operation was the central and most effective operation (Diagram 18). The main objective of this operation was annihilation of the enemy's large Kanev force, which totaled nine divisions and a motorized brigade with numerous support weapons,⁴ comprising approximately 10 percent of the higher numerical strength of forces defending in the Right-Bank Ukraine. Their total annihilation would substantially weaken the enemy's forces and prevent him from establishing reserves by pulling back from the Kanev salient, and beefing up the most threatened sectors.

The German-fascist command authorities, endeavoring to hold the Korsun'-Shevchenkivskiy salient, which could serve as a bridgehead from which to launch an offensive, were hastening to establish a stable defense. In the course of a short period of time following establishment of this salient, the enemy succeeded in adapting the majority of towns and villages for defense, in digging emplacements, organizing a fire plan, and constructing field fortifications in places.

The main defensive zone opposite the troops of the Second Ukrainian Front was from 3 to 6 km deep and consisted of strong points and centers of resistance linked by trenches. Within strongpoints there was an elaborate network of fighting trenches. A second defensive zone was set up at a distance of 10-12 km from the forward edge of the battle area, but its construction was not completed by the commencement of our offensive. The enemy's defense opposite the First Ukrainian Front was more weakly fortified.

Preparations for the operation were conducted in a complex operational situation, in which the troops of the fronts had just completed the preceding operations, had expended a substantial quantity of men and equipment, and in a number of sectors were fighting heavy defensive engagements with large enemy forces, as the enemy still entertained hopes of reestablishing the integrity of the Eastern Wall. Considerable forces, especially of the First Ukrainian Front, were involved in the fighting against the counterthrusting enemy panzer divisions. Part of the forces of the front's 40th Army (the 136th Rifle Division, a regiment of the 167th Rifle Division, part of the forces of the 6th Motorized Rifle Brigade) were even fighting in a position of encirclement. This greatly complicated forming a front battle group.

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The ammunition situation was extremely critical. The principal artillery systems in the armies had from 0.7 to 1.5 basic combat loads.

Weather conditions were also unfavorable. A thaw had set in, the ice had broken up on small rivers and creeks, and the roads were in a deplorable state. The weather was overcast, which made it difficult to employ air.

Hq SHC's concept for the Korsun'-Shevchenkivskiy Operation called for adjacent sides of the First and Second Ukrainian fronts to drive toward one another in a pincer movement, to break through the enemy's defense at the base of the salient and, linking up in the Zvenigorodka-Shpola area, to envelop and destroy the defending enemy force.

Although defense at the base of the enemy's Kanev salient proved to be significantly weaker, the commanding generals of the fronts established fairly large battle groups for the conduct of this operation -- two combined-arms armies and one tank army each.

Operational densities and relative strengths in the fronts' breakthrough sectors are indicated in Table 7.

Table 7. Operational Densities and Relative Strengths in the Breakthrough Sectors in the Korsun'-Shevchenkivskiy Operation

Battle Group	Breakthrough Sector, km	Number of Divisions	Number of Tank (Mechanized) Corps	Km per Division	Guns and Mortars (76 mm and Larger) per km	Tanks per km	Relative Strengths		
							In Infantry	In Artillery	In Tanks
Battle group of the First Ukrainian Front	25* 15	6	2	2.5	80 (104)	10	2.5:1	3.3:1	5.0:1
Battle group of the Second Ukrainian Front	19	14	3	1.4	90 (117)	14.2	4.6:1	6.3:1	10.4:1

* The figure in the numerator was specified by Hq SHC, and in the denominator -- the number decided on by the commanding general of the front. The figures in parentheses include rocket artillery.

Proceeding from the character of the defense, it was to be neutralized not along the entire continuous breakthrough sector frontage but by centers of resistance and strongpoints. The plan of the commanding general of the 40th Army specified: "Since the enemy's defense is of a focal type, the frontage of suppressive fire will be reduced to half, which makes it possible to increase actual artillery density to 100-120 tubes per kilometer of suppressive-fire delivery area."⁵ Artillery fire was planned against the most important targets in the 27th Army as well.

Artillery preparation was to run 35 minutes in the First Ukrainian Front and 56 minutes in the Second Ukrainian Front, From 10 to 20 guns per kilometer of frontage

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were set up for direct fire, for knocking out important targets on the forward edge of the battle area. Support of the assault phase in the Second Ukrainian Front was to be by moving barrage in combination with successive fire concentration, and in the First Ukrainian Front -- only by successive fire concentration.

Both fronts devoted considerable attention to gaining the element of surprise. Toward this end, the battle group on the First Ukrainian Front was formed with minimal redeployments. On the Second Ukrainian Front, in addition to measures worked out in detail to achieve undetected concentration of troops in the breakthrough sector, preparations were made for an operation to deceive the enemy. It pursued the aim of convincing the enemy that preparations were being made for an attack on a previous axis, west of Kirovograd, in the zones of the 5th and 7th Guards armies. As Mar SU I. S. Konev notes, "phony tank and artillery concentration areas were established here, for example, phony gun positions, and movements of troops and equipment were simulated. All these measures as an aggregate greatly promoted the success of the operation."⁶

The troops of the Second Ukrainian Front commenced the attack on 24 January, with actions by reinforced forward battalions. Supported by artillery and small groups of ground-attack aircraft, they shattered the enemy's resistance at the forward edge of the battle area with a surprise assault, and by evening had advanced to a depth of 6 km along a 16 km front.⁷

In this situation it would have been expedient decisively to exploit the offensive success achieved by the forward battalions, by engaging the main forces of the front's battle group. The front's command authorities, however, would not alter the original operation plan and did not engage the main forces that day. As a result, the enemy had time to move forces to the breakthrough sector from other sectors.

On the morning of 25 January, following 10 minutes of preliminary bombardment, the main forces of the 4th Guards and 53d armies were engaged. They immediately encountered stubborn enemy resistance. The suppressive fire had proven insufficiently effective. Tactical air was not operating due to the bad weather.

It was necessary immediately to build up the efforts of the attacking troops. The armies and corps, however, disposed in a single echelon, lacked the personnel and weapons for this, and by 1400 hours the commanding general of the front engaged the 5th Guards Tank Army in a sector only 6 km wide. This army, working in close coordination with combined-arms large units of the 53d Army, completed penetration of the tactical zone of defense. By evening its forward-echelon corps (20th and 29th Tank Corps) had advanced to a depth of 18 km.

On the second day the armies' advance slowed, since they were forced to repel a number of counterattacks by units of the enemy's 14th and 3d Panzer divisions, which had hastily been moved to the breakthrough sector. On 27 January the enemy mounted counterthrusts from the south by 3 panzer divisions and from the north by 2 infantry divisions and a panzer division, and following fierce fighting succeeded in closing the gap which had formed in the defense. The 20th and 29th Tank Corps were cut off from the rest of the forces of the 5th Guards Tank Army.

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The commanding general of the front, estimating the situation, made a bold decision: the 20th and 29th Tank Corps would continue advancing toward Shpola and Zvenigorodka, where they would link up with the forces of the First Ukrainian Front; the 18th Tank and 5th Guards Cavalry corps would respectively engage in the zones of the 53d and 4th Guards armies, would crush the opposing enemy force in cooperation with them, and would exploit on the heels of the forward-echelon tank corps of the 5th Guards Tank Army.

The 20th and 29th Tank Corps captured the town of Shpola in a night battle, captured Zvenigorodka at 1300 hours on 29 January, and met the forward detachment of the 6th Tank Army, which had reached the town.

The troops of the 4th Guards Army and 53d Army, working in coordination with the 18th Tank and 5th Guards Cavalry Corps, on 28 through 30 January fought their way through the enemy's screen in the neck of the penetration, and swept forward in the direction of Shpola, simultaneously establishing an inner and outer perimeter of envelopment, which was in place by 2 February.

The troops of the First Ukrainian Front commenced the attack on 26 January. Fighting was of a stubborn character along the entire penetration frontage. The troops of the 40th Combined-Arms and 6th Tank armies encountered particularly strong enemy fire. By evening they had advanced only 2-5 km. The 6th Tank Army's losses totaled 59 tanks and self-propelled guns. Combined units of the 27th Army had succeeded in advancing 8-12 km that day.

On the second day the forces of the First Ukrainian Front, exploiting the successful advance of the 27th Army, advanced 10 km on the right flank and 25 km on the left flank of the breakthrough sector. The enemy's tactical defense was penetrated along the entire front. At 1300 hours on 28 January the forward detachment of the 6th Tank Army, which had been dispatched ahead, reached Zvenigorodka, where it linked up with the 20th Tank Corps of the 5th Guards Tank Army. The enemy's Kanev force was in a solid ring of encirclement. The rout of the enemy's Korsun'-Shevchenkovskiy force, completed by the evening of 17 February, greatly weakened the center of the strategic defense in the Right-Bank Ukraine. By successful execution of the Rovno-Lutsk and Nikopol'-Krivoy Rog operations, the Soviet forces had also succeeded in putting the defense in disarray on the flanks as well. We should note that in the Rovno-Lutsk Operation (Diagram 19) the command authorities of the 13th Army had skillfully utilized a gap in the enemy's defense in the Sarny area to penetrate to operational depth: two cavalry corps moved across forested-swampy terrain through this gap and attacked the enemy force from the rear. In this same operation the 13th Army's main forces accomplished penetration directly from an approach march. The difficulty of organizing coordination with this mode of penetration and difficulty in ensuring that the attacking forces reached the enemy's forward positions simultaneously led to a slow breakthrough. It was only a weakening of the enemy's operational defense by the unexpected drive by the cavalry corps deep into the enemy's rear which made it possible to complete penetration, to capture the Lutsk-Surazh-Rovno area, and to place the forces of the First Ukrainian Front into a threatening position vis-a-vis Army Group South.

Completion of the Korsun'-Shevchenkovskiy, Rovno-Lutsk, and Nikopol'-Krivoy Rog operations ended the first stage of the enemy's defeat in the Right-Bank Ukraine.

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Heavy losses had been inflicted on the enemy in almost 3 months of intensive fighting. The morale of the enemy troops was low, a fact which could not help but reflect in the stability of the defense, which proved weak in many sectors. All this created the requisite conditions for a decisive breakthrough of the enemy's strategic front from the Polesye to the Black Sea and complete liberation of the Right-Bank Ukraine. The spring season of bad roads was setting in, however, which in the opinion of the German command authorities would prevent the conduct of large-scale offensive operations.

The Soviet command authorities, estimating the situation, decided to utilize the opportunities which had risen and, in spite of the unfavorable climatic conditions, to execute with the forces of the First, Second, and Third Ukrainian fronts the second stage of the strategic operation to liberate the Right-Bank Ukraine.

The General Staff began planning the operation in February. "An analysis of the strategic situation at the front," writes A. M. Vasilevskiy, "the status of the enemy's troops, and our country's steadily growing resources gave the Supreme High Command reason to conclude that it was both possible and advisable to continue the offensive of the Ukrainian fronts without any lull, in order to split the German-fascist troops with simultaneous massive attacks on a wide front from the Polesye to the mouth of the Dnieper and, annihilating them piecemeal, to complete liberation of the Right-Bank Ukraine."⁸ In other words, this plan gave practical embodiment to those ideas on which planning of the offensive in the Right-Bank Ukraine in December 1943 were grounded (Diagram 20).

The First Ukrainian Front would mount the main attack in the direction of Proskurov, with the troops of the 13th, 60th and 1st Guards armies, the 3d Guards and 4th Tank armies, reinforced by the front's entire artillery. Each combined-arms army would penetrate the defense in a separate sector. In addition, two army thrusts would be executed on the left side of the front, in close coordination with the forces of the Second Ukrainian Front.

The Second Ukrainian Front would penetrate the defense in two sectors, mounting the main attack with the forces of the 27th, 52d, and 4th Guards Combined-Arms armies and the 2d and 5th Guards Tank armies. Two armies, with flanks adjacent to the sector containing the main axis of advance (40th and 53d), were assigned the mission of establishing on these flanks forces consisting of 5 rifle divisions each and, taking advantage of the breakthrough on the main axis, to mount attacks to support the front's battle group on the right and left, to enlarge the breakthrough sector toward the flanks, close up the enemy's defense opposite the frontage of their troops.

A subsidiary attack was to be launched 150 km from the main attack, by the adjacent flanks of the 5th and 7th Guards armies.

The Third Ukrainian Front was assigned the following mission: utilizing bridgeheads on the Ingulets River south of Krivoy Rog, launch a main attack with the forces of the 46th and 8th Guards armies, a mounted-mechanized group and tank corps in the direction of Novyy Bug. The forces of the right side of the front -- the 57th and 37th armies -- were to launch an attack with the objective of pinning down the left-flank combined units of the German 6th Army. The 6th Army and the 5th Assault Army

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were to advance in the direction of Bereznegovatoye and Snegirevka, with the mission of crushing the right-flank combined units of the German 6th Army, acting in coordination with the 8th Guards Army and the mounted-mechanized group. The 28th Army was assigned the mission of advancing along the right bank of Dnieper in the general direction of Kherson and Nikolayev.

Thus nine offensive thrusts were planned in this strategic operation, breaking through the defense in 14 sectors. The frontage of army breakthrough sectors ranged from 5 to 13 km. Breakthrough frontage was 25 km for the 60th Army, and 17 km for the 8th Guards Army. The breakthrough sector on the main axis of advance of the Second Ukrainian Front was 25 km wide.

We should note that while the strength of the First and Second Ukrainian fronts was adequate for a rapid breakthrough in several sectors, the Third Ukrainian Front would have difficulty penetrating in four sectors with its reduced strength, especially mobile forces, and short ammunition supply. It could have been reduced to two breakthrough sectors, which would allow better massing of personnel and weapons, and therefore more rapid penetration of the enemy's defense with fewer casualties. Enemy forces could be immobilized on the secondary axis, with the enemy possessing limited operational reserves and concentrating them for the most part opposite the First and Second Ukrainian fronts, by feigning preparations for an offensive, for it was quite sufficient to hold these forces for only 24 hours.

In spite of a serious shortage of combined units, high troop densities and considerable superiority over the enemy were established on many axes by concentrating the efforts of large battle groups in narrow sectors.

The commanding general of the front accomplished a large-scale redeployment of troops in conditions of the spring season of muddy roads, forming large force groupings, positioning them opposite a weak sector in the enemy's defense, and taking up a threatening position opposite the enemy's main force in the Right-Bank Ukraine. Combined units of the 60th and 1st Guards armies and part of the forces of the 18th Combined-Arms and 3d Guards Tank armies were shifted 80-120 km westward. The 4th Tank Army was moving out of the Kiev area, and would be executing a 300-kilometer march.

According to the plan of combat employment of artillery, artillery preparation was scheduled to run 45-56 minutes on the First and Second Ukrainian fronts, and 15-30 minutes on the Third Ukrainian Front. Support of the assault phase was provided by a moving barrage and sequential concentration of fire.

Airstrikes were to be delivered with the objective of destroying enemy aircraft on the ground, breaking up rail traffic on the main lines, and disrupting command, control and communications. During the period of tactical penetration and deep exploitation, supporting air was to destroy enemy weapons and troops ahead of the advancing forces, to provide the troops with cover against air attack, and to support engagement of mobile combined units into the gap. One division apiece of ground-attack aircraft and fighters were allocated to the tank armies for performing the latter mission.

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The principal mission of the engineer troops was to keep the troops moving across the muddy ground, especially in crossing the Goryn' and Gornyy Tikich rivers.

The tactical order of battle of the fronts and armies was for the most part single-echelon. But the front had strong mobile groups consisting of three tank armies, and the Third Ukrainian Front -- a mounted-mechanized group. The combined-arms armies kept one or two divisions in reserve. The corps were also disposed in a single echelon, and the divisions in two echelons. This arrangement proceeded from the fact that there was a serious shortage of combined units, that the enemy's defense was shallow and inadequately fortified, and was aimed at achieving a powerful initial thrust which, according to the concept of the front's command authorities, should ensure penetration of the enemy's entire tactical defense on the first day.

We should particularly discuss engagement of the mobile groups. The 3d and 4th Tank armies contained 730 tanks and self-propelled guns, while the 2d, 6th and 5th Guards Tank armies had about 600. They were all engaged at a shallow depth: the 4th and 3d Guards Tank armies at a depth of 6-8 km, right behind the 4th Tank Corps -- the 60th Army's exploitation echelon -- and the 2d and 5th Guards Tank armies at 1-1.5 km. The 1st Tank Army had been brought up to strength and was en route; it could be engaged in the course of the operation.

Building up the offensive drive by tank armies in the course of breaking through the main defensive zone made it possible to execute penetration without a halt, to penetrate at a rapid pace, and to bring the fighting to operational depth in short order.

Hq SHC and the command authorities of the Ukrainian fronts made a great effort to achieve the element of offensive surprise. The most important measure taken by Hq SHC was to designate a time for the operation to commence which the German-fascist command authorities considered impossible for the conduct of a large-scale operation. "We decided to exploit this unwarranted calculation," wrote Mar G. K. Zhukov, "and mount a number of crushing attacks on the enemy."⁹ In the zone of the 38th Army the command authorities of the First Ukrainian Front conducted extensive preparations for a large-scale offensive: activities included commander's reconnaissance, artillery ranging, phony concentration of a tank army and a rifle corps with support weapons and, finally, on 2 March -- a partial attack. Strict camouflage, concealment and deception procedures were adopted to ensure undetected execution of the redeployment. All this made it possible to keep the forthcoming operation secret for quite some time. Only 3 or 4 days before the offensive began did the enemy obtain certain information on the imminent attack by the forces of the First Ukrainian Front from the Shepetovka area. And although the enemy decided to move 5 panzer and motorized divisions as well as a brigade to the sector under threat, half of these forces had not yet reached that area when the front's forces launched the offensive. At the same time the transfer of large forces to the right side of the First Ukrainian Front weakened the enemy's operational defense opposite the Second Ukrainian Front, which facilitated penetration on the Uman' axis.

Effective camouflage, concealment and deception were organized on the Second and Third Ukrainian fronts, and troop redeployments along the front were reduced to a minimum.

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The troops of the First Ukrainian Front were the first to begin penetration, on 4 March, in conditions where the enemy, convinced that he would not be able to hold firmly to the threatened axis, undertook to withdraw his forces to depth. Artillery fire was delivered on the rear guards. Smashing their resistance, the troops of the 60th and 1st Guards armies were in control of the entire main defensive zone by noon. The tank armies which were engaged conducted offensive exploitation and advanced up to 30 km by evening, while the combined-arms armies advanced up to 15 km. The enemy's defense had essentially collapsed; there was now a possibility of reaching a line Ternopol'-Proskurov that night or the following day, to where enemy reserves were advancing, and to defeat them in detail without a halt. But the extremely muddy ground made it difficult even for the tank armies to move. In addition, the tanks of the 4th Tank Army were down to their emergency fuel reserve, since they had been only half-fueled when the penetration began.

Advancing along muddy roads and destroying the enemy in strong centers of resistance sited in large villages, on 5-10 March the main force approached a line running between Ternopol' and the Southern Bug, where the enemy was hastily setting up a new defensive line, on which the efforts of 10 panzer divisions and 6 infantry divisions were being concentrated. Attempts to break through this defensive line without a halt led only to the capture of bridgeheads and deep penetration of the enemy's defense by units of the 3d Guards Tank Army and 1st Guards Army.

In directives dated 12 March, Hq SHC assigned the First and Second Ukrainian fronts the mission of commencing a general offensive on 20-21 March, in the course of which they were to complete penetration of the enemy's operational defense, envelop the main forces of his 1st Panzer Army, and carry combat operations beyond the Dneestr.

Although the First Ukrainian Front had a week before launching the general offensive, the actual time which the armies could have for preparing for the offensive, in view of repelling enemy counterthrusts and strong counterattacks, did not exceed 3-5 days. This amount of time is very short in conditions of execution of complicated troop redeployments.

Organization and penetration of the enemy's operational defensive line were most instructive in the 1st Guards Army. This army contained 6 corps. Four corps were to be redeployed from the army's left to its right flank, a distance of 65 and 80 km, in order to attack a weak point west of Proskurov. Together with the corps of the 3d Guards Tank Army, they comprised a battle group, which was to penetrate the defense in a 14-km sector (Diagram 21).

The tank corps took up an attack position directly behind the rifle corps, so that they could engage when the strongpoints in the first position were breached, overtake the infantry at a depth of 5-6 km, and advance swiftly to operational depth. A mechanized corps and rifle corps -- the armies' support echelons -- were to engage on the second day with an exploitation mission.

The troops of the 1st Guards Army launched the attack at 1220 hours on 21 March, following 40 minutes of artillery preparation. Although the exhausted and neutralized enemy attempted to offer stubborn resistance, by 1500 hours the first position was completely overrun. The small Ploska River, flooded by the spring thaw, delayed the troops' advance. But by 1700 hours the enemy's entire operational defensive line was penetrated.

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On the following day the troops of both armies advanced 15-20 km and commenced pursuit.

Penetration was equally successful in the zone of the 60th Army, where the 1st and 4th Tank armies were engaged to exploit the breakthrough. Their advance to operational depth and their swift actions, especially those of the fresh 1st Tank Army, led to total disruption of the enemy's plans, an effort to withdraw his forces beyond the Dnestr. Army Group South was cut off, whereby its 4th Panzer Army was pushed westward and its 1st Panzer Army eastward, where it soon found itself in a state of operational envelopment.

The battle group of the Second Ukrainian Front launched an attack on 5 March. Aircraft were grounded by dense fog. Our attack took the enemy by surprise. The infantry and forward detachments of the tank armies, with artillery support, quickly smashed enemy resistance in the first defensive position. An important role in the breakthrough was played by close support guns, of which the armies had from 20 to 30 per km of frontage.

Following penetration of the first defensive position, the main forces of the 2d and 5th Guards Tank armies were engaged at a depth of up to 1.5 km from the enemy's forward position. By evening the 2d Tank Army had reached the Gornyy Tikich River, having advanced 14-16 km. In order to exploit this advance, the commanding general of the 27th Army engaged the 78th Rifle Division from his reserve. This enabled the troops of the 27th Army as well to reach the Gornyy Tikich River by that night.

Combat engineer units, assisted by the combat troops, had set up crossings by morning. Combined units of the 2d Tank Army crossed the river and proceeded to advance toward Uman', moving into the zone of the 52d Army. Soviet tanks appearing to the enemy's rear forced him to begin a hasty withdrawal in the zone of the 52d Army as well.

In order to exploit the advance of the 27th Army, the 6th Tank Army was engaged in its zone by orders of the commanding general of the front.

A somewhat less successful penetration was achieved in the zone of the 4th Guards Army, where the 5th Guards Tank Army was engaged.

In order to intensify the offensive drive, in the evening of 5 March and on the morning of 6 March the commander of the 4th Army sequentially engaged the 41st and 62d Guards Rifle divisions. This made it possible to complete on 6 March, through combined efforts with the 5th Guards Tank Army, breakthrough of the enemy's tactical zone of defense, to reach the Gornyy Tikich River, and to place forward units across the river on 7 March.

On 8 March, when the enemy's operational defense was shattered, the 5th and 7th Guards armies launched an attack. They successfully penetrated the defense and began offensive exploitation in the direction of Pervomaysk.

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The weather improved on the morning of 9 March, which enabled the 5th Air Army to fly a number of airstrikes on the enemy's forces and to assist the ground troops in their successful advance.

The enemy was forced to hasten the withdrawal. Soviet forces initiated pursuit. The troops advanced to a depth of approximately 70 km in 6 days, in conditions of muddy ground caused by the spring thaw. With the crossing of the Southern Bug, the way was opened up to the Soviet-Romanian border.

Penetration was somewhat more difficult on the Third Ukrainian Front. Low artillery densities, with very brief artillery preparation, made it impossible reliably to neutralize the enemy's defense; during the course of the day the enemy was offering stubborn resistance, especially in the villages. The Soviet advance began to slow by the evening of the first day. A mounted-mechanized group was engaged at 2130 hours at 6 March, in bad weather. Its attack took the enemy by surprise and predetermined penetration of the defense to full operational depth. On the morning of 8 March the mobile group captured the town of Novyy Bug. The front of the German 6th Army was split open.

The mighty drive southward and southwestward by the First and Second Ukrainian fronts, and development of the Bereznegovatoye-Snigirevka Operation of the Third Ukrainian Front into the Odessa Operation led to the forming of a strategic gap in the enemy's defense in the Southwestern Sector. Development of strategic pursuit here made it possible to liberate most of the Central and Western Ukraine, to advance to the Prut, and to reestablish part of the Soviet border.

* * *

The winter campaign of 1944 enriched Soviet art of warfare with experience in penetrating the enemy's defense in conditions of development of one campaign into another without a pause. A shortage of forces and a certain underestimate of the firmness of the enemy's defense in the Right-Bank Ukraine at the beginning of the campaign prevented Soviet forces from breaking through the defense with cleaving attacks along a wide front. Mounting a number of sequential operations along the front, the Ukrainian fronts shattered the enemy's operational defense and subsequently crushed the strategic front with deep, splitting attacks mounted in the difficult conditions of the spring thaw.

In the Right-Bank Ukraine more than 70 enemy divisions were routed, and the enemy's defense was penetrated in a zone 650 km wide and to a depth of 450-500 km. In order to restore the strategic defensive front along the Carpathian foothills and the lower reaches of the Dneestr River, the German-fascist command authorities were forced to transfer 40 divisions and 2 brigades from Germany, Western Europe, Romania, and Hungary.¹⁰

The operations to liberate the Right-Bank Ukraine were characterized by employment of diversified forms of operational penetration:

mounting a number of attacks with the aim of deeply splitting the defense and the enemy's force groupings (Zhitomir-Berdichev, Proskurov-Chernovtsy, and Uman'-Botosani operations);

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penetration in two sectors with exploitation along converging axes, with the objective of enveloping and annihilating enemy forces (Kirovograd, Korsun'-Shevchenkovskiy, Nikopol'-Krivoy Rog operations);

penetration by cavalry corps, exploiting a gap in the enemy's defense, and a frontal attack by combined-arms large units (Rovno-Lutsk Operation);

penetration in a number of sectors along a wide front, with the objective of breaking up the enemy's defense into separate parts, subsequently linking the breakthroughs into a single large penetration (Bereznegovatoye-Snigirevka and Odessa operations).

Such a great diversity of forms of operational penetration attests to the innovative approach of the Soviet command authorities in selecting forms of penetration taking into account assigned missions, grouping of forces and character of the enemy's defense, as well as the state and grouping of friendly forces.

Proceeding from the fact that as a rule the enemy's defense was shallow, was inadequately fortified, and was constructed for the most part as a system of centers of resistance and strongpoints, in the majority of front operations penetration was accomplished in 3-4 or more sectors. Of the nine operations, for example, the fronts penetrated as follows: in 2 sectors -- three operations; 3-4 or more sectors -- in six operations. The breakthrough sectors of the fronts on the main axis of advance ranged from 18 to 28 km, and usually the efforts of 2-3 combined-arms armies would be concentrated in these sectors. The width of army breakthrough sectors ranged 3.5-13 km, and as much as 17-25 km only in certain instances, when breaking through a weakened defense.

The tactical order of battle of the fronts, armies, and the majority of combined units and units involved a single echelon, since what was primarily needed to break through a shallow enemy defense was a strong initial drive. Such a tactical order of battle was also determined by the fact that all fronts in the Right-Bank Ukraine contained large tank combined units and formations. During an offensive in conditions of the muddy ground of the spring thaw, the absence of or a limited number of close-support tanks and diminished combat capabilities of rifle combined units, on each occasion they took part in completing penetration of the enemy's defense and subsequently were the lead force during pursuit.

In view of the fact that the tank troops were greatly under strength, front command authorities sought to concentrate on the main axis of advance the efforts of several tank armies, tank and mechanized corps, which made it possible to employ them in a massed fashion, to achieve decisive superiority over the enemy, rapidly to complete penetration of the enemy defense and to exploit to considerable depth.

When penetrating a focal-type defense, duration of artillery preparation usually did not exceed 60 minutes, while a rolling barrage was primarily used to support the infantry and tank assault. The difficult conditions of muddy roads caused by the spring thaw, which made a normal flow of ammunition to the artillery difficult, were also a factor. Artillery extensively employed direct fire, which made it possible to accomplish fire missions with moderate expenditure of rounds.

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In the course of the 1944 winter campaign the Soviet forces also gained experience in penetrating a strongly fortified enemy defense at Leningrad, Novgorod, and in the Crimea. Here narrow breakthrough sectors were assigned, running 12-14 km, in which the defense was penetrated as a rule by the forces of a single, full-strength combined-arms army, supported by considerable artillery and the bulk of the front's tactical air forces.

Penetration of a strongly fortified defense required greater artillery densities than was the case in the operations in the Right-Bank Ukraine, a much greater number of large caliber guns (122 mm and large) in the artillery groupings, which were also extensively employed for direct fire, prolonged artillery preparation for the assault, assignment in a number of instances of a preliminary period of artillery bombardment to demolish specific targets, a considerably larger consumption of ammunition, and employment of more effective assault support methods (a moving barrage in place of sequential concentration of fire).

On the whole the experience obtained in penetrating the enemy's defense in the winter campaign of 1944 constituted a further step in the development of Soviet art of warfare.

2. Improvement of Penetration in the Operations of the 1944 Summer-Fall Campaign

The strategic situation which had developed on the Soviet-German front by the summer of 1944 was quite favorable for the Soviet Army. In the course of the winter campaign the enemy had sustained heavy casualties and losses, and lacked the manpower and economic resources to replace them. But Germany's war industry was still working at full capacity, which made it possible regularly to supply the army with weapons and materiel. In 1944 it received sufficient combat equipment to arm 225 infantry and 45 panzer divisions.¹¹

The Soviet forces, benefiting from the steadily increasing capabilities of this country's war industry, field repair facilities and the excellent job being done by the military hospitals, entered the new campaign at full strength and well trained. Morale was high. The quantitative and qualitative composition of the Armed Forces enabled the Soviet Supreme High Command to conduct large-scale offensive operations with even more decisive objectives.

The political objectives assigned by the Communist Party and Soviet Government to the USSR Armed Forces in the summer-fall campaign of 1944 included completely clearing all Soviet soil of the fascist invaders, restoring the Soviet Union's borders along the entire line from the Barents Sea to the Black Sea, and proceeding with liberation of the peoples of Poland, Czechoslovakia and other European countries from fascist enslavement.

In conformity with these goals, and taking into consideration the capabilities of the Soviet Armed Forces, Hq SHC drew up a plan for the summer-fall campaign of 1944, grounded on the idea of sequential mounting of powerful attacks in different sectors, which subsequently would lead to strategic breakthroughs in the Western and Southwestern sectors and develop into a Soviet Army general offensive along the entire Soviet-German front.

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Seven strategic offensive operations and a number of operations of operational significance were conducted during this campaign. Penetration of the enemy's strategic front in the Western Sector was initiated and executed by the Baltic Front and the group of Belorussian fronts.

Penetration in the Belorussian Operation (Diagram 22). Attaching great importance to standing ground in Belorussia, the fascist command authorities were maintaining large forces here and had established a solid defense disposed in depth. In addition to a tactical zone, the Germans had established at depth four lines and several intermediate zones and switch positions, the total depth of which was 250-270 km.

The most highly fortified was the tactical zone of defense, which contained two zones. The main defensive zone, 5-6 km deep, consisted of two, and in places three positions equipped with full-profile fighting trenches and linked by communicating trenches. The second defensive zone was 12 km back from the forward positions. The enemy had extensively utilized numerous rivers, swampy stretches of terrain, and forests to increase the stability of the defensive line.

Forces defending in Belorussia included Army Group Center (3d Panzer Army, 4th, 9th and 2d Field armies), as well as flank combined units of the 16th Army of Army Group North and of the 4th Panzer Army of Army Group Northern Ukraine. Forces totaled 53 divisions and 3 brigades (including 4 panzer and 3 motorized divisions). Of these, only 11 divisions were assigned to operational reserve, on a front extending more than 1000 km, divisions which in addition were immobilized by actions by partisan forces, which was a weak point of the defense.

In determining the operation concept, Hq SHC proceeded from the character of the enemy's defense and the marshy woodland terrain. The experience of uncompleted operations conducted in the Western Sector in the winter of 1943/44 was also thoroughly analyzed. It indicated that without a swift and decisive defeat of substantial forces in a number of sectors simultaneously, the enemy was capable of executing maneuver, of withdrawing his troops to the next defensive lines, and of maintaining the integrity of his front. Therefore in the Belorussian Operation Hq SHC decided that the forces of four fronts would simultaneously launch an offensive on the Vitebsk, Orsha, Mogilev, and Bobruysk axes, break through the defense in 6 sectors, encircle and destroy enemy forces in the Vitebsk and Bobruysk areas and, advancing along converging axes toward Minsk, encircle and destroy the main forces of Army Group Center. Subsequently additional forces would be engaged and the adjacent fronts would shift to the offensive, with the objective of the complete liberation of Belorussia, the Western Ukraine, and a large part of Lithuania and Poland.

The uniqueness of the concept of this operation was that elimination of the enemy's Vitebsk and Bobruysk forces at the first stage of the operation would form operational gaps 90-100 km wide in the enemy's defense, through which large mobile forces could penetrate to depth without delay. Advancing toward Minsk on converging axes, they could envelop and, working in coordination with the combined-arms armies, destroy large forces of Army Group Center east of Minsk, to a depth of more than 200 km. This would lead to the forming of a strategic breach approximately 500 km wide, in order to close which the enemy would be compelled to bring up strategic reserves and forces from other strategic sectors. In other words, this concept

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expressed in final form the idea of continuous development of tactical into operational breakthroughs, of operational into a strategic breakthrough, in the course of which several large enemy forces would be encircled and destroyed.

In conformity with the general plan of the Belorussian Operation, the troops of the First Baltic Front were to mount the main attack north of Vitebsk in the general direction of Beshenkovichi-Lepel', to penetrate the defense in a single continuous sector 25 km wide with the adjacent flanks of the 6th Guards and 43d armies and, working in coordination with the Third Belorussian Front, to defeat in detail the enemy's Vitebsk-Lepel' force.

The troops of the Third Belorussian Front were to launch two attacks: one in the direction of the attack mounted by the First Baltic Front, and another along the Minsk highway. Penetration of the enemy's defense south of Vitebsk was to be accomplished by the forces of the 39th and 5th armies in a 16 km sector, and along the highway by the forces of the 11th Guards and 31st armies in a 17 km sector.¹²

The Second Belorussian Front was to operate on the secondary Mogilev-Belvnichi axis, splitting the 4th Field Army into two parts. At the same time its aggressive actions were to prevent the enemy from stabilizing the defense on the flanks of the large Belorussian salient with the forces of the central sector. This front was to penetrate the defense with the forces of the 49th Army alone, consisting of four corps in a 12 km sector.

The First Belorussian Front was to launch two attacks of approximately equal force: one from the Rogachev area, by the troops of the 3d and 48th armies in a 15 km sector, in the general direction of Bobruysk-Osipovichi; the other -- from an area between the lower reaches of the Berezina River and Ozarichi, with the forces of the 65th and 28th armies, in a 14 km sector, in the general direction of Staryye Dorogi-Slutsk, enveloping Bobruysk from the south.

In addition to this mission the left side of the First Belorussian Front, according to Hq SHC instructions, was to immobilize the opposing enemy force and prepare for an advance on the Lublin axis.

According to the plans of the commanding generals of the fronts, 75 percent of rifle divisions, 85 percent of artillery and almost 100 percent of tanks, self-propelled guns and aircraft were assigned to the battle groups. This massing of personnel and weapons made it possible to establish high operational densities in all breakthrough sectors (Table 8).

It is evident from the table [see following page] that with a total frontage of 690 km (not including the left side of the First Belorussian Front), penetration was to be accomplished in 6 sectors with a total frontage of 99 km, comprising 14.3 percent of the width of the front's zone of advance. As was indicated by the course of combat operations, the extent of breakthrough sectors proved sufficient both for successful execution of penetration and for development of the strategic operation to full depth.

Average operational densities in the breakthrough sectors were 4-5 times those in the entire zone of advance of the fronts, which attests to great skill in massing men and weapons. The following superiority was achieved over the enemy on the

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Table 8. Average Operational Densities During Penetration in the Belorussian Operation

Front	Width of Zone of Advance, km	Number and Width of Break-through Sectors km	km per Rifle Division		Guns and Mortars per km		Tanks and Self-Propelled Guns per km	
			In Entire Zone	In Break-through Sector	In entire Zone	In Break-through Sector	In Entire Zone	In Break-through Sector
First Baltic	160	1-25	6.6	1.5	31	151	4	22
Third Belorussian	140	2-33	4.2	1.2	51	175	13	44
Second Belorussian	160	2-12	7.3	1.2	80	181	2	19
First Belorussian (right side)	230	2-29	5.8	1.3	86	204	5.6	45
First Belorussian (left side)	120	1-20	3.3	1.0	70	356	14.5	88.1

Note: Densities in guns and mortars include rocket launchers but exclude antitank and antiaircraft guns

most important axes: 3-4:1 in infantry, and 3-6:1 and more in artillery and tanks.

The tactical order of battle of all four fronts (excluding the left side of the First Belorussian Front) was single-echelon. This made it possible to employ a maximum quantity of personnel and weapons to achieve a massive initial thrust with the objective of penetrating as rapidly as possible the enemy's tactical zone of defense, within which the main forces of Army Group Center were deployed. The fronts had mobile groups of various composition for exploitation at operational depth.

Of the 14 armies operating in the fronts' battle groups, only two (the 6th Guards Army of the First Baltic Front and the 3d Army of the First Belorussian Front) were disposed in two echelons, while the remainder were in a single echelon, with designated reserve. Mobile groups -- each consisting of a tank corps -- were established in four armies (11th Guards, 3d, 65th, and 8th guards). The armies, with 20-30 km zones of advance, were assigned a breakthrough sector of 6-12 km, where from 50 to 80 percent of their men and weapons were concentrated.

The majority of rifle corps were disposed in two echelons. Their breakthrough sectors ran 3.2-6 km, which enabled them to achieve high tactical densities and decisive superiority over the enemy in these sectors. All combined-arms large units and units had artillery groups, which enabled the commanders actively to influence the course of combat operations.

Artillery preparation was scheduled to run 120-140 minutes, to the entire depth of the main defensive zone, but only the first two positions on the Third Belorussian Front. Large numbers of guns were designated for direct fire in all armies, with a density of 18-23 per km of breakthrough sector.

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The assault phase was to be supported by a moving barrage, sequential concentration of fire, or a combination of these methods, to a depth of 1.5 km. On the First Belorussian Front, in the zones of the 28th and 65th armies, the infantry and tank assault was to be supported, for the first time in the war, by a double moving barrage to a depth of 1.5-2 km.¹³

In order to increase the power of the initial thrust and to achieve rapid penetration of the tactical zone of defense, a large percentage of tanks and self-propelled guns (approximately 44 percent of the total number) were assigned to close support of infantry. Their density averaged from 12 to 22 fighting vehicles per km of breakthrough sector, and in some cases even more. In contrast to previous operations, independent tank brigades and regiments were utilized not in a centralized manner at the division level, but were attached to subunits and rifle regiments, which made it possible more closely to organize their coordination with infantry in conditions of marshy woodland terrain.

The army mobile groups were to be employed to complete penetration of the main defensive zone or to overrun the second defensive zone without a pause, while the mobile groups of the fronts were to be employed, following penetration of the tactical zone of defense, to exploit tactical into operational penetration without a pause. The strongest mobile groups were established on the Third and First Belorussian fronts, which played a leading role in the strategic operation.

Table 9 contains the principal indices in planning the combat employment of mobile groups of fronts and armies.

Table 9. Principal Indices in Planning Combat Employment of Mobile Groups in the Belorussian Operation

Front, Mobile Group 1	Total Tanks and Self- Propelled Guns 2	Day of Engage- ment 3	Engage- ment Depth, km 4	Zone of Engage- ment, km 5	Number of Routes 6	Rate of Advance, km 7
First Baltic						
Front mobile group -- 1st Tank Corps	297	2d	12-15	7	3	20
Third Belorussian						
Front mobile group -- 5th Guards Tank Army	524	3d	30-35	16	4	40
Front mobile group -- mounted-mechanized group	322	2d	12-15	8	4	38
Mobile group of 11th Guards Army -- 2d Guards Tank Corps	252	2d	4-6	8	2	32
First Belorussian (right side)						
Front mobile group -- mounted-mechanized group	274	2d	10-12	20	4	25
Mobile group of 3d Army -- 9th Tank Corps	251	1st	10	7	2	20
Mobile group of 65th Army -- 1st Guards Tank Corps	252	1st	3-4	8	3	25

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Table 9 (cont'd)

1	2	3	4	5	6	7
First Belorussian (left side)						
Front mobile group -- 2d Tank Army	805	2d	20	18-20	4	35-40
Mobile group of 8th Guards Army -- 11th Corps	216	1st	5-6	9	2	25-30

We should note that the 5th Guards Tank Army of the Third Belorussian Front and the mounted-mechanized group of the First Belorussian Front were to engage in the gap between 24 and 28 hours after engagement of the army mobile groups. Such a sequential engagement of the mobile groups would make it possible sharply to build up efforts in the course of the operation (operational densities of tanks and self-propelled guns were increased to 60-80 or more per km of engagement sector), which ensured offensive exploitation to considerable depth and development of operational into strategic success.

Depending on penetration progress in the northern and southern forces of the Third Belorussian Front, engagement of the 5th Guards Tank Army was specified in two variations: in the zone of advance of the 11th Guards Army, along the Minsk highway, or in the zone of advance of the 5th Army, with subsequent movement to the Minsk highway.

Air activities were planned in the form of an air offensive. Immediate preliminary airstrikes in all fronts were to be delivered during the night on the eve of the offensive by night bombers (approximately 2000 sorties) and long-range bombers (5 bomber corps). In addition, on the Orsha axis, where the enemy's defense was particularly strong, during the last 30 minutes of artillery preparation 448 ground-attack aircraft and bombers were to deliver massive airstrikes.

Planned air support of the assault on the Third and First Belorussian fronts called for concentrated strikes by ground-attack aircraft and bombers on enemy artillery and personnel (on the Rogachev axis, for example, five strikes in the course of 2.5 hours, by 825 aircraft; on the Parichi axis -- three strikes by 540 aircraft). On the First Baltic and Second Belorussian fronts, where air forces were substantially smaller, air support of the assault was to be accomplished by wave strikes by small groups of 6-8 ground-attack aircraft, with 4-6 fighters flying cover.

When the army mobile groups engaged, as a rule they would be supported by 1 fighter division, 1 ground-attack division and 1 bomber division. One or 2 air corps were designated to support mounted-mechanized groups, while the 5th Guards Tank Army was supported by 3 corps -- 800 aircrews flying 1500 sorties on the first two days of combat.

Execution of the above-enumerated measures, together with those performed by Hq SHC (phony concentration of men and weapons on the Kishinev axis in May-June, conduct of reconnaissance in force on 20-23 June in the zones of the First Ukrainian,

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Second and Third Baltic fronts, etc), enabled the Soviet command authorities to conceal preparations for the major operation in the summer of 1944, which in large measure ensured successful penetration and conduct of the operation as a whole. Even a week before our offensive began, when, according to the testimony of fascist general Tippelskirch, the command authorities of Army Group Center learned of a concentration of substantial Soviet Army forces in Belorussia, on the German General Staff "the view that the Russians would launch the main attack against Army Group Northern Ukraine continued to be dominant.... The response to a request by Army Group Center to be given at least more reserves was that the general situation on the Eastern Front did not permit a different deployment of forces."¹⁴ This was a gross miscalculation on the part of the fascist command authorities.

On the eve of the day of the general offensive, all fronts conducted reconnaissance in force. On the First Baltic Front it began at dawn on 22 June, following 15-25 minutes of artillery preparation. During the fighting the forward battalions succeeded in penetrating to a depth of up to 1.5 km in some sectors and, in places, in overrunning the first defensive position. In the 6th Guards Army, in the zone of the 22d Guards Rifle Corps, subunits of the main forces of the attack-echelon regiments (6 battalions with 3 to 4 tanks each) were engaged for exploitation; this made it possible by that evening to penetrate the enemy's main defensive zone on a frontage of 15 km and to advance to a depth of 5-7 km.¹⁵

The successful actions of the forward battalions required changes in the fire support plan for the attack. In the 6th Guards Army duration of artillery preparation was cut in half, with a smaller number of guns involved. In the 43d Army the artillery of the 1st Rifle Corps began delivering fire directly as support of the assault, and in the 60th Rifle Corps -- artillery support of the assault began at the end of artillery preparation,¹⁶ which was shortened by 90 minutes.

On 23 June the main forces of the front's battle group commenced to attack. Rifle combined units, accompanied by close-support tanks and supported by artillery and air, smashed the resistance of the 252d and 56th Infantry divisions and began rapidly advancing deeper. The commanding general of the front ordered the 1st Tank Corps to engage in the gap, but the corps advanced slowly due to the recent rain, which had ruined the roads. As Mar SU I. Kh. Bagramyan notes, its engagement would have required freeing the roads, which could slow the movement of the successfully advancing rifle combined units and the movement of crossing equipment to the Western Dvina River. In addition, upon reaching this river, the corps would be forced to wait for the infantry to arrive. Therefore the commanding general of the front revised the plan of the offensive and decided to engage the tank corps after rifle troops captured a bridgehead on the Western Dvina.¹⁷

That afternoon the support-echelon corps of the 6th Guards Army was brought into action to increase the force of the offensive drive. By evening the front's troops had completed breakthrough of the enemy's tactical zone of defense, had advanced to a depth of 16 km, and had widened the penetration frontage to 50 km.¹⁸

On 24 June both armies of the front's battle group, pursuing the retreating enemy, advanced to a depth of 30 km, expanding the penetration frontage to 90 km. They reached the Western Dvina on a 50 km frontage and captured 5 small bridgeheads. When an additional rifle corps was engaged from the support echelon of the 6th Guards

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Army, a single bridgehead was formed, 65 km wide and up to 10 km deep. On 25 June the 1st Tank Corps crossed over to this bridgehead and immediately began pursuit, in coordination with rifle combined units. That same day the forces of the 43d and 39th armies completed envelopment of the enemy's Vitebsk force.

On the Third Belorussian Front reconnaissance in force was conducted on the afternoon of 22 June. Two hours later forward battalions of the 5th Army overran the first position. The regiments' attack-echelon battalions were engaged, which advanced to a depth of up to 3.5 km.¹⁹ The forward battalions in the zone of the other armies were less successful. On the whole the reconnaissance in force showed that the enemy's defense in the Orsha sector was considerably stronger than in the Bogushevsk sector.

During the night of 23 June airstrikes were delivered on the major strongpoints in the main defensive zone and on artillery positions. On the morning of 23 June, following artillery preparation and preliminary airstrikes, the front's forces launched an attack in both sectors.

The greatest success was achieved on the Bogushev axis. On the 39th Army's main axis of advance it was noted half an hour before artillery preparation was ended that enemy subunits, unable to withstand our massive artillery fire, had begun pulling back from the front-line trench. The decision was made to shift artillery fire deeper and to commence the assault along the entire front. Units of the 5th Guards Rifle Corps swiftly overran the front-line and second trenches and, advancing without a halt, captured three serviceable bridges across the Luchesa River. This made it possible for the corps main forces to cross the river by 1200 hours, and an hour later to complete penetration of the enemy's main defensive zone. By evening the corps had advanced 13-14 km and had widened the penetration frontage to 20 km.

Combined units of the 5th Army also were quite successful that day; exploiting the successful advance achieved by the forward battalions on the previous day, they launched a determined assault and penetrated the main defensive zone, broke through the second defensive zone without a halt, and by evening had advanced 10-13 km, widening the breakthrough frontage to 26 km.

Thus in a single day the troops of the 39th and 5th armies had completely penetrated the enemy's tactical zone of defense and had widened the penetration frontage to 50 km. The following day, repulsing strong enemy counterattacks, they advanced 10-20 km and captured the town of Bogushevsk. That afternoon Gen N. S. Oslikovskiy's mounted-mechanized group was engaged in the zone of the 5th Army for offensive exploitation; by 2000 hours forward detachments of this group reached a point north-east of Bogushevsk.

On the Orsha axis, where the enemy's defense was particularly strong, on the first day of the operation, the armies on the adjacent flanks were able to penetrate only to a depth of 2-3 km. At the same time on the right flank of the 11th Guards Army the troops of the 16th Guards Rifle Corps and the 152d Fortified Area, advancing in a weakly-defended marshy area, advanced from 4 to 10 km, breaking through the main defensive zone.²⁰ In connection with this the commanding general of the army decided to redeploy to this point the support echelons of two rifle corps which were

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advancing on the main axis, plus a rifle division from his reserve. Their engagement made it possible to advance to a depth of up to 14 km on the following day. On the main axis advance along the highway once again was minimal.

Although the offensive action by the southern battle group had not yet achieved total penetration of the tactical zone of defense, a deep crack formed in the enemy's defense, promising rapid development of tactical into operational penetration and joining of two breakthroughs into a single common front breakthrough.

On the third day of the operation the mounted-mechanized group captured Senno without a halt and cut the Orsha-Lepel' rail line. The 5th Army, working in coordination with it, advanced 20 km.

In connection with the very successful advance on the Bogushevsk axis, the commanding general of the Third Belorussian Front, on A. M. Vasilevskiy's instructions, on 25 June put the 5th Guards Tank Army into the gap on the Bogushevsk axis, and the 2d Guards Tank Corps in the planned breakthrough sector north of the Minsk highway. Outstripping the infantry, by evening on 26 June the tank army had advanced 50 km, had captured the town of Tolochin and cut the enemy's lines of communication west of Orsha, toward which the 2d Guards Tank Corps was advancing.

In connection with the successful advance of the front's right-side battle group, the enemy was forced to begin withdrawing troops defending south of Orsha.

During the next three days the mobile forces and, behind them, the combined-arms armies were successfully advancing along the entire front and reached the Berezina River by the evening of 28 June. In 6 days the troops had advanced from 80 to 150 km, while the breakthrough frontage, including the First Baltic Front, had expanded to 200 km.

The troops of the Second Belorussian Front shifted to the offensive on 23 June. One feature of the breakthrough here was the fact that it involved crossing a river with a wide, swampy floodplain.

In the course of artillery preparation for the assault phase, which ran 2 hours, specially designated reinforced rifle companies (one from each attack-echelon regiment) crossed the Pronya River and overran three, and in places four trench lines. By the end of artillery preparation the divisions' main forces had also crossed the river behind them, on assault footbridges placed by the combat engineers. The tanks and self-propelled guns, however, encountered major difficulties in crossing the river, and especially the swampy floodplain, which slowed the pace of the attack. By evening the troops had advanced to a depth of up to 8 km and had widened the breakthrough frontage to 25 km.

On 24 June the troops of the 49th Army advanced 12-14 km. During the night of 25 June the enemy began withdrawing beyond the Dnieper. Combined units of the 33d and 50th armies initiated pursuit. By evening on the fifth day of the operation the front's forces, having advanced 80-90 km, completed breakthrough of the enemy's operational defense and continued advancing toward Minsk.

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On the First Belorussian Front penetration of the enemy's defense began on 24 June. Reconnaissance in force had been conducted on the previous day, but since three Soviet fronts were already engaged in offensive actions, the enemy had put his troops into a full state of combat readiness, and the forward battalions conducting the reconnaissance in force were met with heavy fire and numerous counter-attacks, and enjoyed limited success.

On the night before initiation of penetration, the 16th Air Army and long-range bombers delivered heavy bombing strikes onto the main defensive zone, flying 550 sorties.

Artillery preparation began at 0455 hours. Although the enemy was expecting it, the force of the artillery fire and airstrikes shattered his morale, especially in the zone of the left-side battle group. A total of 80 artillery and mortar batteries, 11 separate guns, 56 weapon emplacements, 24 earth-and-timber bunkers, 8 dug-out shelters and 12 observation posts were destroyed and up to 1500 officers and men killed in the breakthrough sector of the 65th Army.

When artillery preparation and preliminary airstrikes ended, the front's forces launched an assault on both axes.

Combined units of the 65th and 28th armies launched the assault with the support of a double moving barrage and close-support strikes by ground-attack aircraft.

The nature of conduct of penetration by rifle combined units on marshy woodland terrain can be seen in the example of the 18th Rifle Corps of the 65th Army (Diagram 23).

A total of 1087 guns and mortars 76 mm and larger, plus 353 rocket launchers were delivering fire in a corps breakthrough sector 5 km in frontage; forces in action included 3 tanks and self-propelled guns, and 5 combat engineer battalions, which amounted to 288 artillery systems, 16 tanks and 1 combat engineer battalion per km of breakthrough sector. Divisions were advancing on a frontage of 1.5-1.8 km.

The assault on the enemy's forward positions took place in a unique manner. Following preliminary bombardment small assault teams assigned to reconnaissance from the 15th and 37th Guards rifle divisions swiftly overran the first-line trench. In the course of the continuing artillery preparation the forward battalions crossed the swampy stretches and 50 minutes before completion of artillery preparation took up an assault position in the enemy's front-line trench. At 0700 hours close-support tanks reached them, and a general assault began, supported by a double moving barrage.

The artillery fire stunned the enemy sufficiently that during the first minutes of the assault he offered very weak resistance. The advance of the attack-echelon battalions was so swift that in certain sectors the moving barrage had to skip a concentration point, and sometimes even two.²¹

The enemy took an hour to begin offering his first organized resistance. Blowing up the bridge across the Ipa River in the zone of the 69th Rifle Division, an enemy task force held up the advance of tanks and self-propelled guns east of Rakovichi. At this point rifle subunit, under cover of fire delivered by tanks, self-propelled

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guns and close-support artillery, crossed a marshy area and pushed the enemy northwestward. The combat engineers were able to begin repairing the bridge. At 0900 hours tanks crossed the Ipa River on this bridge, caught up with the infantry and, working in teamwork with it, captured Rakovichí.

The 37th Guards Rifle Division, supported by a heavy self-propelled artillery regiment, by 0900 hours had put two regiments into Nikolayevka, while the third regiment began bypassing Petrovichi on the north.

When the moving barrage ended, the main forces of the 15th Rifle Division proceeded in a swift enveloping movement on Petrovichi from the south and southwest. Fearing encirclement, the garrison of the Petrovichi center of resistance fled into the forest in disarray.

Thus in 2 hours of offensive action all three divisions succeeded in penetrating two enemy positions and advancing 3 km.

The enemy, endeavoring to halt deeper advance by the troops of the corps and adjacent units, sent out task forces to block the most accessible axes -- to Chernin, in the forest west of Nikolayevka, and to Vyazhny. At 1100 hours the divisions penetrated the second position, but were stopped by stubborn enemy resistance. The enemy mounted a counterattack with an infantry battalion and 5 tanks from the vicinity of Chernin in the direction of Nikolayevka.

One of the company commanders, spotting tanks and infantry emerging from the forest north of Chernin, requested artillery fire, deployed his platoons toward the advancing enemy, and ordered the close-support artillery to take up position on a ridge of hills west of Nikolayevka.

As soon as the enemy tanks and infantry reached the Ipa River, all weapons opened fire. The company was supported by adjacent units and artillery delivering fire on request. The enemy counterattack stalled. Enemy casualties included 40 killed. But during his withdrawal to Chernin the enemy succeeded in blowing up the bridge across the Ipa River. Without this bridge the tanks could not cross the swampy floodplain.

The infantry advanced toward Chernin under cover of massive fire support by artillery, tanks and close-support guns. As the weather improved, air activities were stepped up.

In water up to their waists, the infantry slogged across the viscous mud of the inundated floodplain and took up an attack position.

The artillery of the 69th Rifle Division, changing position, immediately prior to the assault intensified fire on enemy centers of resistance, as a result of which enemy ground was taken with light casualties.

Capture of the center of resistance in Chernin facilitated the advance of the 37th Guards Rifle Division. By 1800 hours the main defensive zone on the right flank of the corps was penetrated. On the left flank the 15th Rifle Division was fighting

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to take a strong center of resistance established by the enemy in Vyazhny. This created favorable conditions for putting the army's mobile group into action in the gap -- the 1st Guards Tank Corps.

The lead battalions of the attack-echelon tank brigades caught up with the infantry as the rifle divisions broke through the enemy's first defensive position and advanced behind the infantry, ready to exploit. Since the marshy terrain prevented movement off regular roads and corduroy roads, the tank corps main forces began moving in brigade columns. But enemy artillery succeeded in demolishing the corduroy road on the floodplain of the Ipa River, and the 16th Guards Tank Brigade was forced to turn off onto the main road leading to Chernin. The tank corps combat formation became disconnected. To intensify the offensive thrust at the junction of the 18th and 105th Rifle Corps from a point near Chernin, the army commander put into action the 44th Guards Rifle Division together with the 16th Guards Tank Brigade; passing through the combat formations of the 69th Rifle Division, they led the advance on Knyshevichi. But stubborn enemy resistance on Hill 152.0 and the marshy Peschanka River valley delayed their advance all night.

The 1st Guards Motorized Rifle Brigade reached Nikolayevka by 1400 hours. Movement of the brigade's artillery was delayed due to damaged corduroy road at Petrovichi. And the fighting vehicles were moving slowly along the poor-condition forest road. There was a new obstacle beyond the Vyazhny-Chernin road -- a very marshy stretch of ground. Utilizing the crossing constructed by the 37th Guards Rifle Division, the brigade finally reached tactical depth, captured Gamza at 2100 hours, and Slobodka at 2400 hours. The 17th Guards Tank Brigade was advancing in the left part of the zone of the 15th Rifle Division. By 1700 hours its battalions had overtaken the infantry and fought their way into Romanishchi at midnight on 25 June.

Thus by evening on 24 June the enemy's tactical zone of defense was penetrated.

Exploiting the advance of the 1st Guards Tank Corps, the divisions of the 18th Rifle Corps increased the rate of their forward movement. By evening they had penetrated 12 km deep into the enemy's defense, widening the breakthrough frontage to 10.5 km.

During the night of 25 June the enemy began withdrawing in a northwesterly direction.

The success of the 18th Rifle Corps decisively influenced the advance of the adjacent corps. The commander of the 105th Rifle Corps engaged his support echelon across its zone, while the 3d Guards Rifle Corps of the 28th Army, which had been advancing slowly during the morning, increased its rate of advance upon engagement of the support echelon, and by 0500 hours on 25 June its forward units were crossing the Tremlya River, after which it began pursuit of the retreating enemy.

That afternoon General Pliyev's mounted-mechanized group was engaged at a depth of 9 km in the zone of the 28th Army and began exploiting the tactical breakthrough into an operational breakthrough, advancing toward Glusk.

On the first day combined units of the right-side battle group were able to penetrate only 2-4 km into the enemy's defense. Results were affected by difficulties connected with crossing the marshy floodplain of the Drut' River, as well as the

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fact that the offensive thrust was directed against the strongest sector of the enemy's defense.

On the morning of 25 June the commander of the 3d Army engaged two tank brigades of the 9th Tank Corps. Once again there was 45 minutes of artillery preparation prior to the assault by the main forces. There was stepped-up Soviet air activity, with more than 2000 sorties flown that day. By evening the troops of the right-side battle group had completed penetration of the main defensive zone and had reached the second.

Combat actions on 26 June were a turning point along the entire front. Following engagement of all forces of the 9th Tank Corps and the support echelon of the 3d Army, the troops of the right-side battle group completed penetration of the enemy's tactical zone of defense, and the troops of the left-side battle group reached operational depth.

On the following day the troops of the front encircled the enemy's Bobruysk force and, having advanced to a depth of 70-80 km in four days, completed penetration of the operational defense and created favorable conditions for offensive exploitation on the Minsk axis.

Pushing the advance further, on 3 July the troops of the First and Third Belorussian fronts liberated Minsk, the capital of Belorussia, and encircled an enemy force of 105,000 men to the east of Minsk.

Thus in 12 days Soviet forces in the central sector of the Soviet-German front had routed the main forces of Army Group Center and had pushed its remnants westward 230-280 kilometers.²² A breach more than 400 km wide had been formed in the enemy's strategic defensive front in the western sector.

Pursuing the enemy, by 11 July the troops of the fronts had completed defeat in detail of the enveloped force and by 15 July, having advanced to a depth of more than 500 km, were approaching the East Prussian and Polish borders.

Hq SHC, endeavoring maximally to exploit the results achieved in Belorussia, with the aim of widening the breakthrough frontage and exploiting deep, reinforced the First Baltic Front with strategic reserves -- the 2d Guards and 51st Combined-Arms armies -- and ordered the First Belorussian Front to put into action a large force which had been established on the left side of the front, and also ordered the First Ukrainian, Second and Third Baltic, Leningrad, and subsequently the Second and Third Ukrainian fronts to initiate an offensive.

Of all the operations conducted by these fronts, determining trends in exploitation of a breakthrough, characteristic of the summer-fall campaign of 1944 were manifested to the greatest degree in the L'vov-Sandomierz and the Iasi-Kishinev operations (diagrams^{24, 25}).

The breakthrough of the enemy's strategic front in Belorussia created a critical situation for the enemy, on the approaches to East Prussia, cradle of Prussian militarism. The Hitlerite high command hastily moved large forces into Western Belorussia and Lithuania, in particular the 39th, 40th, 12th Panzer and 26th Army corps.

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At the same time, aware of the presence of four Soviet tank armies between the Polesye and the Carpathians, the German-fascist command authorities were expecting a Soviet offensive in this area and were holding south of the Pripet 24 of the 30 panzer divisions on the Soviet-German front. From this area they transferred to Belorussia only 4 infantry and 2 panzer divisions, which were replaced by 1 panzer, 1 motorized and 6 infantry divisions from the OKH reserve.

By the beginning of the L'vov-Sandomierz Operation the troops of the First Ukrainian Front were opposed by Army Group Northern Ukraine -- the German 4th and 1st Panzer armies and the Hungarian 1st Army, totaling 40 divisions (including 5 panzer divisions and 1 motorized division) and 2 infantry brigades. Operational troop density was high -- 10-12 km per division.

Expecting an offensive by the forces of the First Ukrainian Front, the army was preparing a strong defense. The main defensive zone, 4-6 km deep, contained from 2 to 3 positions. The second defensive zone was established 10-15 km from the forward positions. Intensive work was in progress along the west banks of the Western Bug and Gnilaya Lipa rivers, preparing a third, rear defensive zone. The total depth of the enemy's operational defense ran 40-50 km.

A characteristic feature of the enemy's force grouping was the fact that the army group's main forces occupied the tactical zone of defense, while the operational reserves (5 panzer divisions, 1 motorized division, 3 infantry divisions, and an infantry brigade) were in the hands of the army commanders. The panzer divisions were positioned 15-20 km from the forward edge of the battle area on the probable Soviet axes of advance, and consequently could be employed in fighting for the tactical zone of defense, where the heaviest resistance could be expected.

The fascist command authorities considered the defensive sector in Moldavia and Northern Romania to be the least threatened and the most stable. This assessment was based, on the one hand, on the fact that the Soviet Army allegedly could not conduct an offensive along the entire strategic front, and on the other hand, on the fact of establishment of a very strong defense at the southern end of the front, in order to block the advance of the Soviet Army toward Romanian oil and the Balkans. Army Group Southern Ukraine totaled 47 divisions and 5 brigades.²³ The majority of these divisions (32) and the strongest army, the German 6th, were defending in the center of the army group's order of battle, where operational density was 7.5-8 km per division. On the army group's flanks, however, operational density was 18-20 km per division, and the flanks were defended by Romanian troops.

The enemy's defense was characterized by great depth, thoroughness of preparation, permanent fortifications, and heavy saturation with men and weapons, especially on the Iasi and Kishinev axes. The tactical zone of defense consisted of two zones of a total depth of 8-15 km and more. Opposite the Second Ukrainian Front the second defensive zone ran along the southern bank of the Bakhlyu River which, with its marshy floodplain, muddy banks and bottom, presented a formidable obstacle. Opposite the Third Ukrainian Front the defense was fortified only on the Kishinev axis. There were fortified areas in the tactical zone of defense in the vicinity of Tirgu-Neamt, Tirgu-Frumos and Iasi, fortified with reinforced concrete and earth-and-timber fighting bunkers and numerous defensive barriers covered by antitank and antipersonnel obstacles. There were up to 7 reinforced concrete structures per km of frontage in the fortified areas.²⁴

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At operational depth opposite the Second Ukrainian Front there was a third, army defensive zone at a distance of 20-35 km, along the Mare range, well fortified with individual strongpoints, covering each narrow pass and road junction. At operational depth opposite the Third Ukrainian Front there were two zones, running along the Kagil'nik and Prut rivers.

The German-fascist command authorities attached great importance to preparing a defensive line along the Seret River, which covered the major routes into the Romanian heartland via the famous Focsani gate -- an 80 km natural corridor between the Carpathians and the Danube. As many as 1700 various reinforced concrete defensive structures had been built here, as well as heavy zones of antitank posts and water-filled antitank ditches. All accessible areas of terrain were protected by barbed wire, minefields and demolition charges.

These are the conditions under which the L'vov-Sandomierz and Iasi-Kishinev operations would be conducted.

They occurred shortly after the Belorussian Operation. Therefore penetration in these operations was planned along the general principles established by the summer of 1944. However, the specifics of operational-strategic conditions and the views of the commanding generals on the conduct of operations introduced new elements into preparation for these operations and opening up of breaches in the enemy's defense.

The plan for the summer-fall campaign of 1944 prepared by Hq SHC assumed and demanded unconditional and successful conduct of all specified strategic operations. Therefore, in issuing directives to the Ukrainian fronts, Hq SHC specified forms of operational breakthroughs and composition of battle groups which would guarantee definite opening of deep breaches on the strategic axes, by exploiting which the Soviet forces could push broad maneuver actions to considerable depth.

In both operations two powerful drives were to be launched on converging axes, with the objective of encircling and destroying large enemy forces. For the First Ukrainian Front accomplishment of envelopment involved considerable difficulties. The curvature of the battle line toward the enemy was insignificant, a matter of only about 40 km, and this was in the Kovel' sector of the First Belorussian Front. There was essentially no advantageous bulge on the line of deployment of the battle groups. The enemy was expecting an offensive by the forces of the First Ukrainian Front, had stepped up reconnaissance activities, and had specified countermeasures, in particular the withdrawal of troops to the second defensive zone along a considerable sector of front. The enemy placed his operational reserve -- the 3d Panzer Corps -- opposite the southern battle group.

Table 10 shows the battle groups and troop densities established for accomplishing operational breakthroughs in the fronts.

A comparison of the composition of the battle groups of the fronts and troop densities in the L'vov-Sandomierz and Iasi-Kishinev operations with counterpart forces and densities in the Belorussian Operation and the two preceding campaigns indicates that the quantity of combat equipment, and especially troop densities in the breakthrough sectors had increased by approximately 20-35 percent in artillery and 5-15 percent in tanks and self-propelled guns. The number of aircraft supporting

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Table 10. Composition of Battle Groups and Troop Densities in Breakthrough Sectors

Designation	L'vov-Sandomierz Operation		Iasi-Kishinev Operation	
	Northern Battle Group of First Ukrainian Front	Southern Battle Group of First Ukrainian Front	Battle Group of Second Ukrainian Front	Battle Group of Third Ukrainian Front
Combined arms armies	2	3	3	3
Tank armies	1	2	1	-
Mounted-mechanized groups	1	1	1	-
Independent tank (mechanized) corps	-	-	1	2
Rifle divisions	14	24	24	24
Guns and mortars	3250	3775	4380	5500
Tanks and self-propelled guns	717	1084	1164	591
Aircraft	1300	1950	915	1037
Breakthrough sectors, km	12	15	16	18
Densities:				
km per attack-echelon rifle division	1.5	1.5	2	1.5
guns and mortars	24-255	236-254	240-250	240-280
tanks and self-propelled guns	35	70	56	25

the advance of the battle groups was approximately the same as in the Belorussian Operation, but was 20-30 percent greater than in the summer-fall campaign of 1943 and 2-2.5 times that of the winter campaign of 1944.

An increase in density of weapons in breakthrough sectors was also achieved by narrowing their frontages. For example, initially the command authorities of the Second Ukrainian Front planned a 22 km breakthrough sector, which meant 220 guns and mortars per km of breakthrough sector. In order to increase the density to 250 guns and mortars, Hq SHC instructed the front to narrow the breakthrough sector to 16 km.

High artillery densities ensured sufficient suppressive fire on the enemy's defense in a 90-105 minute bombardment, whereby in the Second Ukrainian Front 50 percent of artillery preparation time involved heavy specific-area bombardment, and 19 percent in the Third Ukrainian Front. The tiered disposition of enemy targets on high ground forward of the breakthrough sectors made it possible to put 35-55 guns per km on direct fire,²⁵ which increased the degree of hit scoring on enemy targets.

The double and single moving barrage in combination with sequential concentration of fire became the principal method of close support of the assault on the Ukrainian fronts.

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Characteristic for the First Ukrainian Front in employment of tanks was an endeavor to place the majority of tanks in the exploitation echelons; the commanding general of the front believed that it was more advantageous to engage these echelons during penetration of the tactical zone of defense. As a result, very few tanks were allocated for forming close-support tank groups. The number in the northern battle group, for example, was 149, and 119 in the southern battle group, or an average of 12 percent as compared with 44 percent in the Belorussian fronts. This made it possible to establish close-support tank densities of only 12-13 per km, and even as few as 8 per km in the 38th Army.²⁶ Some of the close-support tanks were knocked out of action during reconnaissance in force, reducing their density to an even greater extent.²⁷

Thus the command authorities of the First Ukrainian Front underestimated the role of close-support tanks and were emphasizing premature engagement of tank armies with the objective of breaking through the enemy's defense. Hq SHC, having studied the operation plan of the First Ukrainian Front, pointed out that tank armies and mounted-mechanized groups should be employed not for penetration but for offensive exploitation following a breakthrough. The commanding general of the front was forced to change the sequence of engagement of tank armies and to lessen his excessive optimism regarding the capabilities of the combined-arms armies, which were initially assigned the mission of advancing to a depth of 30-45 km on the first day of the operation.²⁸ The front command authorities did not, however, make changes in the procedure of employment of close-support tanks.

On the Second Ukrainian Front close-support tanks were employed in a massive fashion at the division level, although in 1944 there was already a trend toward utilizing them in the regiments and even battalions. But such a method was more suited to the specific conditions of hilly terrain, on which the enemy concentrated his main defensive efforts on hilltops. Swift capture of the hilltops damaged the stability of the defense throughout the entire main defensive zone. On the average close-support tank densities were 17 tanks per km. But by massing tanks against key enemy tactical installations, their density increased to 40-50 per km, two to three times the average. If even 10 tanks were disabled, so went the thinking of the front command authorities, the remaining tanks would still reach the target, and the strongpoint would surely be smashed.²⁹

Massed employment of tanks also had morale-psychological significance, especially against insufficiently stable troops.

The 6th Tank Army was to be engaged following penetration of the tactical zone of defense.

The main air efforts in the Iasi-Kishinev Operation were concentrated on supporting penetration. On the Second Ukrainian Front, for example, more than 4000 sorties were to be flown on the first three days of the operation, 50 percent to suppress and destroy enemy personnel and combat equipment in the main defensive zone, and almost 70 percent of sorties including providing the main force cover against air attack. The distribution of air efforts was approximately the same on the Third Ukrainian Front.

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In the L'vov-Sandomierz Operation the First Ukrainian Front had the most air assets. Its aircraft could fly 6500 sorties per day. Bombers concentrated their efforts on major targets and on the most critical moments of the offensive, which increased the operational significance of bomber strikes -- bombers were employed to support the engagement of mobile groups of the armies and fronts, to hold up the enemy's operational reserves, to thwart their counterthrusts, and to support river-crossing operations.

Penetration by the troops of the First Ukrainian Front was conducted in conditions where the Belorussian fronts were successfully pursuing the enemy on the approaches to the Neman and the upper reaches of the Narew, threatening envelopment of the left flank of Army Group Northern Ukraine. The course of the Belorussian Operation gave reason to assume possible deep withdrawal of enemy troops opposite the right side or in the entire zone of the First Ukrainian Front, which naturally had to be provided for in the operation plan.

By 10 July the command authorities of the First Ukrainian Front learned of the enemy's intention to withdraw his forces to the second defensive zone.³⁰ This information urgently required elaboration of a breakthrough plan variation involving deliberate withdrawal of enemy troops from the first to the second zone. This was not done, however. The commanding general of the front, basing his decision on intelligence data, decided to conduct reconnaissance in force during the night of 13 July, initially by reconnaissance detachments consisting of a reinforced company from each attack-echelon division, and subsequently by forward battalions as well, supported by artillery, thus preventing delivery of artillery preparation fire onto empty ground, and conserving forces for defeating the enemy in detail at depth.³¹

At 2200 hours on 12 July, reconnaissance detachments began reconnaissance in force on both axes. In the zones of the 120th and 76th Rifle Corps, which were operating on the Rava-Russkaya axis, it was established that beginning at dusk the enemy's 88th and 72d Infantry divisions, covered by rear guards, had begun withdrawing their forces to the second defensive zone. Directly ahead of the breakthrough sector, units of the 291st Infantry Division repulsed an attack by reconnaissance detachments.

The enemy had no intention of withdrawing his troops in the L'vov sector.

Reconnaissance results once again suggested that in conditions where the enemy was offering such stubborn resistance in a position which he had decided to abandon, enemy resistance in the second zone could be very stubborn. Therefore advance planning of penetration of this zone was essential. On 13 July it was still possible to issue instructions on ~~movement~~ and deployment of battle groups forward of the second defensive zone, to specify probable breakthrough sectors, and to plan delivery of fire for effect.

The offensive commenced on the morning of 13 July, by the forces of 7 forward battalions, following 30 minutes of artillery preparation (Diagram 26). Subunits of the 504th and 506th regiments of the 291st Infantry Division could not withstand their assaults. By 1600 hours the forward battalions had advanced to a depth of 7-8 km, that is, had crossed the main defensive zone.³² At 1800 hours, following massive delivery of artillery fire and airstrikes, the main forces of the

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attack-echelon divisions, which by this time had moved forward to the level of the forward battalions, attacked. They swiftly crushed the resistance of the 291st Infantry Division and swept forward toward the second zone, but lacked the momentum to break through it,³³ for the main forces of the 42d Army Corps had succeeded in withdrawing to the second zone without heavy casualties and in preparing to repel assaults. The weakest sector was the position to which remnants of the 291st Infantry Division had withdrawn, but this fact was not discovered soon enough.

The enemy moved up the 16th and 17th Panzer divisions onto the axis of advance of the northern battle group of the First Ukrainian Front, which increased the stability of the enemy's second defensive zone. Efforts to break open weak points in the defense, which continued until evening, failed to produce the desired results. All this indicated that the enemy, having discovered the main axis of advance of the northern force, had concentrated his principal efforts precisely on this axis. A massive attack was needed in order to crush enemy resistance, preparation for which would require approximately 12-16 hours, using the hours of darkness for redeploying troops and the morning for reconnoitering the enemy's defense and planning artillery fire and airstrikes.

But the assault on the second zone began on the morning of 14 July following a 5-minute preliminary bombardment, with a density of 90-100 guns and mortars, with a capability of 200 guns per km.³⁴ Following displacement, artillery had sited in positions lacking a topographic base, and had not had time to register. Intelligence on the enemy and his weapons in the second zone was very meager. Centralized control of artillery had been disrupted, and due to the limited time available (short July night) artillery fire had not been adequately organized and planned. As a consequence of this little suppressive effect was placed on the enemy. The advancing troops encountered stubborn resistance. Airstrike activity was intensified. The enemy's 16th and 17th Panzer divisions mounted a number of counter-attacks.

Repeated assaults failed to produce significant results. Only the 76th Rifle Corps of the 3d Guards Army, which was not an element of the battle group, succeeded in probing a weak point in the enemy's defense. The 1st Guards Tank Brigade (forward detachment of the 1st Tank Army) was engaged in its zone. Working in concert, they advanced to a depth of up to 8 km.

In connection with the difficulties encountered in penetrating the second defensive zone, it was decided to regroup forces during the night, move the support echelons of the rifle corps up into the front line, to conduct massive artillery preparation on the morning of 15 July, and to complete penetration of the tactical zone of defense.

Forty minutes of artillery preparation was scheduled and artillery density increased for offensive action on 15 July by the 3d Guards Army. In the 13th Army fire planning was performed at the corps and division level, which made it possible better to plan artillery actions under conditions of limited time for preparing for penetration.

The troops of the northern battle group resumed the offensive at 0830 hours. The troops of the 13th Army were the most successful that day; artillery densities in

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its breakthrough sector had been increased to 200 tubes per km. Its corps broke through the second defensive zone by evening. Their success was promoted by the fact that the army's main efforts were concentrated in the sector of the tattered 291st Infantry Division.

On the following day the 3d Guards Army also broke through the second defensive zone, which created conditions for engaging the mobile groups. The commanding general of the front changed the initial sequence of their engagement. First, on 16 July, he engaged the mounted-mechanized group to assist the troops of the left-side battle group in enveloping the defending forces in the Brody area, and on the morning of 17 July he engaged the 1st Tank Army to accomplish deep exploitation of the breakthrough.

These changes did not result in accomplishing two major operational missions in the next 24 hours. Although the mounted-mechanized group had almost as many tanks as the 1st Tank Army, the fact that it contained vulnerable cavalry divisions complicated its passage to operational depth through a narrow breach. This led to the loss of a full 24 hours, needed for exploiting tactical into operational penetration. Only after the 1st Tank Army was engaged was the enemy's operational defense fully penetrated, with the troops of the right-side battle group obtaining maneuvering room.

The fact that a tank army could more successfully enter a narrow breach is indicated by the actions of the 3d Guards Tank Army, which penetrated to operational depth through the Koltuv corridor, which was only 4-6 km wide. At the same time we should note that engagement of the battle group of the 1st Guards Army here on 16 July, and the 4th Tank Army on 18 July cannot be considered successful from the standpoint of development of the operation as a whole. A great number of troops massed in a narrow gap, but they had no maneuvering room. Since the right-side battle group had broken through to operational depth on 17 July, the 4th Tank Army could be committed to battle behind the mounted-mechanized group, bypassing L'vov on the north and northwest. For this it would have to execute a 110-120 km march to the point of engagement, plus approximately 100 km from the point of engagement to L'vov. In conditions where the defense was already broken up on the axis of advance of the northern force and the 1st Tank Army was advancing swiftly toward the San, all this could take 48 hours, a maximum of 72. The 4th Tank Army could reach the L'vov area by 19-20 July and attack the city from the unprotected north or west.

Moving into action through the Koltuv corridor, the 4th Tank Army reached L'vov on 19 July, that is, one of its tank corps reached the city. Encountering stubborn resistance at L'vov, it was unable to continue advancing, and its forces were scattered in four areas. Finally by 25 July the army commander succeeded in gathering his forces together and commencing an assault on the city, which was captured through joint efforts of the 3d Guards Tank Army and 60th Army, but not until 27 July, that is, 5-6 days later than could have been the case if the 4th Tank Army had been engaged in the zone of the 13th Army.

Of course such a maneuver involved certain risk, for the enemy was endeavoring to close the Koltuv corridor, and might succeed. But by mobilizing the battle group of the 1st Guards Army and the antitank weapons of the front and the 5th Guards

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Army, comprising the front's support echelon, the Koltuv corridor and the ring of encirclement around the Brody force could be preserved. The capture of L'vov on 21-22 July disrupted the operational stability of Army Group Northern Ukraine, which made it possible more rapidly to join together two operational breakthroughs into a strategic breakthrough, and to reach the Vistula sooner and in greater force.

Penetration by the southern battle group was taking place in complex, at times critical conditions. The main reason for this was the fact that the enemy, having determined the point and time of commencement of the offensive, had made preparations to repulse it: he had put his troops on a heightened combat alert status, had somewhat beefed up his combat formations, and had brought up operational reserves to the breakthrough sector -- the 1st and 8th Panzer divisions. Nevertheless the high troop densities established in the breakthrough sector, substantial superiority in personnel and weapons, firm and flexible direction of the operation by the commanding general of the front, and determined actions by all the troops made it possible to break through a very strong enemy defense.

Comparison of penetration on the First Ukrainian and Belorussian fronts and expenditure of forces required for its accomplishment suggests the conclusion that in conditions where there is little probability of gaining the element of surprise, weapon and equipment densities should be 30-40 percent higher than the figures adopted for the prevailing conditions in a campaign in progress.

Penetration on the L'vov axis was also characterized by the fact that two tank armies were squeezed through a 6-km gap to operational depth, a gap which proved to be one third to one fourth the width considered necessary according to prewar views and the established practice of engaging front mobile groups. This experience indicates that engagement of large masses of tanks is also possible without wide "safety" zones on their flanks at the time of engagement. It is important to deprive the enemy of the opportunity of delivering direct fire, to suppress and demoralize large counterthrust forces. To achieve this objective, the First Ukrainian Front extensively employed mass fires and concentrated airstrikes. For example, the Second Air Army flew 1848 sorties against the enemy's 1st and 8th Panzer divisions, which sharply weakened the force of their drives.³⁵

As in the Belorussian Operation, the defeat in detail of the enemy's Brody force, which was encircled at tactical and immediate operational depth, led to the formation of a large gap in the enemy's defense, while the enemy was endeavoring at all costs to hold the Western Ukraine and thus to block the path of the Soviet forces into the Silesian industrial region and into Czechoslovakia, to which the Hitlerite leaders had rebased from Germany a large number of war plants and where a resistance movement was gathering momentum, a movement which developed into the Slovak uprising. By the 10th day the troops of the First Ukrainian Front had advanced almost 200 km in the center of a zone more than 300 km wide. On 29-30 July the front's forces, which had advanced a total of 350 km, crossed the Vistula and seized a number of bridgeheads on the far side. During August these bridgeheads were linked up into a single bridgehead 75 km in frontage and 20-60 km deep.

The successful advance of the troops of the First Ukrainian Front made it possible to widen the strategic breakthrough to 1200 km. The enemy was able to stabilize his strategic defensive front only by moving to the western strategic sector large

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reserves from Germany, the Western European countries and other strategic sectors, as well as by deploying them along natural barriers -- the Vistula and Narew rivers, and along the fortified East Prussian border.

At the same time we should note that the heavy expenditures of men and equipment by the First Ukrainian Front on breaking through the tactical zone of defense and exploitation to operational depth limited its capabilities to exploit the strategic breakthrough. The overall depth of advance by the front's forces proved to be half that of the Belorussian Operation, although it had more mobile combined units than in all the fronts which had been advancing in Belorussia north of the Polesye. In addition, the four tank corps of the left side of the First Belorussian Front were operating close to the zone of advance of the First Ukrainian Front.

Penetration in the Iasi-Kishinev Operation, which began on 20 August with a simultaneous offensive drive by the Second and Third Ukrainian fronts (Diagram 25), had a number of notable aspects.

On the Second Ukrainian Front, due to high artillery densities established in the breakthrough sector, concentrated fire on key points in the tactical defense, and the achieved element of surprise, the defense was suppressed well, with communications, command and control at the company, battalion, and regimental level completely disrupted.

Officers specially designated by front headquarters monitored the course of penetration. As soon as the attack-echelon troops crossed the Bakhлуй River, the 6th Tank Army was given the signal to advance. It entered the gap at 1400 hours. This was the only instance in the Great Patriotic War where a tank army entered a so-called "clean" gap in the middle of the first day of an operation.

Although the second defensive zone was already penetrated, the 6th Tank Army was unable immediately to break through to operational depth. The enemy had engaged three reserve divisions, endeavoring with these combined units, together with retreating forces, to halt the advance of the forces of the Second Ukrainian Front in the third zone, which ran along the Mare range. By stubborn fighting the enemy was able to slow the advance of the front's battle group. But on the following day Soviet troops captured passes across the Mare range without a halt and completed breakthrough of the army defensive zone. On the night of 22 August the 6th Tank Army, commencing pursuit, advanced 35 km for the day, an additional 45 km on 23 August, and drove swiftly toward the Focsani Gate, in order to penetrate the fortified area without a halt and open up the road into Central Romania, Bulgaria, and to the borders of Yugoslavia and Hungary. It brilliantly accomplished this mission on 27 August, having fought its way forward 180 km in a week's time.

Penetration was proceeding equally successfully on the Third Ukrainian Front, where in conditions of offensive actions from a bridgehead, they nevertheless achieved the element of surprise. An important role in this was played by preparation of a feint attack in the zone of the 5th Assault Army and conduct of reconnaissance in force by that army on the day the operation began. This deluded the enemy about the actual main axis of advance, and he delayed withdrawing the main forces of the German 6th Army from the Kishinev salient, which facilitated their total envelopment and annihilation.

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On the second day of the operation the 4th Guards Mechanized Corps, and subsequently the 7th Mechanized Corps as well were committed to action for offensive exploitation. The front battle group advanced 25-30 km. On the following day tanks succeeded in breaking through to operational depth and in pushing forward toward the area where they were to link up with the troops of the Second Ukrainian Front. On 22 August the 7th Mechanized Corps covered 80 km. On the following day the enemy's Iasi-Kishinev force, totaling 22 divisions, was encircled and soon thereafter defeated in detail. A huge gap had been formed on the southern side of the German Front, which the enemy was unable to close. In this operation the front's forces crushed the main forces of Army Group Southern Ukraine between 20 and 29 August and thus achieved a breakthrough of the enemy's strategic front in the Southwestern Sector. This enabled them subsequently to cross the Eastern Carpathians and Transylvanian Alps, to liberate the Romanian and Bulgarian peoples from the German-fascist occupation forces, and to reach the Hungarian and Yugoslavian borders. In a single month the troops of the Second and Third Ukrainian fronts had advanced 500 km. It was not until mid-September that the German-fascist command authorities succeeded in establishing a new, continuous defensive front, with the newly-formed Army Group South, consisting of the German 8th Army and the Hungarian 2d and 3d armies.

The Soviet Army achieved excellent success in the summer-fall campaign of 1944. Large German-fascist forces were defeated in detail in all sectors of the Soviet-German front, and the enemy's strategic front was broken through twice: in the Western Sector, in a sector 1200 km wide, from the Western Dvina to the Carpathians, where 100 divisions were routed, and in the Southwestern Sector -- from the Carpathians to the Bulgarian Maritsa River, on a front of more than 500 km, with 56 divisions defeated in detail. Our forces had advanced from 400 to 700 km.

In both cases penetration of the enemy's strategic front was achieved by mounting large-scale strategic operations, during which the enemy's defense was initially softened up by simultaneous attacks in several narrow sectors of front, while subsequently the opposing German-fascist main forces were enveloped and annihilated by advances on converging axes, with simultaneous deep advance at a rapid pace.

As experience indicated, this mode of penetration of the enemy's strategic front gave the Soviet forces continuity of offensive drives to considerable depth, offensive exploitation at a rapid pace, reduction in the time required to conduct strategic operations, enormous enemy casualties and combat equipment losses, with friendly forces sustaining light casualties, and also led to exhaustion of the enemy's strategic reserves and created advantageous conditions for conducting new strategic operations in other sectors.

In the summer-fall campaign of 1944 the task of splitting up the enemy's defense into separate pieces by several simultaneous thrusts (3-6 or more) was carried out by the forces not of a single front, as had been the case in the preceding campaign, but by the forces of a group of fronts, which was due to the fact that the enemy possessed a strong defense disposed in depth and substantial operational reserves, consisting for the most part of panzer and motorized combined units capable of extensive maneuver and execution of powerful counterthrusts.

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Depending on the concept of the operation, available men and weapons, the character of the enemy's defense and his force grouping, the front executed penetration in one or two sectors. Of the 13 initial front operations conducted in June-August 1944, in seven operations the fronts penetrated the defense in two sectors, and in six operations -- in one sector. If the front was attacking simultaneously on two axes, a powerful battle group would be formed on each of these axes, capable of independently penetrating the enemy's defense and exploiting to considerable depth. In this case one would be designated the main attack, and the other a second attack, but not secondary attack, since in its force, significance and role in the operation it went beyond the framework of a secondary attack, which usually would be conducted with a limited objective. Each attack would involve from two to three combined-arms armies and one or two tank armies (or from one to three tank and mechanized corps), with 3500-4500 guns and mortars, a considerable number of engineer troops, with strong air support.

The main attacks in front operations were mounted for the most part against a weak point in the enemy's defense, but in such a manner that the selected axes would bring our main forces into the flank and rear of the enemy's main forces (offensive drives of the First Baltic Front at Vitebsk, the First Belorussian Front at Bobruysk, the Second and Third Ukrainian fronts in the Iasi-Kishinev Operation, etc). In a number of instances the main attack was delivered against strongpoints in the enemy's defense when attacks on other axes failed to accomplish the mission of routing the opposing enemy main forces (First Ukrainian Front in the L'vov-Sandomierz Operation), or when major lines of communication passed through strong defensive sectors, roads suitable for successful employment of large mobile forces (Third Belorussian Front on the Orsha axis). Great importance was attached to the element of surprise in selecting the main axis of advance. Particularly characteristic in this regard are the attacks of the First Belorussian Front near Parychi and the Third Ukrainian Front from a bridgehead south of Bendery. In these sectors the enemy had totally excluded the possibility of mounting main attacks by Soviet forces.

Men and weapons would be massed on the selected axes, and powerful battle groups would be formed. For example, 50-80 percent of combined-arms large units, 60-80 percent of artillery, and 90-100 percent of tanks and air would be concentrated in breakthrough sectors comprising 6-15 percent of the entire width of the front's zone. This made it possible to establish high operational densities -- an average of 0.8-1.0 km per rifle division, 150-250 guns and mortars and 60-80 tanks and self-propelled guns per km of breakthrough sector -- and to achieve a 4-6:1 superiority over the enemy in infantry, 6-10:1 in artillery, 4-8:1 in tanks, and 4-10:1 in aircraft.

A most important role in accomplishing the mission of penetration of the enemy's tactical defense was played by rifle combined units, which were more heavily saturated with tanks and artillery than in the past. Assigned narrower breakthrough sectors -- 1.5-2.5 km per division and 3-5 km per rifle corps, they were able to increase tactical densities of personnel and weapons to 5-7 rifle battalions and to 20, and in some cases more, close-support tanks per km of breakthrough sector.

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As a rule the combat formations of the combined-arms large units and units were deep, figured for mounting a strong initial attack, capability to build up the offensive effort during penetration, and conduct of an assault without a pause to the entire depth of the enemy's main defensive zone. The depth of missions increased in comparison with the summer-fall campaign of 1943. It became a rule to assign an immediate objective to the regiment -- capture of the first position (depth to 2 km), for the rifle division -- capture of the second position (depth 4-5 km), for the rifle corps -- capture of the main defensive zone (depth 6-8 km). In most cases the subsequent objective for the rifle divisions would be capture of the main defensive zone (depth 8-10 km), for the rifle corps -- advance to the second zone or capture of the entire tactical zone (depth 13-17 km). In those cases when an army mobile group was employed in the corps sector, the subsequent corps mission (or the day's objective) would be assigned to considerable depth.

Increase in artillery densities in the breakthrough sectors and improvement in the qualitative composition of artillery, as well as an increase in the ammunition limit released to the fronts, taking into account amassed combat experience, made it possible to increase the percentage share of massed fire in the artillery preparation plan and to increase its effectiveness. In 1943, for example, 8-20 percent of total artillery preparation time would be allocated to heavy shelling, while in the summer-fall campaign of 1944 it amounted to 50 percent and more. Depth of simultaneous suppressive fire on the enemy's defense increased to 5-6 km, and in some operations (Iasi-Kishinev and others) to 8 km. A double moving barrage to the depth of the enemy's first defensive position was employed to ensure reliability of artillery support of the assault phase. Artillery control was also improved by establishing a well-structured system of artillery groups according to the organizational-tactical principle, and enlistment of artillery breakthrough division and corps headquarters for controlling artillery groups.

Typical of air support of penetration was extensive employment of massed airstrikes, increased duration of continuous battlefield close support of ground troops, and closer coordination between air and ground troops. The latter was achieved by full adoption of the practice of controlling close-support air by representatives of the air command, assigned to the command posts of the combined-arms commanders.

Improvement in the art of preparing for penetration and methods of its conduct made it possible in a number of operations (First Baltic and Third Belorussian fronts in the Vitebsk area, the First Belorussian Front south of Bobruysk and on the Kovel' axis, the Second and Third Ukrainian fronts in the Iasi-Kishinev Operation) to achieve penetration of the enemy's tactical zone of defense to its entire depth on the first day of the operation.

Development of tactical to operational breakthrough was achieved by engaging mobile groups of the armies and fronts. As a rule army mobile groups would be committed to battle on the first day in order to complete penetration of the enemy's tactical zone of defense, but sometimes following breakthrough (the 7th Mechanized Corps of the 37th Army in the Iasi-Kishinev Operation, the 11th Tank Corps of the 8th Guards Army of the Lublin-Brest Operation). Front mobile groups, consisting of tank armies and mounted-mechanized groups, would most frequently be moved into the breach after the forward operational echelon had penetrated through the tactical zone of defense, which was a new phenomenon in their employment and attested to substantial

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achievements by Soviet art of warfare in resolving the problem of penetrating the enemy's defense.

3. The Art of Penetration of the Enemy's Defense in the Operations of 1945

The 1945 campaign in Europe was conducted in a military-political situation which was favorable to our Armed Forces. The enemy had been expelled from Soviet soil, and the battle front ran through East Prussia, Poland, Czechoslovakia and Hungary, 520-550 km from Berlin, and 650 km from the Elbe River, the designated point where the Allied armies were to meet. As a result of the crushing defeat of the Hitlerite forces in Northern Norway and Finland's withdrawal from the war, the battle line had shrunk from 4450 to 2250 km, which enabled our command authorities to move freed men and equipment to strengthen those fronts which were still active.

Thanks to measures taken by the Communist Party and Soviet Government, by the beginning of 1945 the Soviet Army was better armed and equipped than at any time in the war. This created extensive capabilities to form powerful battle groups capable of mounting crushing drives to great depth and to conduct an offensive at a swift pace.

The concept of Hq SHC for this campaign called for a simultaneous offensive along the entire strategic front, with the main attack to be launched on the Warsaw-Berlin axis, with the objective of crushing the German-fascist forces in East Prussia, Poland, Czechoslovakia, Hungary, and Austria, with Soviet forces reaching a line from the mouth of the Vistula River to Bydgoszcz, Poznan, and on to Vienna. Subsequently an offensive would be launched on Berlin and Prague.

Penetration of the enemy's strategic defensive front on the Berlin axis. Seven defensive lines had been established between the Vistula and the Oder, to a depth of up to 500 km. The strongest of these lines -- the Vistula line -- consisted of four zones with a total depth of 50-70 km. The defense was particularly solid opposite our bridgeheads in the Magnuszew, Pulawy, and Sandomierz areas. The main defensive zone consisted of 3-4 positions. Divisions in this zone were defending in sectors 5-10 km wide. Enemy operational-reserve panzer and motorized divisions were deployed against the bridgeheads. Subsequent defensive lines were set up for the most part along rivers, which increased their strength and enabled the German-fascist command authorities sequentially to shift efforts to depth, thus delaying penetration by Soviet forces to strategically important objectives.

The defense of East Prussia was based on a string of fortified areas extending along its eastern and southern borders, as well as on a number of strongholds.

To weaken the enemy's force grouping on the Berlin axis, the Soviet Supreme High Command undertook operations in East Prussia and in Hungary, which forced the enemy to move 18 divisions (including 8 panzer) and 3 brigades from the center to the flanks in October and December. In exchange, only 6 infantry and 2 panzer divisions were moved into the central sector. The fact that the enemy's forces were weakened by 10 divisions, including 6 panzer divisions, prevented him from establishing strong operational reserves and occupying fortified defensive lines at depth in advance.

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According to the concept of Hq SHC (Diagram 27), the main attack on the Berlin axis was to be mounted by the forces of the Second and First Belorussian and First Ukrainian fronts in the Ostroleka-Krakow sector. A breakthrough of the strategic front in this sector would make it possible rapidly to liberate Poland's central and western voivodships and, advancing to the tactical approaches to Berlin, to create the requisite conditions for completing total defeat of fascist Germany's armed forces; subsequent advance by the Second Belorussian Front to the mouth of the Vistula would cut off the enemy's East Prussian force and would lead to its defeat, working in coordination with the troops of the Third Belorussian Front and the Baltic Fleet.

Although the experience of the preceding campaign had demonstrated the great effectiveness of an envelopment operation, in the January 1945 offensive Hq SHC selected a different form of conduct of operations -- delivery of a number of powerful, splitting attacks to considerable depth. The Second Belorussian Front, utilizing bridgeheads on the west bank of the Narew River, was to mount two powerful attacks at the boundary of Army Groups Center and A and then, forming a single breach, was to push the advance toward the Baltic. The First Belorussian Front also was to mount two attacks, utilizing the Magnuszew and Pulawy bridgeheads. During penetration to immediate operational depth they were to merge into a single offensive drive, spearheading directly toward Berlin. The First Ukrainian, Third Belorussian and Fourth Ukrainian fronts were each to mount an offensive thrust.

If we consider that the breakthrough sectors of the battle groups of the First and Second Belorussian fronts were 20-40 km from one another, we can state that at the operational-strategic level these fronts were also mounting one powerful offensive thrust each.

The enemy's defense on the Berlin axis was strongest against the bridgeheads. Penetration required establishment of high troop densities, while deep exploitation of the planned operations required the formation of several operational echelons.

In directives to the fronts Hq SHC specified the composition of the battle groups, the directions of offensive thrusts and breakthrough sectors, and artillery densities, that is, essentially the principal matters pertaining to penetration were determined by Hq SHC.

For example, in a directive to the First Ukrainian Front (and to all the others) Hq SHC gave the following instructions: the main attack was to be launched by the forces of five combined-arms armies (45 rifle divisions), 2 tank armies, 4 tank and mechanized corps from the Sandomierz bridgehead toward Chmelnik-Rodomsko. The defense was to be penetrated in a 30 km sector, and artillery densities were to be 220 tubes per km of breakthrough frontage (76 mm and larger).

Actual force groupings and densities of men and weapons are shown in Table 11.

Troop densities were 15-20 percent greater than in the summer-fall campaign of 1944, and even higher in the zones of certain combined units. For example, in the breakthrough sector of the 29th Guards Rifle Corps and the 8th Guards Army, artillery density was increased to 390 guns and mortars per kilometer.

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Table 11. Composition of Front Battle Groups and Troop Densities in January 1945 Offensive

Designation	Third Belorussian Front	Second Belorussian Front		First Belorussian Front		First Ukrainian Front
		Rozan Force	Serock Force	Magnuszew Force	Pulawy Force	
Combined-arms armies	4	3	2	4	2	8
Tank armies		1		2		2
Independent tank (mechanized) corps	2	3	1		2	4
Rifle divisions	30	22	13	35	14	56
Artillery	4800	4770	1800	5300	3800	8200
Tanks	1238	1535	375	1982	768	3244
Aircraft	1333	1647		2190		2582
Width of breakthrough sector, km	24	18	10	17	13	36
Densities:						
km per attack-echelon division	1.5	1.7	1.5	1.2	1.8	1.4
guns and mortars per km of breakthrough sector	220	290	180	310	300	230-250
close-support tanks and self-propelled guns per km of breakthrough sector	30	25	20	24	26	Up to 20
operational density of tanks and self-propelled guns per km of breakthrough sector	50	71	32	104	60	95

Concentration of a large quantity of weapons in breakthrough sectors made it possible to smash the enemy's defense with assurance, while dense combat formations and a deep tactical order of battle ensured penetration at a rapid pace and to full depth.

New features appeared in planning delivery of fire on the enemy. In the First Belorussian Front artillery support for the attack was planned in two variations, taking into account the specific features of initiation of offensive actions by the troops of the front, where the assault by the main forces was preceded by actions by reinforced forward battalions or, as they were then called, "special echelons." Artillery preparation for the assault by the forward battalions was to involve a single massive 25-minute delivery of fire by all the front's artillery, concentrated in breakthrough sectors, and not only specially designated artillery (1-3 artillery regiments per battalion), as had usually been the practice in the past. Close artillery support of the assault phase was to involve a single moving barrage to a depth of 1.5-2 km. In case the forward battalions broke through the first position, artillery was to provide support for engagement of the main forces of the attack-echelon divisions, and in case of an unsuccessful attack -- to conduct artillery preparation on a full schedule, that is, for an additional 70 minutes (20 minutes of repeat heavy shelling, 30 minutes of demolition and suppression of

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targets by methodical fire, and 20 minutes of a third heavy shelling). No less important was the fact that in the first variation artillery preparation was reduced to 25 minutes. According to the second variation, massive shellings comprised almost 60 percent of total preparation time, and almost 70 percent including the first heavy shelling.

On the First Ukrainian and Third Belorussian fronts artillery preparation was to run 107 and 120 minutes. The percentage share of massed fire increased to 30-35 percent, and in addition, methodical fire was to be extensively conducted during destruction of enemy targets, which would increase probability of neutralization of the enemy's defense. Depth of delivery of artillery fire on the enemy increased to 6-8 km in all fronts. On the Second Belorussian Front artillery preparation was planned in three variations, depending on the successfulness of the forward battalions which were to attack following the first 15-minute heavy shelling, supported by a double moving barrage.

Planning of several artillery preparation variations on the First and Second Belorussian fronts was a new element in planning fire delivery.

Air combat actions were planned in the form of an air offensive. During penetration of the enemy's tactical zone of defense, main air efforts were to be focused on close support of the infantry and tanks of the battle groups, and following breakthrough -- on support of the actions of mobile forces. On the First Belorussian Front 7945 sorties were to be flown on the first two days of the offensive, and 12,080 in the first three days on the First Ukrainian Front.

A heavy delivery of fires was planned in order to crush the forward echelon of the defending enemy force and to prevent the enemy from withdrawing troops and organizing defense on lines prepared at depth. As was noted soon after the war by Gen M. S. Malinin, chief of staff of the First Belorussian Front, we sought to establish a system of offensive action which would be capable of penetrating the enemy's entire tactical zone of defense and subsequently would be capable of swiftly completing operational penetration, so that we could capture ground before the enemy was able to organize defense at these points with the forces of retreating units and reserves arriving from depth.

Troop formation and the planned character of combat operations were subordinated to this same objective.

The tactical order of battle of the fronts which conducted the Vistula-Oder Operation was in two echelons. In the First Belorussian Front the 3d Assault Army was in the support echelon, and in the First Ukrainian Front -- the 21st and 59th armies. The exploitation echelon in each front consisted of two tank armies. The mobile group of the First Belorussian Front also contained the 2d Guards Cavalry Corps. In addition, the fronts maintained reserves.

The Third Belorussian Front was also formed in two echelons, in spite of the fact that the operation was to be comparatively shallow -- 150 km. This was due to the fact that on the front's axis of advance the enemy had a defensive line on the Daime River with reinforced concrete fortifications, as well as the Heilsberg fortified area and the Koenigsberg fortifications, penetration of which would require a build-up of efforts on an operational scale.

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The Second Belorussian Front had a single-echelon formation. The mobile group consisted of the 5th Guards Tank Army, and the reserve — a tank corps and a cavalry corps. This decision was made because five of the seven combined-arms armies were required to form two battle groups. Part of the forces of the 49th Army was also employed to widen the breakthrough sector of the front's main force and to protect it against counterthrusts from the north, where several Army Group Center reserve divisions were deployed in the Masurian Lakes area.

From 8 to 9 divisions were needed to cover a sector 170 km wide, and the commanding general of the front assigned 3 corps of the 49th and 50th armies to this. At the same time, in planning the operation the front military council was assuming that since the enemy had concentrated his principal efforts on holding the main defensive zone, it should and could be penetrated by the attack-echelon armies, establishing army mobile groups in most of them, consisting of a tank or mechanized corps. This would make it possible to maintain the forces of the 5th Guards Tank Army which, entering a "clean" gap, would be able to advance to the Baltic Sea without much hindrance.

The tactical order of battle of the armies was one-, two- and three-echelon.

A one-echelon tactical order of battle on the First and Third Belorussian fronts was due to the fact that they had wider zones of advance, as well as the fact that the command authorities of the fronts were endeavoring to establish a strong forward operational echelon, assigning to it all rifle corps which, penetrating the defense in narrow sectors, could sequentially build up efforts and if possible penetrate both defensive zones with their own resources, creating conditions for putting the tank armies into the gap.

On the First Ukrainian and Second Belorussian fronts the armies were formed for the most part in two echelons, while the 3d Guards Army was formed in three echelons. This was due to the fact that with a common breakthrough sector the majority of armies of the First Ukrainian Front were assigned narrow zones of advance, while the 3d Guards Army was in addition to thrust toward the flank in order to envelop the enemy force at the boundary with the First Belorussian Front.

Eight of the 14 armies advancing on axes where front mobile groups were not employed had their own mobile groups, consisting of one or two tank corps. In addition, artillery and antiaircraft artillery groups, antiaircraft artillery and engineer reserves, and mobile obstacle construction detachments were established in the armies.

The combat formations of the rifle combined units and units were organized for the most part in two echelons, which made it possible sequentially to build up efforts when penetrating enemy positions and zones in the tactical zone of defense. The width of the corps breakthrough sector averaged 2.5-5 km, and the division -- 1.2-2.5 km.

Employment of tanks in the fronts followed the same principles as in the summer of 1944. In the First Belorussian Front 22 percent of tanks and self-propelled guns were assigned to the attack echelon, which made it possible to establish average

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densities of 25 armored vehicles per km of breakthrough sector in the armies of the battle groups, and approximately 30 per km in the 8th Guards, 5th Assault, and 33d armies.

On the First Ukrainian Front close-support tank densities comprised 17.5 per km of breakthrough sector, while the figure was 10.3 in the 5th Guards Army, and 13.7 in the 52d Army.³⁶

The fronts assigned tanks to the exploitation echelon as follows: the First Belorussian Front -- 2160; and the First Ukrainian Front -- 2640 tanks and self-propelled guns.

The views of the commanding generals of the fronts on employment of the exploitation echelon during penetration were expressed in this difference. On the First Belorussian Front tank armies were to be committed to action following penetration of the tactical zone of defense by rifle troops, for capturing the army defensive zone without a halt, while on the First Ukrainian Front the principal, most fully elaborated variation was engagement of tank armies to complete breakthrough of the tactical zone of defense.³⁷ One reinforced tank (mechanized) brigade was detailed from each attack-echelon corps for final penetration of the main defensive zone.³⁸

This variation of engagement of tank armies had been thoroughly worked out in preceding operations and unquestionably would guarantee completion of penetration of the tactical defense. But it also had drawbacks. When tank armies were engaged in the course of penetration of the enemy's tactical defense, they were forced to operate in constrained conditions, to mount a frontal attack, and frequently to engage enemy operational reserves without maneuvering room. With a shortage of close-support tanks, this made it necessary to engage corps echelon by echelon, that is, unit by unit. All this increased the physical and psychological stress on the tank crewmen, increased vehicle utilization and tank losses to hostile antitank weapons, and diminished tank army capabilities to execute a swift dash to operational depth.

The problem of completing penetration of the tactical zone of defense in the operational sectors of tank armies was resolved more successfully in the First Belorussian Front. The combined-arms armies (5th Assault and 8th Guards) received up to 500 tanks and self-propelled guns. This enabled them to establish high close-support tank densities, to ensure a strong initial offensive thrust, and to exploit to a maximum degree the results of fire delivery and to execute an assault to substantial depth.

This employment of tanks for penetration made it possible more closely to organize their coordination with infantry, artillery, and engineer troops, to avoid expending tank armies for completing breakthrough of the enemy's tactical defense, and to create favorable conditions for their actions at operational depth.

A new element in the employment of close-support tanks was the fact that they were attached company by company to rifle battalions, while individual tanks would be assigned to rifle platoons. Such tank employment became possible in connection with an increase in the number of rifle subunits and improved combat skill of the commanders of these subunits.

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Army mobile groups were designated for performing two missions -- completion of penetration of the enemy's tactical defense and offensive exploitation to operational depth. Normally they would be engaged following penetration of the defense of the enemy's forward-echelon regiments, that is, two positions.

The limited nature of bridgeheads and attack positions with high troop density created the threat of excessive density, and consequently increased casualties to hostile fire. In connection with this, bridgeheads were to be provided in advance with an extensive network of fighting trenches, communicating trenches, and fortifications, which could be used in defensive fighting to hold the bridgeheads and for positioning troops immediately prior to an attack. Average densities of field fortifications per kilometer were as follows: up to 10 km of fighting trenches and communicating trenches, and up to 75 artillery and mortar emplacements; up to 27 command posts and observation posts; more than 100 dugouts and shelter trenches. In order to achieve continuous buildup of offensive force from the bridgeheads and uninterrupted supply to the troops during an advance to considerable depth, 26 bridges of various load capacity were constructed across the Vistula, from 5 to 15 per battle group or 3-4 bridges per army. In order to achieve maximum and swift exploitation of massive delivery of fire by attacking troops, from 3 to 4 lanes would be cleared through enemy minefields per rifle company, and 2-3 per tank company. Densities of engineer troops had been increased from 5 to 13 combat engineer companies per km of breakthrough frontage in order to accomplish a large volume of engineer support missions.³⁹

Party-political work was entirely focused on preparing the troops for penetrating a defense disposed in depth at a rapid pace and swift exploitation to depth. Particular attention was focused on increasing the men's combat skill and coordinating the actions of the units and subunits of the various arms in performing combat missions.

In consideration of the fact that in the course of the operation they would be liberating fraternal Poland and fighting on German soil, a correct, internationalist attitude toward the local population, including the German people, was instilled in the men. At the same time discussions were held, at which instructors pointed to the fact that the enslaved peoples of Europe were impatiently awaiting their liberation. All this increased the troops' fighting enthusiasm and resoluteness of actions in the course of the offensive.

Achievement of the element of surprise was a complex problem, since a broad offensive was possible only from the bridgeheads, and the locations of our planned breakthroughs could not be a secret from the enemy. Therefore Hq SHC and the command authorities of the fronts were endeavoring to conceal from the enemy to a maximum degree the force of the offensive drives which were in preparation and the time of commencement of the offensive. With this objective Hq SHC stepped up combat actions on the flanks of the strategic front, endeavoring to stretch out the enemy's forces in Poland. As Army Gen S. M. Shtemenko noted, this led Hitler to conclude that the Soviet Army intended to mount the main attack in 1945 across Hungary and Bohemia. Consequently the Wehrmacht main forces were dispatched to that area.⁴⁰

The fronts were carrying out various camouflage, concealment and deception measures. During the period of stepped-up combat actions in Hungary and East Prussia, a number of measures were taken to create the impression that the troops of the First

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and Second Belorussian and First Ukrainian fronts were endeavoring to strengthen the occupied bridgeheads and would not be launching an offensive in December-January. Attack positions were being readied under this guise. When the troops proceeded to prepare for the offensive, in conformity with the plans of camouflage, concealment and deception, they proceeded to simulate phony axes of advance, concentration areas, phony troop movements and unloading of supplies and withdrawal of troops from bridgeheads. Simultaneously troops were moving to assembly areas for the offensive. A great effort was made to deceive the enemy by feeding him phony documents, conducting phony telephone traffic, etc. Combat missions were communicated to the troops in written form: to the corps 5 days in advance, to the attack-echelon divisions 3 days in advance, to the support-echelon divisions 2 days in advance, and to the regimental commanders -- at the same time, but orally.

On 12 January 1945, the troops of the First Ukrainian Front were the first to begin penetration of the enemy's defensive line on the Vistula. Following a heavy 15-minute artillery bombardment (2-3 artillery regiments per battalion), the forward battalions commenced the attack at 0500 hours, that is, 4 hours before dawn, and captured the first trench line, from which the enemy had withdrawn a large part of his troops to depth (Diagram 28).

Artillery preparation began at 1000 hours. Its power, as well as the fact that it was conducted immediately following reconnaissance in force, which the enemy was not expecting, shook the enemy troops to such an extent that many enlisted men, and even officers panicked and began abandoning their positions without orders.⁴¹

Forty-five minutes before artillery preparation came to an end, along the entire breakthrough sector rifle platoons, 1 platoon designated from each attack-echelon battalion, began feigning a general attack. To add realism to the assault, 2 or 3 tanks operated with each rifle platoon. The enemy, knowing from past operations that our main-force attack would begin with tanks advancing to the forward edge of the battle area, took the feint attack to be the beginning of a general offensive and moved out of the shelters to repel the attack those troops which had survived the artillery fire. At this time a final, massive 15-minute bombardment was delivered by the front's entire artillery. After this the main forces attacked.

The infantry and tank assault, supported by a double moving barrage, developed at a rapid pace, especially in the 52d Army. As a result the double moving barrage was terminated after delivering fire on the first main defensive line and two intermediate lines, with shifting to support of the assault phase by the method of sequential concentration of fires. Abatement of friendly artillery fire enabled the enemy to intensify resistance and even to mount several counterattacks, which led to a slowing of the pace of the assault, especially during fighting for the second position. This position also, however, was penetrated from 2 to 3 hours after the attack began.

The buildup of enemy resistance indicated that resistance could be substantial in the third position. As a consequence of this the commanding general of the front issued an order at 1400 to commit the tank armies and independent tank corps to battle. In order to complete breakthrough of the main defensive zone, one tank (mechanized) brigade was engaged from each attack-echelon corps, while their main forces were to penetrate the enemy's second defensive zone without a pause.

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The forward brigades (detachments), jointly with the rifle combined units, completed penetration of the main zone and swept forward toward the second defensive zone. Conditions were right for engaging the main forces of the mobile groups. In the 3d and 5th Guards armies engagement of the main forces of the mobile groups took place in a timely manner, which enabled them swiftly to reach the second zone. In view of the onset of darkness, however, it was difficult to reconnoiter weakly defended sectors and to clear lanes through minefields, which delayed the assault on the second zone by the forces of some of the tank corps and forward detachments of the divisions. When the rifle corps reached the second zone, attempts were made to break through it at night, as a result of which they succeeded in penetrating the enemy's dispositions, while the tank corps were able to break through the entire tactical zone of defense and to reach the Nida River by morning on 13 January, along which ran the enemy's army defensive line.

Engagement of the main forces of the 3d Guards and 4th Tank armies was delayed approximately 16 hours, that is, instead of the afternoon of 12 January, they actually engaged at 0800 hours on 13 January close to the second defensive zone, when the forward detachments, bypassing strongpoints, reached the Nida River, having outpaced the main forces by 20-25 km. The delay in committing the main forces of the tank armies to action occurred because at the moment they reached the forward units of the combined-arms armies, all roads and routes were clogged with artillery and transport vehicles advancing behind their units. The 3d Guards Tank Army spent all night negotiating the enemy's main zone of defense without a fight, while the corps of the 4th Tank Army halted behind the infantry formations until morning on 13 January.⁴²

In connection with delay in committing the main forces of the tank armies, they engaged when the enemy's 24th Panzer Corps launched a counterstroke, supported by the second defensive zone, where withdrawn troops were holding important strongpoints. This led to protracted fighting, which continued throughout the day on 13 January. The second zone was finally penetrated by the front's troops on the second instead of the first day of the offensive. The tank armies, however, did not accomplish the objective of the first day of the offensive (to execute a hasty crossing of the Nida River) until the third day.

Rout of the enemy's operational reserve -- the 24th Panzer Corps -- created the requisite conditions for advancing to operational depth. On the morning of 14 January the front's troops accomplished a hasty crossing of the Nida River, succeeded in breaking through the deliberate defense on this river, which was weakly defended by the enemy, and in advancing swiftly to the defensive line established on the Pilica River, to which the enemy was hastily withdrawing his scattered troops. Beating the enemy troops to the river, the 3d Guards Tank Army executed a hasty crossing and captured a number of important points and crossing sites. That same day the town of Radomsko was captured, situated 30 km beyond the Pilica River. On the following day the troops of the 4th Tank and 13th armies broke through the defensive line on the Pilica River without a pause, after which they initiated operational pursuit of the enemy troops opposing the First Ukrainian Front.

Penetration of the First Belorussian Front began with a 25-minute artillery bombardment. Air support, just as on the First Ukrainian Front, was not provided due to

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bad weather. Shortening artillery preparations saved 30,000 of the 53,000 tons of ammunition allocated for preparation.

The German officers and men knew that the troops of the First Belorussian Front would quickly commence the attack, but they figured that artillery preparation would last for one and a half to two hours, with fire shifted several times, and they took refuge in solidly-built bunkers. But immediately following the preliminary bombardment, 22 reinforced battalions and 25 rifle companies attacked on a frontage of more than 100 km. Their attack took the enemy by surprise. On the main axis of advance the attack was supported by a single moving barrage, and only on the principal defensive lines, while the successive fire concentration method was employed in the armies attacking from the Pulawy bridgehead.

We shall examine conduct of penetration by combined units in the example of the 61st Rifle Corps of the 69th Army, which was attacking from the Pulawy bridgehead (Diagram 28).

Two forward battalions reinforced by artillery and tanks initiated the attack in its zone of advance. They overran the first and second trench lines while it was still dark, without much resistance by the enemy, who had sustained heavy casualties from the artillery fire, since the bombardment occurred at that moment when the enemy was moving infantry from the first to the second trench. The greatest number of enemy killed in action were found in the communicating trenches.⁴³ One hour and 20 minutes later, following stubborn fighting, the battalions also captured the third trench, which led to disruption of the enemy's entire fire plan and coordination. The enemy's thoroughly suppressed artillery either remained silent or was hastily changing position.

Specially assigned platoons advanced behind the forward battalions and cleared the trenches of remaining enemy personnel.

In connection with the successful actions of the forward battalions, the main forces of the attack-echelon divisions attacked at 1000 hours, on orders by the army commander.⁴⁴ Artillery preparation was replaced by a 15-minute shelling of targets in the second position. Since fog was complicating delivery of fire from indirect positions, all guns in the regimental artillery groups were moved forward for direct fire.⁴⁵ Their aimed fire gave effective support to the infantry and tanks.

At 1030 hours, following effective artillery bombardment, the 134th and 274th Rifle divisions assaulted the second position. They quickly overran the first trench, but soon the enemy, recovering from the blow, proceeded to offer steadily increasing resistance. From a small wood east of Flerjanow, at the edge of which five earth-and-timber fighting bunkers were situated, the regiments of the 134th Rifle Division encountered stubborn resistance. The enemy mounted a counterattack from the forest south of Gielenow.

The attack-echelon regiments, concentrating primarily fire from direct-fire guns and tanks on earth-and-timber fighting bunkers and counterattacking enemy subunits, captured the bunkers with a flanking maneuver and routed the enemy in the small wood. The counterattacking force was neutralized by artillery fire and subsequently routed by an encounter attack. The second position was penetrated by 1330 hours.

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The 274th Rifle Division was counterattacked on the approaches to the second position, just before engaging the main forces. Although it took only half an hour to repel the counterattack, this time allowed the enemy to organize defense of the second position, the assault on which did not begin until 1100 hours. The enemy offered stubborn resistance, especially at the Lagow strongpoint, the approaches to which were protected by minefields and an antitank ditch.

The division commander concentrated on Lagow the fire of the divisional artillery group. While methodical, concentrated fire was being delivered, combat engineers were clearing lanes through the minefields. Tanks and infantry, launching an assault, smashed the resistance of the 55th Infantry Regiment and overran the second position. Here too, however, the enemy mounted another counterattack. It was halted by artillery fire, upon which attacking infantry and tanks threw the enemy back, inflicting substantial casualties.

The main defensive zone consisted of a string of strongpoints and emplacements, which enabled the troops of the 61st Rifle Corps, neutralizing some of them with artillery fire, to bypass others and to advance more rapidly to depth. The divisional commanders, however, keeping their support echelons for an assault on the second zone, would not commit them. Nor were the divisions' forward detachments sent out. Therefore exploitation was somewhat slowed, which delayed engagement of the 11th Tank Corps. The onset of darkness made advance of units of the 61st Rifle Corps even more difficult. But nevertheless it reached the second zone by 2100 hours, having advanced 15 km on that short January day. Breakthrough frontage increased from 4 to 6 km.⁴⁶ Its divisions, however, did not take advantage of all opportunities to penetrate the second zone without a pause.

Engagement of the 11th Tank Corps into the gap began at 1400 hours, following penetration of two enemy positions. Two tank brigades were advancing in the forward echelon. Since enemy resistance was not weakening between the main and second defensive zones, it became necessary to commit the forward detachments of the brigades. The brigades' main forces were engaged through weak points, covered by the forward detachments. This enabled the 20th Tank Brigade to reach the enemy's second defensive zone by 2000 hours. The 65th Tank Brigade reached it together with the rifle troops.

In view of the slowdown in the advance of the troops of the 69th Army, the enemy succeeded in occupying the second zone with his 19th Panzer Division and remnants of the 17th and 214th Infantry divisions. On a frontage of 18 km, where the 69th Army was to break through the defense, the enemy had 8 fresh battalions and 4-5 composite battalions made up of remnants of the 17th and 214th Infantry divisions.⁴⁷

Since the enemy troops were taking up the defense hastily and in the dark, there should be weak spots in the defense. Two such points were discovered, to the east and south of the town of Zwolen. Attacking aggressively, the 20th Tank Brigade had broken through the second zone by 2100 hours and proceeded to bypass the town of Zwolen on the north. Divisions of the 25th Rifle Corps exploited its successful advance, mounting a frontal assault on the town. In spite of all the difficulties of mounting a night attack in a built-up area, the town was captured by 2400 hours.

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The 61st Rifle Corps would be penetrating the second defensive zone in the strongest sector, defended by three fresh battalions of the 19th Panzer Division and a substantial number of withdrawn enemy troops. Therefore it was decided to attack on the morning of 15 January, that is, after limited preparation time.

A total of 602 guns were concentrated in the breakthrough sector, which made it possible to establish a density of 103 guns and mortars per km of frontage. A fairly high density of fire was established in 30 minutes of artillery preparation.

The offensive was resumed at 0930 hours. The enemy offered very stubborn resistance, especially at points where panzer subunits were defending. After overrunning the first trench, the 134th Rifle Division was stopped. Three enemy battalions, supported by 20 tanks, counterattacked. The divisional commander engaged the support echelon to crush them, focusing it at the base of the spearhead. The division's main forces attacked with it. Capturing the powerful strongpoint of Wilcza Wola, they routed the counterattacking enemy forces and began rapidly advancing.

In the 274th Rifle Division the support echelon was engaged to assault the second zone. Its more powerful drive ensured a successful advance by the regiments. By 1200 hours they had penetrated the second zone. The 11th Tank Corps, together with the 77th Guards Rifle Division, was engaged in savage combat with the 10th Motorized Division, inflicting heavy casualties on it. This enabled it to penetrate the third defensive zone without a pause and to reach the city of Radom by evening on 15 January.

Thus the tactical zone of defense was penetrated in 24 hours, and the operational zone in 48.

The advance of the troops of the First Belorussian Front from the Magnuszew bridgehead was somewhat more difficult. While the 5th Assault Army succeeded in penetrating the entire main defensive zone by 1200 hours on 14 January and by evening had captured strongpoints in the second zone, which ran along the Pilica River, the 8th Guards Army did not capture the main zone until 0300 hours on 15 January. The 61st Army only advanced 2-3 km that day. The reason for the slowed advance of the main force of the First Belorussian Front was that in conditions of poor visibility insufficient suppressive fire was placed on the second position, while the number of close support guns was not increased.

On the morning of 15 January the Magnuszew force resumed the offensive. The 5th Assault Army attacked following a 10-minute artillery bombardment. The massive shelling and smoothly-coordinated assault resulted in the rapid collapse of enemy resistance, and the troops began successfully advancing to depth.

The 8th Guards Army commenced the attack following 40 minutes of artillery preparation, in the course of which enemy resistance in intermediate positions was softened up, while the attack frustrated enemy plans calling for a gradual shifting of efforts to the second zone. By 1600-1700 hours the army's combined units had reached a position, which was a continuation of the second zone, established on the Pilica River, and attempted to penetrate it without a halt. The enemy offered stubborn resistance with the remnants of mauled units and arrived operational reserves, and the advance slowed.

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At this time the main forces of the 1st Guards Tank Army reached the point at which they were to engage. Following heavy shelling by the 8th Guards Army's artillery, they proceeded to drive forward, and by the evening of 15 January the enemy's entire tactical zone of defense in the zone of the 8th Guards Army was penetrated. But while in the zone of the 5th Assault Army this immediately opened up the way for unhampered movement to operational depth, in the zone of the 8th Guards Army it was still necessary to smash the resistance of the tactical reserve -- the main forces of the 25th Panzer Division. It is true that these forces were clearly inadequate to resist two armies. The division, enveloped by the troops of the 5th Assault Army on the north and the 1st Guards Tank Army on the South, attempted to withdraw beyond the Pilica River, but it was preceded by tank army forward detachments, which were crossing the river and had shut off the avenues of withdrawal, which led to its total defeat. There were no troop-occupied positions ahead, which made it possible to exploit swiftly to operational depth.

Enemy forces positioned between the axes of advance of the battle groups of the First Belorussian Front were defeated in detail in the course of 16 January, after which a single breakthrough sector of the First Belorussian Front was formed. The troops initiated swift pursuit. Beating the enemy's reserves and retreating troops, they penetrated the subsequent defensive lines without a halt.

On the second day of the operation the troops of the 47th Army attacked, and during the night of 17 January, the Polish 1st Army. They captured bridgeheads on the Vistula River and threatened an attack on the Warsaw force from north and south. Their actions made it possible to utilize all the forces of the 2d Guards Tank Army to push the drive to operational depth. Engaged into a "clean" gap on the morning of 16 January, that is, on the third day of the operation, it immediately executed a 70-90 km dash, its main forces reaching the Zyrardow-Sochaczew area.

Penetration of the enemy's defense on the Second Belorussian Front began on the morning of 14 January, following an initial 15-minute artillery bombardment. When the forward battalions, having captured the first, and in certain areas the enemy's second and third trenches, encountered strong resistance, the decision was made to lift fire from the capture areas of the enemy defense and to continue artillery preparation on full schedule. But results of artillery fire could not be observed due to the heavy fog. Nor were preliminary airstrikes delivered.

When artillery preparation ended, at 1125 hours, the main forces attacked, supported by a double moving barrage. Reaching the second position, however, to which the enemy had succeeded in withdrawing his troops, they encountered stubborn resistance and were halted. It took several hours to prepare for an assault. If massive suppressive fire on the second position had been provided for in advance, this would have taken less time, and if suppressive fire had been delivered while the tanks and infantry were approaching the position, it could have penetrated without delay. In conditions of a successfully initiated assault, a substantial part of the artillery proceeded to change positions and observation posts. This process dragged on due to the poor visibility. Little daylight remained, and by evening the troops had advanced only 3-6 km.

The low rate of penetration by the troops of the Second Belorussian Front was due not only to the bad weather, which prevented air operations and diminished the

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effectiveness of artillery fire, but also to disruption of coordination of infantry, close-support tanks and guns, and to the inability of reconnaissance to spot enemy targets in conditions of reduced visibility and of artillery quickly to commence massed fire on sectors where continuation of assaults was to occur. Difficulties in advancing were also heightened by the fact that in conditions of a slow rate of penetration, the army penetrations were for the time being disconnected. This enabled the enemy to deliver fire on the advancing troops and to launch counter-attacks from the flanks, diverting substantial forces required for deep exploitation of penetration. All these factors made it impossible to commit the army mobile groups to action on the first day, as had been planned.

The offensive was resumed on the morning of 15 January. But during the night the enemy had moved up reserves, including the 7th Panzer Division and the Grossdeutschland Motorized Division. That day the front's forces repelled more than 70 counter-attacks. Units of the 7th Panzer Division, which mounted a counterattack, came under massed prepared Soviet artillery fire and lost as many as 70 tanks and more than 2000 officers and men.⁴⁸ This somewhat weakened the enemy's defensive front. Resuming the attack, rifle combined units pushed back the enemy forces, which made it possible to engage a tank corps on each of the bridgeheads. Powerful offensive thrusts by these corps succeeded in completing penetration of the main defensive zone. Advancing 5-8 km, they initiated penetration of the enemy's second defensive zone.

A decisive turning point took place on 16 January, when the weather improved and the 8th Mechanized Corps was engaged in the zone of the 48th Army, and the 4th Air Army was able to deliver several massed strikes. By evening on the third day of the offensive all breakthrough sectors were linked up into a single front breakthrough sector, extending 60 km in frontage and 30 km in depth. The Second Belorussian Front was greatly aided by the swift advance of the troops of the First Belorussian Front, into the zone of which the enemy hastily redeployed the Grossdeutschland Panzer Corps. All this created favorable conditions for engaging the front's mobile group.

The 5th Guards Tank Army entered a "clean" gap on the afternoon of 17 January. Sweeping forward, it penetrated the enemy's third defensive line without a halt and by evening, having advanced 30 km, reached the Mlawa fortified area. On 18 January it was enveloped from the north and south, and on the following day was cleared of enemy forces. This opened up the road to the Baltic Sea for the troops of the Second Belorussian Front, with the objective of cutting off the enemy's entire East Prussian force.

Swift pursuit of the enemy on 15-17 January by the forces of the First Ukrainian, First and Second Belorussian fronts created gaps in the enemy's operational-strategic defense the depth of which in the fronts ran 160-80-60 km respectively, which signified penetration of 3-4 operational defensive lines and a deep split in the forces of Army Group A, which had no reserves left not only for reestablishing defense along the Vistula but also for organizing defense on subsequent lines. Remnants of its thoroughly-defeated forces were in a scattered retreat toward Germany. All this predetermined the rapid development of operational penetrations into a strategic breakthrough on a front extending from the Carpathians to the Vistula, and soon on to the Baltic Sea, which had been reached by the troops of the

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Second Belorussian Front. The strategic breakthrough had been achieved essentially on 17 January, the fifth day of the operation, when the enemy's defense was penetrated on a 500 km front.

The offensive of the Third Belorussian Front began on 13 January. Following an initial 5-minute artillery bombardment, reconnaissance subunits detailed from each attack-echelon division swung into action. They determined that the first trench was occupied only by battle outposts, while the main forces had been withdrawn to the second trench. In connection with this, the bulk of artillery fire was re-directed onto the second and subsequent trenches. Heavy fog and a low overcast, however, restricted visibility to 100-200 meters, and in many places to 40-50 meters, which influenced the effectiveness of artillery preparation. In the 5th and 39th armies direct hits on the second trench were few. Because of this, they were not able everywhere rapidly to take even the first trench, since the enemy, who was not neutralized in the second trench, was placing heavy fire on the approaches to the first trench, inflicting heavy casualties on the attacking extending lines of riflemen and the close-support tanks. The assault proceeded slowly and with difficulty. Coordination between infantry, tanks and supporting artillery was disrupted, since the infantry line was too broken up. The assault became scattered in axes and time. The troops were forced to "chew through" the defense, rather than sweeping it out. As a result the troops of these armies advanced only 2-3 km in a day of intensive fighting, that is, penetrated only the first position, and not even that throughout the entire zone. The troops of the 28th Army, where artillery preparation results were much better, succeeded in penetrating 7 km into the defense.⁴⁹

The commanding general of the front, determining the deficiencies of the first day of the offensive, ordered the observation posts of the batteries and battalions brought closer to the combat troops, ordered establishment of firm communications with the infantry, more close-support guns to be allocated to the companies, and organization of closer coordination between infantry, tanks and artillery at the regiment-battalion level. During the night the troops corrected the indicated deficiencies and at 1245 hours on 14 January, following a 30 minute artillery preparation, resumed the offensive.⁵⁰ During this time the enemy had moved the 5th Panzer, 56th and 61st Infantry divisions to the breakthrough sector from the reserve and from sectors which were not under attack and, when Soviet forces resumed the attack, launched strong counterattacks along the entire front.

On 14 and 15 January the troops of the Third Belorussian Front, engaged in savage fighting, each day repelled more than 30 enemy counterattacks, each involving forces from a battalion to a regiment, with tanks and assault guns. As a result the battle group succeeded in penetrating not more than 2-3 km in 24 hours.⁵¹ Thus it took the front's forces three days to penetrate the main defensive zone, with advance to the second zone in some sectors. The assault on the second zone, undertaken following limited-time preparation, in conditions where the enemy had taken up defensive positions with withdrawn troops and had beefed up the defense with reserves, failed to achieve tangible results. There was a definite threat that the front's offensive could grind to a halt.

In order to deny the enemy the opportunity to maneuver and in order to increase the offensive drive of the Soviet troops, the commanding general of the front ordered

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the 2d Guards Army to have the left-side battle group (on the (Darkemenskoye) axis) launch an attack on 16 January, and engaged the 2d Guards Tank Corps in the zone of the 5th Army.⁵² This corps, engaging on the afternoon of 16 January, immediately encountered stubborn resistance and enemy counterattacks. By evening it had penetrated the defense only 1-1.5 km, and by the night of 17 January had captured several enemy strongpoints, but was unable to advance further. The enemy was continuously moving up reserves and was maintaining a continuous defensive battle line.

In spite of the limited success of the troops of the Third Belorussian Front, in four days of offensive action they had inflicted heavy casualties on the enemy. The enemy was also in a crisis situation, for the tactical defense was on its last legs: in conditions where all operational reserves had been expended, a breakthrough at one point would be sufficient to collapse the defense.

The enemy command authorities, having exhausted their basic reserves against the 5th and 28th armies and the 2d Guards Tank Corps, were unable to reinforce the defense in the zone of the advance of the 39th Army. Mounting a strong attack with its left-flank corps, on the morning of 17 January the 39th Army completed penetration of the enemy's tactical zone of defense and proceeded to exploit toward the northwest. The enemy began hastily retreating.

The commanding general of the front, exploiting the successful advance of the 39th Army, engaged the 1st Tank Corps in its zone.

On the morning of 18 January the 1st Tank Corps entered the gap on two routes and, destroying remnants of enemy forces in its path, reached the Inster River by evening and accomplished a hasty crossing. The troops of the 39th Army, exploiting the successful advance of the tank corps, moved forward as much as 20 km on this day and also reached the Inster River. On the whole by the evening of 18 January the troops of the Third Belorussian Front had achieved major operational success. The enemy's defense was penetrated on a frontage of 65 km and up to 30 km in depth. With the objective of exploiting the successful advance, on 19 January the commanding general of the front moved into the gap (on the heels of the 1st Tank Corps) the 2d Guards Tank Corps, transferred from the zone of the 5th Army, and on the morning of 20 January -- his support echelon -- the 11th Guards Army, which advanced 45 km by the evening of the following day and by morning on 22 January, operating in coordination with the 5th Army, captured the town of Insterburg.

The enemy began withdrawing his forces to a permanent-fortification defensive zone running along the Deime and Alle rivers, including the towns of Bartenstein and Heilberg. But the enemy was unable to occupy this line along the entire front either with retreating troops or hastily assembled reserves, and the line was penetrated both without a pause and with a limited halt in attack position. The troops of the Third Belorussian Front continued advancing directly toward Koenigsberg.

The experience of penetration in the Vistula-Oder and East Prussian operations indicated that in conditions of attack from bridgeheads and when penetrating a particularly strong defense, the composition of battle groups should ensure establishment of especially high densities of men and weapons and maintaining overwhelming superiority over the enemy during the entire conduct of an operational breakthrough. At the same time, in order to overcome the resistance of an enemy

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force which has prepared for turning back an offensive, it is essential particularly thoroughly to coordinate the efforts of the units and combined units of all combat arms taking part in the penetration. In conditions of poor or limited visibility, great importance is assumed by saturating the infantry and tank combat formations with close-support artillery and moving artillery observation posts close to the combat formations in order to ensure effective massing of fire, prompt and timely shifting of fire during combat.

Experience also indicated that completion of penetration of the tactical defense took place more successfully in those armies which had their own mobile groups. Army commanders did a better job of closely organizing their teamwork and coordination with combined-arms large units, engaged them in a more reliable manner, and more rapidly exploited their successful advance.

Engagement of a front mobile group from the standpoint of achieving a rapid pace of an operation proved to be more advantageous following penetration of the tactical zone of defense. When committing tank armies to battle within a tactical zone of defense and in conditions of establishment of very high troop densities, they were unable rapidly to overtake the rifle troops and wasted motor transport resources, fuel and manpower on negotiating short stretches of roads and cross-country routes deteriorated by the troops and vehicles of the combined-arms armies.

Crushing defeat of enemy troops occupying the tactical zone of defense and the enemy's immediate operational reserves was one of the most important factors in successfully crossing numerous defensive lines at depth without a pause and advance at a rapid pace -- 25-30 km per day. The tank armies were advancing at an average pace of up to 45 km per day, and on some days as much as 70 km, and up to 100 km ahead of the combined-arms armies. Such high rates of advance were being achieved for the first time in the war, and the experience of attaining them has retained significance up to the present day.

Penetration in the Berlin Operation (Diagram 29). The collapse of the strategic front of the German-fascist forces in Poland and swift pursuit of the routed enemy combined units at the end of January created conditions which led the commanding generals of the First Belorussian and First Ukrainian fronts to the decision to cross the Oder River in a hasty river-crossing operation and to launch a drive directly on Berlin. A reduction in the size of sectors of operations, however, short distances from the areas of formation of reserves, an extensive road network, utilization of the experience of the defense of Moscow and Leningrad by Soviet forces, about which a great deal was being written at that time in Germany's newspapers, enabled the German-fascist command authorities to move into the Berlin sector a large quantity of men and weapons, to mobilize manpower and to set up a very strong defense on the tactical approaches to Berlin.

In view of this circumstance, as well as the enormous political significance of a concluding operation involving capture of the capital of the fascist state, the Soviet Supreme High Command decided to create preconditions for conduct of a Berlin Operation which would rule out even the slightest failure and would guarantee penetration of a particularly strong, fanatically fought defense. With this objective the enemy was cleared from Eastern Pomerania, which made it possible to

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enlist the troops of the Second Belorussian Front for the Berlin Operation, bridgeheads on the Oder River were held and strengthened, and the 3d, 28th, and 31st armies of the Third Belorussian Front, which had ended combat operations, as well as a number of artillery and air combined units were redeployed from East Prussia. Enormous work was done to restore lines of communication and to replenish the forces with materiel and replacement troops. All this took more than a month.

By mid-April 1945 the 3d Panzer and 9th armies from Army Group Weichsel and the 4th Panzer and 17th armies from Army Group Center were defending on the Berlin strategic axis. German forces totaled 48 infantry, 6 panzer and 9 motorized divisions, 37 independent infantry regiments, 98 independent infantry battalions, and a large number of independent artillery and special units and combined units. The enemy's Berlin force totaled 1 million men, 10,400 guns and mortars, 1500 tanks and assault guns, and 3300 combat aircraft.⁵³ These forces enabled the German-fascist command to establish high operational densities. In the zone of advance of the Second Belorussian Front, for example, they amounted to 9 km per division, the First Belorussian Front -- 7 km, and the First Ukrainian Front -- 10.5 km per division. The enemy established particularly high troop densities opposite the Kuestrin bridgehead. Fourteen divisions were defending here in a 44 km zone, while average operational density was 3 km per division, 66 guns and 17 tanks per km of frontage.⁵⁴ Essentially such troop densities were characteristic of the offensive operations of 1941-1942.

Preparing to repel a Soviet offensive, the fascist command authorities established a powerful defense on the approaches to Berlin. The Oder-Neisse defensive line consisted of three zones and a number of intermediate and switch positions and was from 20 to 40 km deep. Immediately behind it was the Berlin defensive area, which consisted of 3 defensive perimeters and fortifications within the city proper. Total depth of the defense was 90-100 km. It was heavily saturated with weapons, minefields, reinforced concrete pillboxes, antitank and antipersonnel obstacles, and formidable strongpoints set up for a perimeter defense. The first zone was the most strongly fortified. It contained three positions with continuous fighting trenches, pillboxes and earth-and-timber fighting bunkers to a depth of 5-10 km.⁵⁵ We should also note that the terrain between the Oder-Neisse and Berlin was advantageous for defense. The Seelow hills, the Oder, Neisse, (Dame), and Spree rivers, a dense network of canals, rail lines and highways, a large number of towns with masonry buildings, and forests -- all this greatly complicated the job of the advancing forces.

The strength of the enemy's defense, however, lay not only in this. The fascist leaders, realizing that the end was near, made a desperate attempt to force their enlisted men, officers and general officers to fight with the ferocity of the doomed. Falsifying history and exploiting the national feelings of the Germans, and even Roosevelt's death, they succeeded in generating a desperate burst of fanaticism in the ranks of the troops defending on the approaches to Berlin and within the city itself.

Thus in the final operation of the war the Soviet forces would have to smash a very strong enemy defense, defeat a large strategic force, and capture the huge fortress-city of Berlin, with its 200,000-man garrison.

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The Soviet command authorities, clearly aware of the great difficulty of the forthcoming operation, prepared for it with great thoroughness. Three fronts were enlisted to conduct this operation: the Second and First Belorussian fronts and the First Ukrainian Front, which totaled 2.5 million men, 41,600 guns and mortars, 6250 tanks and self-propelled guns, and 7500 aircraft.⁵⁶ Our troops had a 2.5:1 superiority in personnel, 4.2:1 in tanks and self-propelled guns, and 2.3:1 in aircraft.

The Hq SHC general plan of this operation was as follows: the three fronts, launching powerful attacks, were to penetrate the Oder-Neisse defensive line in a number of sectors, after which they were to encircle the enemy's entire Berlin force, split it up into segments and, destroying them piecemeal, capture Berlin and advance to the Elbe, where they would link up with Allied forces.

In order maximally to increase the penetrating force of the main battle groups of the First Belorussian and First Ukrainian fronts, Hq SHC demanded establishment of an artillery density of not less than 250 guns and mortars per km of breakthrough sector. Fifteen breakthrough artillery divisions were transferred to these fronts to establish such densities.⁵⁷

Hq SHC ordered that tank armies be engaged to exploit on the main axes following penetration of the enemy's defense. The tank armies of the First Belorussian Front were to bypass Berlin on the north and northeast, while the tank armies of the First Ukrainian Front were to advance into an area 30-35 km southwest of Berlin. At the same time Hq SHC specified as a supplementary variation the possibility of the tank armies of the First Ukrainian Front swinging directly into the direction of Berlin.

Guided by the concept of Hq SHC and the assigned missions, the commanding generals of the fronts formulated their plans, on the basis of which preparations for the operations were conducted.

The form of operational penetration selected by the commanding generals of the fronts specified mounting three frontal attacks on the First Belorussian Front, two on the First Ukrainian Front, and one on the Second Belorussian Front. Acting in combination, they would make it possible not only to split but also to envelop the opposing enemy force, thus depriving the enemy of the capability to execute extensive operational maneuver.

At the exploitation phase of the operation the offensive drives of the fronts would branch out in conformity with the missions being performed both by the battle group as a whole and by the individual armies. On the First Ukrainian Front, for example, part of the forces of the main force grouping (2 tank armies and 1 combined-arms army) were to turn in the direction of Berlin with the objective of encircling and capturing it, working in coordination with the troops of the First Belorussian Front if the latter encountered particularly strong enemy resistance. The three armies of the Second Belorussian Front, after accomplishing operational penetration, were to advance with the objective of driving the enemy's 3d Panzer Army against the sea and totally destroying it.

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Battle groups were formed to execute these drives, in relation to the significance of each. Table 12 shows their composition and densities.

Table 12. Composition of Battle Groups and Troop Densities in the Breakthrough Sectors in the Berlin Operation*

Battle Groups of Fronts	Width of Break-through Sector, km	km per Rifle Division	Guns and Mortars per km	Tanks and Self-Propelled Guns per km
Second Belorussian Front				
65th, 70th, 49th armies, 8th Mechanized Corps, 1st Guards Cavalry Corps (17 rifle divisions, 3999 tubes, 860 tanks)	14	0.8	287	50
First Belorussian Front				
61st Army, 1st AVP, 7th Guards Cavalry Corps (10 rifle divisions, 3 cavalry divisions, 1430 tubes, 113 tanks)	7.5	0.75	190	14
47th, 3d, 5th Assault divisions, 8th Guards Army, 3d Army, 1st Tank Army, 2d Guards Tank Army, 9th, 11th Tank Corps (34 rifle divisions, 7912 tubes, 2306 tanks)	24.3	0.8	324	96
33d, 69th armies, 2d Guards Cavalry Corps (15 rifle divisions, 3785 tubes, 474 tanks)	12.5	0.9	255	32
First Ukrainian Front				
3d Guards, 13th, 5th Guards, 28th, 31st armies, 3d Guards, 4th Guards Tank armies, 2d, 5th, 4th Guards Tank Corps (40 rifle divisions, 6976 tubes, 1277 tanks)	27	0.7	359	47
52d Army, 2d AVP, 1st Tank Corps, 7th Guards Mechanized Corps (16 rifle divisions, 2232 tubes, 153 tanks)	9	1.5	248	15

* This table is based on figures contained in the following: "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne" [Operations of the Soviet Armed Forces in the Great Patriotic War], Vol 4, Moscow, Voenizdat, 1959; "Berlinskaya operatsiya 1945 goda" [The Berlin Operation of 1945], Moscow, Voenizdat, 1950; "Posledniy shturm" [Final Assault], Moscow, Voenizdat, 1970.

The most powerful force groupings were established on the main axes of advance of the First Belorussian and First Ukrainian fronts -- 5 combined-arms armies, 2 tank armies, and 5-6 breakthrough artillery divisions each. Such a composition of

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battle groups ensured penetration of a defense of any strength, under the most difficult operational-tactical conditions, and offensive exploitation to the scheduled depth.

A fairly strong battle group was also established on the Second Belorussian Front, the defense opposite which was somewhat weaker than opposite the First Belorussian and First Ukrainian fronts. As a rule the secondary attacks of the fronts would be mounted by two armies reinforced by SHC Reserve artillery, 350-600 tubes. One cavalry corps each was attached to the 61st and 33d armies to form army mobile groups on the First Belorussian Front, and a tank corps each to the 52d Army and 2d AVP on the First Ukrainian Front.

Depending on position in the tactical order of battle, composition and assigned support weapons, the breakthrough sector for the armies was specified at 3-4 km in the Second Belorussian Front, 2.5-7 km in the First Belorussian Front, and 8-10 km in the First Ukrainian Front.

The width of an army's breakthrough sector exerted direct influence on the width of the breakthrough sector and zone of advance of the combined units and units. In a number of armies the rifle divisions were assigned very narrow zones of advance -- 1-1.5 km, and even as little as 0.5-0.7 km for the 143d and 132d Rifle divisions of the 47th Army. The reason for narrowing zones of advance and breakthrough sectors of combined units was an endeavor to achieve high troop densities, with elements substantially under strength following the recently completed Vistula-Oder, East Pomeranian, and Silesian operations. On the average the numerical strength of the divisions ran 3600-6000 men,⁵⁸ while the rifle companies were at half authorized strength.

Artillery density on the main axis of advance of the First Belorussian Front was greater than that during the Vistula-Oder Operation by 25 guns and mortars per km of breakthrough sector, and by 36 including rocket artillery. At certain, more important points in the breakthrough sector artillery density ran as high as 350-370 guns and mortars per km. Here the density increase ran 70-100 units.

In the breakthrough sectors of the main force of the First Ukrainian Front, artillery density increased insignificantly, but if we compare it with the strength of the defense, which was greater opposite the Sandomierz bridgehead than on the Neisse River, there is an appreciable increase in degree of delivery of fire on the enemy.

Airstrikes considerably supplemented artillery fire. In the zone of the First Belorussian Front the number of bombers and ground-attack aircraft in the Berlin Operation was twice that of the Vistula-Oder Operation.

One also notes an increase in density of close-support tanks. While on the average for the breakthrough sectors of the battle groups they were the same as in the Vistula-Oder Operation, in the zone of the 5th Assault Army densities comprised 43.7 tanks and self-propelled guns per km of breakthrough sector.⁵⁹ Such high close-support tank densities created strong conditions for the army to be able on its own to penetrate the enemy's entire tactical zone of defense, with a very high degree of enemy resistance. In its zone, where the 2d Tank Army was also committed to

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battle, operational densities reached the highest level of the entire Great Patriotic War -- 117 tanks and self-propelled guns per km of frontage.⁶⁰

Established in the employment of close-support tanks was the principle of teamwork and cooperation with rifle subunits, right down to the platoons, to which specific tanks were assigned.

The tank and mechanized corps attached to the combined-arms armies were to be used primarily to complete penetration of the main defensive zone and to break through the second zone without a pause. Engagement of tank armies was planned in two variations -- following penetration of the tactical zone of defense, and during penetration. Since very strong enemy resistance was anticipated, preference was given to the second variation, especially on the First Ukrainian Front.

The Soviet Supreme High Command and the command authorities of the fronts, forming strong battle groups, were seeking to achieve a high degree of superiority over the enemy in the breakthrough sectors, since this was a most important prerequisite for accomplishing penetration at a rapid pace. However, since the enemy had also established high troop densities on our probable axes of advance, it was not always possible to achieve great superiority over the enemy's forces. This is evident in Table 13.

Table 13. Relative Strengths in Personnel and Weapons in the Breakthrough Sectors of the Fronts in the Berlin Operation*

Front	Personnel and Weapons	Ratio
Second Belorussian	Personnel	4.6:1
	Guns, mortars, rocket launchers	5.2:1
	Tanks	7.1:1
	Aircraft	2.5:1
First Belorussian	Personnel	3.2:1
	Guns, mortars, rocket launchers	3.4:1
	Tanks	3.3:1
	Aircraft	1.9:1
First Ukrainian	Personnel	8.0:1
	Guns, mortars, rocket launchers	10.6:1
	Tanks	9.6:1
	Aircraft	2:1

* This table was prepared on the basis of figures from the following: "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne" [Operations of the Soviet Armed Forces in the Great Patriotic War], Vol 4, Moscow, Voenizdat, 1959, pp 318, 331.

The figures in the table show that the least favorable ratio of personnel and weapons was on the First Belorussian Front, although the highest troop densities were established there. They proved to be half or less that required on the basis of the experience of numerous operations in the Great Patriotic War for accomplishing penetration at a pace ensuring that the operation would not lose steam.

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An entirely satisfactory ratio, definitely guaranteeing rapid penetration of the enemy's defense, was established only in the breakthrough sectors of the First Ukrainian Front.

The various operational-tactical conditions created in the zones of advance of the fronts by mid-April demanded a diversified organization of delivery of fire on the enemy's defense. The most important thing was the fact that the troops of the Second Belorussian and First Ukrainian fronts and one battle group of the First Belorussian Front would be accomplishing penetration which involved crossing the Oder and Neisse rivers. These rivers were of varying width and river flow conditions, which was taken into consideration in determining duration and organization of artillery preparation.

On the First Ukrainian Front it was to run 145 minutes, and included the following: preparation prior to crossing the Neisse River -- 40 minutes; support of the river crossing, seizure and holding of bridgeheads -- 60 minutes; preparation for assault across the river -- 45 minutes. Close support of the infantry and tank assault was to be provided by the rolling barrage technique, running 10 minutes, and support of infantry and tanks during fighting at depth -- by concentrated fire on request. Engagement of tank armies was to be supported by fire delivered by 2250 guns and mortars to a depth of 20 km. Toward this objective concentrated fires were prepared along nine prior-determined lines. Forward artillery observer officers were designated for sequential requesting of these fires.⁶¹

Air support of the penetration was assigned to the 2d Air Army, which had 2148 aircraft. Close air support was scheduled to begin 45 minutes before crossing the Neisse River, with strikes to be delivered by two bomber corps (230 sorties). A total of 3400 sorties were designated for close air support of infantry and tanks.

On the Second Belorussian Front the Oder River was to be crossed in two stages: initially forward units would cross the east branch of the Oder River, capture the ground between the branches, after which the main forces of the armies would advance to the west branch of the Oder River; then the west branch of the Oder would be crossed, bridgeheads seized, and the requisite manpower and weapons would be concentrated on these bridgeheads for penetration of the enemy's defense on the river's west bank.

Artillery support for the attack in the armies was also organized in conformity with these stages. An initial artillery preparation of the following duration was specified for support of the crossing of the Ost Oder and the ground between the two river branches: 90 minutes in the 65th Army, 120 minutes in the 70th Army, and 110 minutes in the 49th Army. With initiation of the attack by the main forces of the armies which were to cross the West Oder, a second artillery preparation of the following duration was scheduled: 45 minutes in the 65th Army, 60 minutes in the 70th Army, and 50 minutes in the 49th Army.⁶²

Support of the assault phase and close support of infantry and tanks during combat at depth was to be handled in all armies by the rolling barrage method, to the depth of the day's objective.

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Offensive air support was assigned to the 4th Air Army, which had 1360 aircraft. During the three nights prior to the offensive, preliminary airstrikes were to be delivered by the forces of a night bomber division. Immediate preliminary airstrikes were to be delivered by the ground-attack aircraft for 2 hours prior to commencement of the attack, a total of 272 sorties. Air support was to involve delivery of sequential waves of strikes on strongpoints, centers of resistance and enemy artillery to the entire depth of the day's objective. A total of 4079 sorties were scheduled for the first day, including 2671 ground-attack aircraft and bomber sorties.⁶³

On the First Belorussian Front it was decided to employ a method of fire delivery which had been tried and proven in the Vistula-Oder Operation -- brief but massive artillery preparation supplemented by airstrikes. Its duration was specified at 20-30 minutes to a depth of 10-12 km, and up to 17-19 km in the zone of the 8th Guards Army. Support of the assault phase to a depth of 2 km was to be with a double moving barrage, and a single moving barrage for the next 2 km. Close support of infantry and tanks at depth was to be provided by the successive fire concentration method (depth 8 km).

In view of the strength of the enemy's defense and the possibility of engaging tank armies during the fighting for the second defensive zone, artillery preparation lasting 20 minutes was to be delivered just prior to committing the tank armies to battle.

Offensive air support was assigned to the 16th and 18th Air armies (3988 aircraft). Preliminary airstrikes were to be delivered 30 minutes prior to commencement of the attack, by the forces of two night bomber divisions (120 Po-2 aircraft) and Il-4 aircraft of the 18th Air Army, while close air support would involve delivery of sequential waves of strikes.

The tactical order of battle of the armies was two- and single-echelon, with one or two divisions placed in reserve. A single-echelon formation was employed in armies with mobile groups and in those in the zones of which a tank army was to be committed to action.

The combat formations of the combined units and units were in two and even three echelons. All rifle corps and divisions of the Second Belorussian Front, for example, contained two echelons. On the First Belorussian Front the corps of the 3d Assault Army and 69th Army (with the exception of the 61st) were formed in one echelon, but their divisions and regiments were formed in two echelons, and the remaining corps and divisions in two echelons.

The combined units and units of the First Ukrainian Front were similarly disposed.

A single-echelon formation was employed chiefly in those rifle corps in which there were only two divisions, or one of the three was temporarily defending away from the breakthrough sector, or an army mobile group was to engage in its zone (the 3d Assault Army and 5th Guards Army).

The principal feature of engineer support in the Berlin Operation, chiefly on the First Ukrainian and Second Belorussian fronts, consisted in the fact that engineer

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units and combined units, as well as the combat troops had to accomplish two tasks simultaneously: establish and maintain a sufficient number of crossing sites which would ensure a rapid buildup of attacking troops on the enemy's side of the river and penetration by these troops at the scheduled pace.

Hq SHC reinforced the fronts with engineer troops more generously than in any other operation, which made it possible to establish high densities (Table 14).

Table 14. Quantity and Densities of Engineer Troops at the Commencement of the Berlin Operation

Front	Total Number of Combat Engineer Battalions	Battalions in Breakthrough Sectors	Operational Density per km of Breakthrough Sector (Battalions)
Second Belorussian	120	89	4.0
First Belorussian	181	167	4.0
First Ukrainian	184	104	3.0

Such high densities of engineer troops fully ensured accomplishment of all main tasks pertaining to engineer support of the operation.

The principal motto of party-political work in the Berlin Operation was the following: crush the enemy's Berlin force quickly and surely.

Thousands of primary and company party and Komsomol organizations were rebuilt to strength or reestablished in the course of preparation for the operation; these organizations constituted the vanguard of the subunits in performance of difficult combat missions. Company party organizer reserves were established in the political sections of the divisions.

In order to ensure that the men gained a deep understanding of the objectives and missions of the final operation, commanders and political workers extensively held get-togethers with personnel and spoke at subunit party and Komsomol meetings. Young replacement troops were acquainted with the powerful weapons of the Soviet Army and the fighting history of the units which had brought them to the Oder and Neisse; they participated in live-fire exercises at which they rehearsed the forthcoming offensive actions.

Requests contained in letters from home -- to finish off the fascists quickly and to return home victorious -- evoked a lively response in the men's hearts.

In the final hours before commencement of the attack, appeals by the military councils of the fronts were read directly in the attack positions. Just prior to launching the assault, the units' colors were carried along the trenches. Combat veterans and the best fighting men were designated to raise red flags over important enemy defensive installations.

The diversified, purposeful party-political work made it possible to achieve a high level of fighting enthusiasm, which ensured penetration of the enemy's defense and his total defeat in Berlin proper.

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The combat actions of the fronts participating in the Berlin Operation did not commence simultaneously. Because of a large-scale redeployment of the troops of the Second Belorussian Front from Danzig and Gdynia, it was unable to complete preparations for the operation by mid-April and commenced combat actions four days later than the troops of the First Belorussian and First Ukrainian fronts.

Out of operational-strategic considerations it was not possible to delay commencement of the operation until the Second Belorussian Front was fully ready, although the Soviet Supreme High Command fully realized that without the Second Belorussian Front penetration might become difficult for the First Belorussian Front, since reserves from the enemy's 3d Panzer Army, which was defending north of Berlin, would enter its zone.

Commencement of the attack by the fronts was preceded by reconnaissance in force. On the First Belorussian Front it was conducted on 14 and 15 April by reinforced battalions and regiments assigned from each front-line division, on the main axis,⁶⁴ and by companies from each division on secondary axes. During reconnaissance in force they were able to penetrate 2-4 km into the enemy's first defensive zone on the main axis, and up to 5 km on certain other axes, which broke up the integrity of the first defensive zone, pinpointed the enemy's fire plan, and resulted in getting across the densest minefield zone.

On 16 April at 0500 hours Moscow time, that is, while it was still dark, artillery preparation and preliminary airstrikes began. Artillery preparation resulted in the expenditure of approximately 500,000 gun and mortar rounds of all calibers. Preliminary airstrike activity was also massive, involving the participation of night bombers of the 16th Air Army and the 5th Bomber Corps of the 4th Air Army of the Second Belorussian Front.

As the assault phase commenced, searchlights were switched on, the blinding light from which caused the enemy to become confused and greatly assisted in the Soviet attack. As infantry and tanks proceeded to attack, 4 corps of the 18th Air Army (745 bombers) delivered airstrikes on the enemy's defenses on the Seelow hills. At the same time ground-attack aircraft of the 16th Air Army were providing close support to the attacking troops. The airstrikes on the enemy were continuous. During each and every hour of the attack, from 250 to 660 aircraft were in the air above the battlefield.⁶⁵

As a result of the artillery preparation and preliminary airstrikes, the enemy troops occupying the forward position suffered from 30 to 70 percent casualties and were unable to offer any serious resistance. Therefore in the first hour of the attack the troops of the battle group penetrated the first position along the entire front and penetrated to a depth of 1.5-2 km.⁶⁶ Subsequently, however, the pace of advance dropped off. The enemy began offering stubborn resistance, and the Soviet troops, by virtue of the fact that the dust raised by the artillery fire was transformed into a peculiar fog in the searchlight beams, were unable, especially artillery, to spot enemy targets and deliver aimed fire on them. The enemy was holding particularly tenaciously to the third position in the main defensive zone. The German-fascist command authorities kept putting more and more new reserves into action, including operational reserves, and were launching strong counterattacks one after the other along the entire offensive front.

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By evening the 47th Army had succeeded in breaking through the main defensive zone and reaching the second defensive position, having advanced 4-6 km. At 1000 hours the commander of the 3d Assault Army engaged the 9th Tank Corps. By means of cooperation and teamwork between infantry and tanks, with artillery and air support, the enemy's resistance in the main defensive zone was smashed. By evening the army's troops had advanced as much as 8 km and had reached the intermediate defensive position.

The enemy offered the fiercest resistance to the troops of the 5th Assault and 8th Guards Armies, but their infantry and tanks, with massive support by a double moving barrage and ground-attack aircraft, nevertheless succeeded in smashing the enemy's resistance in the main defensive zone and by midday reached the second zone, which ran along the Seelow hills. The defense here, however, had been little neutralized.

In addition, the enemy had moved up fresh reserves to the Seelow hills, including the Muencheberg Panzer Division, and a considerable quantity of artillery from the Berlin air defense zone. The Seelow hills rose 40-50 meters above the Oder River valley and had 30-40° slopes cut by ravines, which made it difficult for our tanks to operate and enabled enemy artillery to deliver aimed fire on our advancing troops beginning at the far approaches.

Recalling that day's fighting, Mar SU G. K. Zhukov wrote: "By 1300 hours I clearly realized that the enemy's defensive fire plan here had for the most part survived, and that we could not take the Seelow hills in the combat formation in which we had initiated the attack and were conducting the assault."⁶⁷

In conformity with this estimate of the situation, the commanding general of the front, conferring with the army commanders, issued the following order at 1630 hours on 16 April: commit to action the 1st and 2d Guards Tank armies which, operating jointly with the infantry of the 5th Assault and 8th Guards armies, are to break through the second defensive zone.⁶⁸ The second defensive zone, however, was not penetrated with their assistance on the first day of the offensive.

The circumstances which had arisen made it necessary to prepare for penetration of the second zone on a limited timetable. Preparation for penetration was conducted at the level of the combined-arms armies, which was correct, for considerably more time would have been required for all the forces of the front to attack simultaneously. The front's command authorities issued only a number of basic instructions: the attack was to begin on the morning of 17 April, 250-270 tubes per km were to be concentrated in the breakthrough sectors, and 30 to 40 minutes of artillery preparation were to be conducted in the armies. The tank armies received instructions to operate jointly with the combined-arms armies.⁶⁹

Approximately as much ammunition was allocated for artillery preparation as was expended by the armies during artillery preparation on the first day of the offensive.

The assault on the second defensive zone by the armies of the First Belorussian Front commenced in the time interval from 0700 to 1100 hours. Artillery supported the assault by successive fire concentration to a depth of 5 km.

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The enemy, relying on a well-fortified defense and numerous built-up areas, continued to offer stubborn resistance. However, in spite of the fact that the enemy threw against the main forces of the front an additional three motorized divisions and one aviation field division from his reserve, the enemy was unable to hold his ground. The 47th and 3d Assault armies, with the 9th Independent Tank Corps and 9th Guards Tank Corps of the 2d Guards Tank Army, broke through the intermediate position and, advancing 4-8 km that day, proceeded to fight for the second defensive zone. The troops of the 5th Assault and 8th Guards armies, with the main forces of the 1st and 2d Guards Tank armies, with air support, broke through the defense on the Seelow hills following stubborn fighting, and advanced 11-13 km that day. On the axes of advance of the right-side and left-side battle groups, the troops advanced 4-7 km that day.

On 18 April the attack once again commenced following from 10 to 30 minutes of artillery preparation. Although the enemy had moved up from the reserve against the main forces of the First Belorussian Front 2 motorized divisions, 2 tank destroyer brigades, a Volkssturm brigade, 2 infantry regiments, and a number of independent antiaircraft battalions and subunits of the Berlin air defense zone, he was nevertheless unable to hold ground. On the third day of the offensive the front's main battle group, having advanced from 3 to 8 km, broke through the two intermediate positions and reached the third defensive zone, which was breached on the following day.

Thus by evening on 19 April the front's troops completed penetration of the enemy's Oder defensive line on a 70 km front and advanced to a depth of up to 30 km. During this fighting the German-fascist 9th Army and reserves moved to this sector from the 3d Panzer Army sustained enormous casualties. The rate of penetration, however, proved to be less than planned.

The reasons for this were the fact that the defense in depth was occupied by troops with a high degree of density and held by the enemy with fanatical tenacity. Taking advantage of the difficult terrain on the Seelow hills, the enemy was able to organize a very strong defense on these hills, employing withdrawn troops and advanced reserves. Penetration of this defense required prior-scheduled preparation for the attack on a tight timetable at the army level, which was not done. Launching an attack without a halt in attack position, employing arriving combined units, the Soviet troops lost about 12 hours, during which the enemy continued strengthening the Seelow hills and the Berlin axis on the side of the Kuestrin bridgehead. This made it necessary to conduct artillery preparation and preliminary airstrikes every day, and prevented the mobile troops from outpacing the rifle combined units in order to achieve deep exploitation. In spite of these difficulties, the front's troops stubbornly advanced, and Soviet artillery fired the first salvo on Berlin at 1350 hours on 20 April.

On the First Ukrainian Front reconnaissance in force was conducted during the night of 16 April by reinforced rifle companies. It confirmed that the enemy was dug in strongly on the west bank of the Neisse River. Artillery preparation began at 0615 hours. During artillery preparation troops were crossing the Neisse River, and launched the assault at 0840 hours. The enemy offered fierce resistance, especially during fighting at midday for the third position, to which the enemy had redeployed part of the forces of the 21st and Fuehrer's Guard Panzer divisions in order to gain

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time to organize defense in the second zone. The Soviet advance slowed somewhat. Influencing factors included a shortage of close-support tanks, as well as the difficult conditions of the forested, lake-studded terrain and large forest fires which had ignited.

The commanding general of the front, noting that the rate of advance of the rifle combined units had begun to drop off, decided to engage the 3d and 4th Guards Tank armies, which began operating as forward brigades at 1400 hours. The engagement of 6 tank brigades and a motorized rifle brigade greatly reinforced the offensive drives of the attacking units. Enemy resistance in the third position was smashed along the entire main attack frontage. By evening the troops of the battle group had advanced 8-13 km on a frontage of 29 km and had reached the second zone, while the forward brigades of the 10th Guards Tank Corps and the 4th Guards Tank Army had penetrated into the second zone. The Polish 2d Army and the 52d Army on the Dresden axis had also broken through the main zone and had advanced up to 10 km that day.

The success of the front's forces, in spite of the fact that the first day's objective had not been reached, was substantial. The enemy's defense was thoroughly battered, and the enemy's combined units had sustained from 50 to 70 percent casualties; captured alone exceeded 2000 officers and men.⁷⁰

The German-fascist command authorities, intending to halt the advance of the front's forces, moved up into the second defensive zone the main forces of the 21st Panzer Division, the Fuehrer's Guard Panzer Division, as well as the Bohemia and Hermann Goering divisions, the 40th Motorized Brigade, a reserve infantry brigade, and other individual units and subunits.

The commanding general of the front decided to penetrate the second defensive zone, preparing for the attack during the night, that is, on a restricted timetable.

One army or 2-3 corps breakthrough sectors were selected, depending on the possibility and expediency of redeploying troops in the armies. Artillery fire with a very high density was concentrated in these breakthrough sectors. Since the enemy's defense was based on centers of resistance established in towns and villages, the fires of several artillery regiments and brigades were massed against these centers of resistance.

On the morning of 17 April the 3d and 4th Guards Tank armies, working in teamwork with the combined-arms armies, began penetration of the second zone. Offensive thrusts mounted by the rifle corps, combined-arms and tank armies at weak points in the enemy's defense made it possible to split it up into segments. In spite of the enemy's desperate resistance, by evening the front's main forces had broken through the second defensive zone in a 15-kilometer sector and had advanced from 8 to 15 km, while the troops of the Polish 2d Army and the 52d Army had penetrated 2-3 km into the second zone.

Crushing defeat of the enemy's reserves in the second zone diminished the enemy's capability to establish a strong defense on an army defensive line along the Spree River. Intelligence established, however, that the enemy had moved up as many as three divisions to this defensive line (the 275th, 344th Infantry, and 10th Panzer).

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It was essential to hit the army defensive line before they deployed, which would make it possible to break through it without a pause, exploiting weak or unoccupied points in the defense. The commanding general ordered the advance of forces toward the Spree River to be accelerated, and at the same time shifted the efforts of the 3d and 4th Tank armies into the zone of the 13th Army, where the enemy had less capabilities to organize a firm defense. The main efforts of the 2d Air Army were focused on suppressing and delaying advancing reserves and on the most important strongpoints beyond the Spree River.

At 1300 hours on 13 April the forward tank brigade of the 7th Mechanized Corps forded the Spree and seized a substantial bridgehead, onto which the corps main forces had crossed over by 2100 hours. The 102d Rifle Corps of the 13th Army also crossed the river here. The commander of the 3d Guards Tank Army also sent the army's remaining corps to this crossing area.

The 27th Rifle Corps, working in coordination with the 10th Guards Tank Corps of the 4th Tank Army, crossed the Spree in approximately the same manner. This made it possible by evening on 18 April to establish a single bridgehead to the south of Cottbus, on which all the forces of the tank armies and 13th Combined-Arms Army were concentrated by morning on 19 April. They were opposed by the 21st Panzer Division, which had already been considerably weakened, and the just-arrived 344th Infantry Division, which was turning to the defense essentially beyond the boundary of the defensive zone. The powerful offensive drive of the First Ukrainian Front on the main axis of advance led to completion of penetration of the enemy's operational defense, which gave it the opportunity to exploit toward Berlin and the Elbe.

We should note that penetration of the enemy's defense by the front's forces, in spite of the existence of three defensive zones and two river barriers, was accomplished without great delays as a unified, precisely planned process. Having crossed the Neisse River, the front's forces immediately, without any pause, broke through the strong, well fortified main defensive zone, after which they broke through the second zone and even the third zone, once again involving a river-crossing operation and without any breaks in combat actions. This experience has retained its significance in present-day conditions.

The troops of the Second Belorussian Front proceeded to execute the first stage of crossing the Oder River on 18 April. As a result of two days of fighting, the armies secured for themselves an assembly area for putting the main forces across the river. Nevertheless, the limited size of the assembly area (in connection with flooding of the ground between the river branches) made it impossible to engage large combined units, while the artillery was forced to remain on the east bank of the Ost Oder, 5-6 km from the enemy's forward defensive positions. All this of course could not help but affect that course of subsequent actions by the front's forces and required great exertion on their part.

At 0715 hours on 20 April artillery preparation commenced, and all armies of the front's battle group began crossing the Oder. Front air forces did not go into operation until 0900 due to fog.

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As soon as Soviet units captured small bridgeheads, ferry crossing activities began immediately, which slowly massed forces on the far bank. At 0800 hours the units which had crossed the river launched an assault, but were met by numerous counterattacks. By evening the troops of the 65th and 70th armies had succeeded in widening the seized bridgeheads south of Stettin to 6 km in frontage, and 1.5 km in depth. That day 31 rifle battalions of the 65th Army plus a small quantity of artillery had been moved across to these bridgeheads, as well as 10 rifle battalions of the 70th Army, without artillery. The troops of the 49th Army were less successful in crossing the river. Due to poor intelligence, artillery was unable to place effective suppressive fire on the enemy's defense, and Soviet subunits were met by strong machinegun fire. As a result only individual groups of combat troops succeeded in crossing the river and digging in on the far bank. Only 4 rifle battalions were moved across onto the seized bridgeheads that day.

During the next 3 days fierce fighting was waged to enlarge the seized bridgeheads and to repel numerous counterattacks by four enemy infantry divisions and a tank-destroyer brigade moved up to the river from the reserve by the high command. Nevertheless, by evening on 23 April the troops of the 65th and 70th armies linked the seized bridgeheads into a single bridgehead 30 km wide and up to 6 km deep. The situation remained unchanged only in the zone of the 49th Army.

In subsequent fighting on 24 and 25 April, the front's troops completed penetration of the main defensive zone and, advancing up to 15 km, reached the second zone in a sector 20 km wide. The enemy had sustained heavy casualties and was unable to hold back further attacks by the troops of the front. Having broken through the second defensive zone and committing mobile troops to action, the armies of the Second Belorussian Front initiated pursuit of the enemy.

During all these days the troops of the First Belorussian Front were continuing savage combat; as in the past, they were forced to break through numerous enemy defensive positions one after the other, resuming the offensive each day with artillery and air preparation. In these fierce engagements the tanks armies were unable to outstrip the combined-arms large units and operated in the infantry formations. In spite of the heavy fighting, the front's troops were advancing at a rate of up to 12 km per day and, having broken through the outer and inner Berlin defensive perimeters, were fighting on the outskirts of the city on 21-22 April.

The tank armies of the First Ukrainian Front, having advanced to operational depth, were moving forward at a rate of 30-35 km per day, which enabled them to break through the enemy's outer Berlin defensive perimeter by evening on 22 April, the 3d Guards Tank Army reaching the southern outskirts of Berlin, and the 4th Guards Tank Army the approaches to Potsdam.

On 25 April the 4th Guards Tank Army linked up with the 47th and 2d Guards Tank armies west of Berlin. On 1 May the enemy forces which were encircled in and southeast of Berlin were annihilated. Only Wenck's army remained, west of Berlin. This meant that the enemy's strategic defensive front had essentially been penetrated. The extensive maneuvering room which had been gained was brilliantly utilized for the offensive on Prague by the forces of the First Ukrainian Front.

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On the whole the Berlin Operation, which was the culmination of the triumph achieved by our Armed Forces in the four-year war against fascist Germany and its accomplices in the aggression, provided a wealth of instructive experience in penetration of a strong defense disposed in depth, which in many aspects has retained its significance in present-day conditions.

* * *

The USSR Armed Forces achieved a world-historic victory in the 1945 campaign in Europe. The defeat of fascist Germany's armed forces was completed, and the peoples of Central and Southeastern Europe were liberated from the Hitlerite occupation forces. From 12 January to 8 May the Soviet Army fought its way from the Vistula to the Elbe, a distance of more than 800 kilometers, and brought the war to a victorious conclusion.

Soviet art of warfare, having utilized all preceding combat experience, rose to a new and higher level. In this campaign a strategic offensive, for the first time in the Great Patriotic War, was conducted simultaneously along the entire Soviet-German front. This deprived the enemy of the possibility of effectively utilizing his reserves as well as defensive lines prepared in advance to considerable depth, and led to splitting up of the enemy's strategic front.

A strategic breakthrough was achieved in January 1945 as a result of crushing the enemy's strategic force on the Warsaw-Berlin axis and swift offensive exploitation. A huge gap formed in the enemy's defense, extending more than 500 kilometers, in a sector from Bydgoszcz to Krakow. The German-fascist command authorities were unable to establish a new strategic front until the beginning of February 1945, utilizing a strong defensive line along the Oder River, and by moving 40 new divisions into this sector.

A successful strategic breakthrough was achieved by mounting powerful frontal attacks to considerable depth by several fronts working in coordination, which resulted in splitting the enemy's strategic front in extensive areas, with subsequent encirclement and annihilation of large German-fascist forces.

Each front sought to break through the enemy's defense on the main axis of advance with the efforts of 3-4 and sometimes 5 armies. In each instance the form of penetration employed depended on the situation conditions and the character of the tactical area of operations. The Third Belorussian Front in East Prussia and the First Ukrainian Front in the Vistula-Oder and Berlin operations sought to penetrate the enemy defense with 3-5 armies in one continuous breakthrough sector 24-39 km wide. The First Belorussian Front in the Vistula-Oder and Berlin operations and the Second Belorussian Front in the East Prussian and Berlin operations mounted the main attacks with approximately equal forces, but they accomplished penetration in 2-3 sectors, while in the Second Belorussian Front some armies penetrated the enemy's tactical defense in independent sectors spaced at 3-5 to 7-10 km. The overall width of army sectors ranged 20-22 km. This ensured initially splitting up the enemy's defense into separate segments isolated from one another, and subsequently, by the end of the first or second day, made it possible to link up all army breakthrough sectors into a single front breakthrough sector of substantial width -- 50-70 km and more. Employment of this mode of breakthrough was dictated

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by the increased combat capabilities of the armies, by the considerable experience of the command authorities, and by the specific features of the situation in which penetration was being accomplished.

The main forces of the fronts and armies would be decisively concentrated in narrow breakthrough sectors: 60-80 percent of combined-arms large units, 60-90 percent of artillery, 80-95 percent of tanks and self-propelled guns, and up to 100 percent of aircraft. This made it possible to establish a 3-5:1 superiority over the enemy in infantry, 5-10:1 in artillery, 7-9:1 in tanks, and 2-4:1 or more in aircraft.

The 1945 campaign in Europe enriched Soviet art of warfare with the experience of employing large tank forces. Tank armies, comprising mobile groups of fronts, were utilized both for exploitation of penetration at operational depth and for completing penetration of the tactical zone of defense. In the former instance they retained their striking power and were able to achieve deep exploitation of penetration at a pace of 30-50 km or more per day. Engagement of tank armies to complete penetration of the enemy's tactical zone of defense together with combined-arms armies was dictated by the enemy's increased defensive strength, by insufficient density of close-support tanks, and in many cases by the endeavor of the commanding generals of the fronts to build up the offensive drive and to achieve faster penetration of the tactical zone of defense in order to deprive the enemy of the possibility of bringing up immediate operational reserves to tighten troop dispositions in the tactical zone. With this utilization, however, tank armies sustained considerable losses, which diminished their capabilities of offensive exploitation at operational depth.

Army mobile groups consisting of a tank or mechanized corps were extensively employed in the operations of the final campaign in Europe. They would be committed to action to complete penetration of the tactical zone of defense, and as a rule exerted decisive influence on successful accomplishment of penetration of the enemy's defense at a rapid pace.

Combat employment of artillery was characterized by an improvement in the qualitative composition of artillery forces, increased firepower, and a further increase in depth of simultaneous suppressive fire into defensive enemy positions during the period of artillery preparation, and by improvement of methods of close artillery support of the assault by infantry and tanks.

Characteristic features in the combat employment of air forces included concentration of main efforts on supporting the actions of ground troops, increasing the density of bombing and low-level attacks on enemy defensive installations, and placing a portion of air forces under the operational command of the commanders of combined-arms and tank armies during deep offensive exploitation. In conditions of fast moving combat and abrupt situation changes, which were characteristic of a number of operations in 1945, the latter ensured rapid air assistance to ground troops and maintaining close coordination with rifle and especially mobile combined units.

In the operations of the 1945 campaign there occurred further development of the art of battlefield maneuver and maintaining continuous coordination among all combat

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arms both during penetration and subsequent exploitation. Flexible, swift maneuver on the battlefield, bypassing and envelopment of strongpoints and enemy forces in combination with frontal attacks attested to the further development of maneuver tactics.

The victory over fascist Germany constituted convincing proof of the total superiority of Soviet art of warfare over that of the German-fascist army.

FOOTNOTES

1. See "Istoriya vtoroy mirovoy voyny" [History of World War II], Vol 8, page 62.
2. See VOYENNO-ISTORICHESKIY ZHURNAL, No 2, 1967, page 13.
3. Ibid., page 18.
4. See "Istoriya vtoroy...", op. cit., Vol 8, page 71.
5. TsAMO SSSR [Central Archives of the USSR Ministry of Defense], Fund 266, List 12070, File 99, Sheet 3.
6. I. S. Konev, "Zapiski komanduyushchego frontom 1943-1944" [Notes of a Front Commander, 1943-1944], Moscow, Nauka, 1972, page 99.
7. Ibid., page 100.
8. A. M. Vasilevskiy, "Delo vsey zhizni" [Lifelong Cause], Moscow, Politizdat, 1973, page 376.
9. G. K. Zhukov, "Vospominaniya i razmyshleniya" [Reminiscences and Reflections], Vol 2, Moscow, Izd-vo APN, 1974, page 231.
10. See "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne 1941-1945" [Operations of the Soviet Armed Forces in the Great Patriotic War, 1941-1945], Vol 3, page 171.
11. See "Promyshlennost' Germanii v period voyny 1939-1945 gg." [Germany's Industry During the War, 1939-1945], Moscow, Izd-vo Inostr. Lit., 1956, page 95.
12. TsAMO SSSR, Fund 241, List 2593, File 330, Sheet 48.
13. See "Sovetskaya artilleriya v Velikoy Otechestvennoy voyne 1941-1945 gg." [Soviet Artillery in the Great Patriotic War, 1941-1945], pp 441-442.
14. K. Toppel'skirkh, "Istoriya vtoroy mirovoy voyny" [History of World War II], Moscow, Izd-vo Inostr. Lit., 1956, page 441.
15. TsAMO SSSR, Fund 235, List 2074, File 119, Sheet 70.
16. See "Sovetskaya artilleriya...", op. cit., pp 449-450.

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17. See "Osvobozhdeniye Belorussii. 1944" [Liberation of Belorussia, 1944], Moscow, Nauka, 1970, page 119.
18. TsAMO SSSR, Fund 235, List 2129, File 28, Sheet 8.
19. See N. I. Krylov, "Navstrechu pobede" [Marching to Victory], Moscow, Voenizdat, 1970, pp 201-204.
20. See K. N. Galitskiy, "Gody surovykh ispytaniy" [Years of Harsh Trial], Moscow, Voenizdat, 1973, page 489.
21. TsAMO SSSR, Fund 463, List 34149, File 1, Sheet 84.
22. See "Operatsii Sovetskikh...", op. cit., Vol 3, page 345.
23. See VOYENNO-ISTORICHESKIY ZHURNAL, No 7, 1964, page 88.
24. See "Yassko-Kishinevskiye Kanny" [Iasi-Kishinev Cannae], Moscow, Nauka, 1964, page 52.
25. See "Operatsii Sovetskikh...", op. cit., Vol 3, page 452.
26. TsAMO SSSR, Fund 236, List 35149, File 2, Sheet 91.
27. See K. S. Moskalenko, "Na yugo-zapadnom napravlenii" [In the Southwestern Sector], Book 2, Moscow, Voenizdat, 1975, page 398.
28. See "Operatsii Sovetskikh...", op. cit., Vol 3, page 385.
29. See "Yassko-Kishinevskiye...", op. cit., page 75.
30. See "Operatsii Sovetskikh...", op. cit., Vol 3, page 404.
31. See Konev, op. cit., page 248.
32. See M. A. Polushkin, "Na sandomirskom napravlenii" [On the Sandomierz Axis], Moscow, Voenizdat, 1969, page 57.
33. See Konev, op. cit., page 248.
34. See "Sovetskaya artilleriya...", op. cit., page 480.
35. See "Operatsii Sovetskikh...", op. cit., Vol 3, page 407.
36. Ibid., page 111.
37. Ibid., page 109.
38. TsAMO SSSR, Fund 324, List 3336280, File 1, Sheet 8; Fund 315, List 4440, File 55, sheets 4-7.

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39. See "Operatsii Sovetskikh...", op. cit., Vol 4, page 119.
40. See S. M. Shtemenko, "General'nyy shtab v gody voyny" [The General Staff in the War Years], page 310.
41. TsAMO SSSR, Fund 328, List 20718, File 40, Sheet 66.
42. TsAMO SSSR, Fund 669, List 33765, File 1, sheets 13-14; Fund 324, List 4756, File 137, sheets 158-162.
43. See F. V. Danilov, "Radom-Lodzinskaya operatsiya" [The Radom-Lodz Operation], Moscow, Voenizdat, 1958, page 121.
44. TsAMO SSSR, Fund 426, List 95713, File 1, Sheet 4.
45. See Danilov, op. cit., page 125.
46. TsAMO SSSR, Fund 528, List 82257, File 14, Sheet 132.
47. See Danilov, op. cit., page 137.
48. See "Sovetskaya artilleriya...", op. cit., page 606.
49. TsAMO SSSR, Fund 241, List 2593, File 988, sheets 140-143.
50. See "Sovetskaya artilleriya...", op. cit., page 600.
51. TsAMO SSSR, Fund 241, List 2593, File 819, sheets 77-79.
52. TsAMO SSSR, Fund 241, List 2593, File 819, sheet 77-79.
53. See "Istoriya vtoroy...", op. cit., Vol 10, pp 322, 326.
54. See "Posledniy shturm" [Final Assault], Moscow, Voenizdat, 1975, page 28.
55. TsAMO SSSR, Fund 233, List 2382, File 478, sheets 29-41.
56. See VOYENNO-ISTORICHESKIY ZHURNAL, No 5, 1965.
57. See "Posledniy shturm," op. cit., pp 46-47.
58. See "Berlinskaya operatsiya 1945 g." [The Berlin Operation of 1945], Moscow, Voenizdat, 1950, pp 170, 176, 184.
59. Ibid., page 182.
60. Ibid.
61. See "Istoriya vtoroy...", op. cit., Vol 10, page 332.
62. TsAMO SSSR, Fund 237, List 2394, File 1309, sheets 22-37.

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63. TsAMO SSSR, Fund 15, List 647244, File 181, Sheet 124.
64. See "Berlinskaya....," op. cit., pp 193-197.
65. TsAMO SSSR, Fund 15, List 647244, File 181, Sheet 124.
66. TsAMO SSSR, Fund 233, List 2356, File 775, Sheet 8.
67. Zhukov, op. cit., Vol 2, page 341.
68. TsAMO SSSR, Fund 233, List 2356, File 804, Sheet 105.
69. TsAMO SSSR, Fund 273, List 401802, File 1, Sheet 105.
70. TsAMO SSSR, Fund 236, List 2673, File 2448, Sheet 34.

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Chapter Four. RESULTS OF DEVELOPMENT OF THEORY AND PRACTICE OF PENETRATION
IN THE GREAT PATRIOTIC WAR

1. Types and Forms of Penetration of the Enemy's Defense

In the four years of the Great Patriotic War the Soviet Army conducted a large number of offensive operations. The most important and most difficult stage in all operations was penetration of the tactical zone of defense. The enemy would allocate up to 80-90 percent of his manpower and weapons for holding the tactical zone of defense, would apply the greatest fortification efforts, and would do the best job of organizing fire plan and obstacle system. Finally, the majority of operational reserves, especially panzer and motorized combined units, would be focused on holding it. By virtue of this, accomplishment of penetration of the enemy's tactical zone of defense predetermined in large measure successful development of an offensive to full operational depth and achievement of the end objectives of the operation.

Penetration consisted essentially in breaking up the enemy's defense with artillery fire and airstrikes, and by a determined ground attack, with the objective of destroying personnel and combat equipment as well as opening one or several gaps, offensive exploitation through which to depth and toward the flanks would lead to collapse of the enemy's prepared and troop-occupied defensive positions.

Three types of breakthrough were successfully employed and developed during the conduct of offensive operations by the forces of the Soviet Army: tactical, operational, and strategic. They comprised a unified, and from the summer of 1944 on a continuous process of opening a breach in the enemy's strategic defense, but at the same time each of them possessed specific qualitative features.

The content of tactical penetration was as follows: smashing of the defense with artillery fire and airstrikes, that is, killing enemy personnel and destroying combat equipment, demolishing the enemy's defensive works, and profoundly damaging the morale of the enemy troops, diminishing their will to resist; an infantry and tank assault, supported by artillery fire and airstrikes; subsequent offensive exploitation to depth and toward the flanks by rifle, tank and mechanized combined units, working in close coordination with artillery, air, and engineer troops.

Operational penetration consisted in driving a breach to the enemy's full operational defense depth. This would be achieved by immediate deep exploitation of

a tactical breakthrough by means of swift actions by mobile combined units and formations, working in close coordination with combined-arms armies, artillery and air, as well as by crushing the enemy's operational reserves and widening the breach in order to make it impossible or maximally difficult to reestablish the integrity of the defensive front on a new operational line.

Strategic penetration consisted in crushing the strategic front and driving a breach in it large enough so that the enemy would be unable to close it with available operational reserves and would be forced to move large additional forces from deep to the rear and other strategic sectors in order to establish a new stable front. The principal content of strategic penetration was consolidation of separate operational breakthroughs into a single breach on a strategic axis, pursuit of routed enemy forces in a wide zone, penetration of hastily occupied enemy defensive positions, and thwarting of attempts by means of counterthrusts to disorganize and delay offensive exploitation, thus gaining time to stabilize the strategic front along a new line.

In the Great Patriotic War the Soviet Army employed diversified forms of operational penetration, which were determined in relation to the concrete conditions of the operational-strategic situation, the objective, concept and scale of the operation, availability of personnel and weapons, plus other factors. The form of operational penetration constituted expression of the general plan of penetration, organization of the efforts of troops to accomplish it, and determination of axes of advance in an operation which would lead to the driving of gaps in the enemy's defense, to collapse of the defense on an operational or strategic axis, and would make it possible to achieve the operation objectives.

In army offensive operations (Diagram 30), an offensive drive on two or three axes was the most widespread form of operational breakthrough in the first period of the war. One or two attacks would be mounted on converging axes, with the objective of enveloping opposing enemy forces.

This form of breakthrough was widely employed in the first period of the war chiefly because in the specific conditions of combat at that time it enabled an army to shift to an offensive (counteroffensive) very quickly, since it did not require complicated redeployment of troops and their concentration on one breakthrough sector. At the same time it contained a significant shortcoming, which consisted in scattering the efforts of an army the fighting strength of which in 1941 had diminished to half. With a large number of breakthrough sectors, insufficient manpower and weapons to accomplish an operational breakthrough would be placed on each. This would diminish the results of the undertaken penetration actions or would lead to failure.

The imperative need to achieve maximum massing of men and weapons in the selected breakthrough sector led to a decrease in the number of attacks mounted by an army. In the second, and especially in the third period of the war armies as a rule would mount one attack, and most frequently by a front battle group penetrating in a single sector. Only certain armies, in particular the 59th Army in the offensive at Novgorod in the winter of 1944, mounted two attacks.

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If an army was penetrating in a separate sector, it would usually mount a cleaving attack or attack toward a point where the perimeter of envelopment of an enemy force in coordination with an adjacent army was to close (the 11th Guards and 61st armies in the Orel Operation). When an army formed an element of a front battle group, it would mount a frontal attack within the entire zone of advance, at the center of the forward operational echelon of the battle group, or in part of the zone -- at the center or on one of the flanks. In the latter case, in addition to a frontal attack by the main forces, an army would frequently have part of its forces exploit toward the flank with the objective of spreading the enemy's defense. In some operations this mission would also be assigned to an army's main forces (3d Guards Army in the Vistula-Oder Operation, the 28th and 49th armies in the East Prussian Operation).

In front offensive operations (Diagram 31) the forms of operational breakthrough went through the same evolution as in the army. In 1941-1942 fronts would usually mount several attacks, each with the forces of one army. The number of attacks in the offensive operations of fronts diminished to 2-3 by the end of the first and beginning of the second period of the war.

The front attack would usually be mounted by the forces of an army or battle groups up to two armies in strength. One or two would be splitting attacks, one or two would be directed toward each other or toward an attack mounted by an adjacent front, with the objective of enveloping a specific enemy force.

When the enemy shifted to a static defense, the number of attacks in the fronts decreased to one or two. In the counteroffensive at Kursk, for example, the Western, Central, and Steppe fronts mounted one attack apiece, while the Bryansk and Voronezh fronts each mounted two attacks. In the operations of 1944-1945 the fronts usually mounted one or two attacks, and only occasionally (the First Belorussian Front in the Vistula-Oder and Berlin operations) three attacks.

Fronts mounted three attacks or more in the operations to liberate the Right-Bank Ukraine, where the enemy's defense in large areas was shallow, of a focal nature, and inadequately fortified.

When a front was executing penetration in one sector, the form of operational breakthrough was a frontal attack on the flank or in the center of the zone of advance. Its axis was selected in such a manner that the attacking troops could advance to a linkup point with the adjacent front and envelop the enemy force (the Second and Third Ukrainian fronts in the Iasi-Kishinev Operation) or split it to full operational depth (the Second Belorussian Front in the Belorussian Operation, the First Ukrainian Front in the Vistula-Oder Operation, etc).

During penetration of the defense on two or three axes, the form of operational breakthrough comprised frontal attacks with subsequent close and wide envelopment of a specific enemy force and deep exploitation by part of the forces or by main forces (Bobruysk, L'vov-Sandomierz operations), or frontal attacks to full operational depth, with the objective of splitting the opposing enemy force and destroying in the course of development of the operation those forces remaining between the axes of advance (First Belorussian Front in the Vistula-Oder Operation).

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In the strategic offensive operations of a group of fronts (Diagram 32), as a rule a number of attacks would be launched simultaneously (Stalingrad -- 7, Belorussian -- 6, Vistula-Oder -- 4, Berlin -- 6). The experience of the war indicated that collapse of the enemy's defensive front in a strategic sector was possible when launching several powerful attacks in a zone 450-700 km or more in width, encompassing from 15 to 30 percent of the active battle front. A series of powerful attacks made it difficult for the enemy not only to parry them with available reserves but also to determine the place and importance of each attack. The defeat of a large enemy force in one of the strategic sectors would lead to a weakening of enemy forces in the others, which made it possible successfully to conduct a number of successive operations, overwhelming a very large part of or even the enemy's entire strategic defensive front.

In the conduct of operations by a group of fronts, corresponding forms of penetration would also be employed, depending on concrete situation conditions. In the first period of the war they comprised a series of splitting attacks, some of which would be directed toward one another with the aim of enveloping small enemy forces. Such a form of penetration facilitated the establishment of battle groups on a limited timetable and rapid commencement of an offensive by these groups.

In the winter campaign of 1942/43 the launching of frontal attacks on converging axes became the predominant form of penetration. It made it possible, with an overall equality of forces or a slight superiority over the enemy, to concentrate the maximum possible quantity of men and weapons on the main axes, swiftly to break through the defense and close the pincers, maintaining the external perimeter of envelopment with limited forces by temporarily shifting them to the defense on an advantageous line and even at separate points.

In the summer-fall campaign of 1943 there was a trend toward combining splitting attacks with attacks with the objective of encirclement. It was manifested in full measure, however, in the campaigns of the third period of the war.

Launching of powerful attacks with the objective of enveloping large enemy forces was characteristic of operations of front groups in the summer of 1944. Forces assigned to the outer envelopment perimeter, including tank forces, would establish a mobile outer envelopment perimeter and conditions for operational breakthroughs to develop into a strategic breakthrough without a pause.

In the operations of 1945, when the battle front had become much narrower, mutually coordinated, splitting front attacks to full depth became the determining form of penetration in the strategic operation. Encirclement of small enemy forces remaining between attacking forces was generally accomplished by small forces and in the process of overwhelming the enemy's strategic front.

On the whole, development of forms of penetration of operational defense during the years of the Great Patriotic War indicates that the greatest success was achieved in conducting a strategic operation by a group of fronts and launching a series of attacks which straddled a substantial part of the enemy's strategic defense frontage. Partial operations conducted by small forces, launching immobilizing attacks, were rejected by the experience of the war. As the defense became more formidable, the number of attacks decreased, but their power increased.

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Operational breakthrough in the form of mounting a series of attacks in an operation, first employed by the Southwestern Front in 1916, advanced from the area of operational art to strategy and became characteristic of operations conducted by groups of fronts.

2. Selection of Axes of Advance and Breakthrough Sectors

During the years of the Great Patriotic War, in the majority of military campaigns smashing of the strategic front was accomplished in a single strategic sector. In the final phase of the war, when the combat might of our Armed Forces had increased sharply while the battle front had narrowed, it became possible to smash the front simultaneously along its entire extent.

In selecting main axis of advance in a campaign and in operations, the Soviet command authorities proceeded from Lenin's statement that in order to achieve victory it is essential "to possess an overwhelming superiority of forces at the decisive place and at the decisive moment...."¹

The experience of the war indicated that correct selection of main axis of advance depends on many factors, which are interlinked and interdependent.

The main axis of advance in an offensive operation would be determined primarily by the objectives of the operation and the concrete situation conditions in which it was conducted. It would be selected taking into account the operational situation of friendly and enemy troops, their quantitative and qualitative composition, and the disposition of the main forces, especially armor. In all cases that axis which would lead the battle groups to the most vulnerable points in the enemy's main forces and which would ensure rapid defeat of that enemy force grouping the defeat of which would sharply diminish the stability of the defense as a whole was considered to be the most advantageous for mounting a decisive attack.

In the offensive operations of the Great Patriotic War the main attack was most frequently mounted against the weakest, most vulnerable point in the enemy's defense. These points were usually sectors with low densities of personnel and weapons, with an inadequately developed system of field fortifications, and occupied by troops who were poorly trained and with poor morale. Weak points in the defense were those sectors in which the enemy did not have large operational and strategic reserves. Boundaries and flanks were always considered to be the most vulnerable points in the defense, especially in those cases where they were inadequately covered, as well as sectors defended by troops with low morale and poor fighting ability. Sectors of terrain which the enemy considered difficult-access on the basis of tactical properties were also usually weak points in the defense. As a rule the enemy assigned minimal personnel and weapons to these areas. Attacks on such defensive sectors would take the enemy by surprise. Thanks to the element of surprise which was gained, troops would gain great advantages even when attacking across difficult terrain. Swift penetration and advance by the attacking troops into the enemy's flank and rear would force the enemy to remove troops from well prepared positions, to transfer them to the axes of advance of the attacking forces, and to fight on inadequately fortified or totally unprepared ground. The Stalingrad, Iasi-Kishinev and many other operations provide instructive examples of exploitation of weak points in the enemy's defense.

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In selecting a main axis of advance, commanders always took into consideration possibilities of maximum efficient employment of all combat arms and weapons, especially large masses of tanks.

Physical-geographic conditions and the character of field fortification exerted substantial influence on selection of main axis of advance. Often these factors would predetermine choice of main axis of advance. In the East Prussian Operation, for example, the existence of the extensive Masurian Lakes area was one of the factors which determined the choice of main axis of advance for the troops of the Second Belorussian Front, bypassing a difficult-axis area and the permanent fortifications of East Prussia on the south and west, where terrain conditions permitted deployment of a large tank force and promoted its rapid advance to the Baltic Coast.

The experience of the war indicated that the terrain selected for mounting the main attack should promote concealed concentration and deployment of the battle group, should be convenient for preparing and occupying the attack position, should offer favorable conditions for actions by large masses of artillery and tanks, execution of maneuver, organization of operational and tactical coordination, prompt and continuous hauling of supplies to the combat troops.

In many instances the time element would exert decisive influence on selection of main axis of advance. In the Belgorod-Khar'kov Operation, for example, the trace of the battle line at the commencement of the operation was quite favorable for mounting enveloping attacks with the objective of encircling the enemy's Khar'kov force. As there was insufficient time available for large-scale redeployment of troops, however, it was not possible to execute such offensive thrusts. Therefore the Voronezh and Steppe fronts were forced to mount the main attack in the direction of Belgorod-Khar'kov, with the objective of splitting the opposing German-fascist force.

In the last war there were instances where selection of the main axis of advance was primarily influenced by the desire to encircle and annihilate the enemy's main forces, preventing their withdrawal. This was the case in the Stalingrad, Iasi-Kishinev, and many other operations.

In a number of offensive operations of the Great Patriotic War the main attack was also delivered into the strongest points in the enemy's defense. This was the case when initiating attack from operational bridgeheads, when it was impossible to employ large force groupings in weak but difficult-access sectors (the Third Belorussian Front in the Vitebsk-Orsha Operation), or with the aim of swiftly crushing the most powerful enemy force, in the L'vov-Sandomierz Operation, for example. Experience in penetration of a static defense disposed in depth, however, indicated that such a defense, when occupied by staunch troops, offers enormous resistance force. Penetration of such a defense involves heavy expenditures of personnel and weapons and frequently is conducted at the limit of capabilities. Shifting of attacks to weak points in the enemy's defense would immediately affect penetration progress.

During the Great Patriotic War substantial changes took place in the role assigned to the main attack and secondary attacks.

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According to prewar views, a secondary attack played a role of assisting the main attack. The troops mounting a secondary attack would usually be assigned missions of protecting the main force against enemy flank attacks and the mission of immobilizing opposing forces. Sometimes a secondary attack would involve advancing to a meeting point with the main force of the front or army, with the aim of encircling opposing enemy forces. These views formed the basis of determination of the significance of attacks in the operations of the entire first period of the war. A secondary (pinning) attack was a mandatory element of almost every operation. And since usually few forces would be assigned to execute such attacks, they frequently would produce an extremely limited operational and even tactical result. This is apparent even in such successful operations as the Rzhev-Sychevka in the summer of 1942, in which the troop advance on secondary axes of the fronts was insignificant.

In the counteroffensive at Stalingrad and Kursk the missions assigned to the troops operating on secondary axes differed little from those assigned to the main-force troops. They also were to break through the tactical defense and exploit to operational depth. Precisely such missions were assigned to the armies of the Don Front in the Stalingrad Operation. Correspondingly the forces mounting secondary attacks were made stronger. A further increase in their strength is observed in the third period of the war, when the capabilities of our fronts had increased significantly.

The breakthrough sector, that is, that point in the enemy's defense where an initial breach was to be driven, was the foundation point of an attack.

The experience of the war indicated that the width of a breakthrough sector should always be in conformity with available manpower and equipment, especially means of fire delivery, as well as the number and quality of combined-arms large units. The designated breakthrough sector should be such that a convenient attack position for the main force could be set up within that sector, and the personnel and equipment assigned the mission of penetration could be deployed without discovery by the enemy. In addition, one should consider the conditions of employment of armored troops, exploitation of tactical into operational success, and at the same time the enemy's capabilities to oppose penetration.

In the course of the war the width of breakthrough sectors of combined units, armies, fronts and battle groups experienced considerable changes. Prior to the war a zone of 20-30 km was considered an advisable breakthrough sector width for an assault army, and 60-80 km for a front. In determining width of breakthrough sectors, in addition to combat capabilities command authorities also proceeded from the point that a breach 20-30 km wide could not be under hostile artillery fire from the flanks and would make it possible to exploit on the main axis without great hindrance; in such a breakthrough sector one could fairly easily engage a mobile group, assigning two routes to each tank division; a breach 20-30 km wide could not be closed by immediate operational reserves.

Change in the composition of combined-arms armies at the beginning of the Great Patriotic War led to the necessity of narrowing the breakthrough sectors of the battle groups. Transition by the enemy to a static defense and the necessity of increasing the densities of the troops executing penetration dictated a further narrowing of breakthrough sectors. In addition, combat experience indicated that

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direct-fire weapons (antitank guns and tanks), as well as machineguns and mortars offer the greatest resistance to attack, not artillery sited in indirect fire positions, which we had learned successfully to engage. Experience indicated in turn that a narrow zone of commitment to action was needed for reduced-strength tank and mechanized corps. All this as an aggregate exerted influence on narrowing breakthrough sectors, the width of which and correlation with the zone of advance in certain operations are shown in Table 15.

Table 15. Width of Breakthrough Sectors and Their Correlation With Zones of Advance in Operations of the Great Patriotic War

Operation	Front, Army, Battle Group	Width of Zone of Advance, km	Number and Width of Break-through Sectors, km	Percentage of Width of Zone of Advance
Counteroffensive at Stalingrad	Southwestern Front, 5th Tank Army	250	2-22	9
		35	1-15	40
Counteroffensive at Kursk	Bryansk Front, 63d and 3d armies	158	2-30	19
		74	1-18	24
		172	3-30	17
Belorussian	Voronezh Front, 6th Guards and 5th Guards armies	26	2-11	42
		First Belorussian Front (right side),	232	2-33
L'vov-Sandomierz	65th and 28th armies	100	1-18	18
		First Ukrainian Front,	440	2-27
Iasi-Kishinev	38th and 60th armies	70	1-15	21
		Second Ukrainian Front	330	1-16
Vistula-Oder	First Belorussian Front,	230	3-34	15
		First Ukrainian Front	250	1-39
Berlin	First Belorussian Front,	175	3-44	25
		First Ukrainian Front	390	2-26

As is evident from the table, the width of the breakthrough sector of a front battle group penetrating on an independent axis would most frequently run 15-20 km.

Of course breakthrough sectors of this width restricted the movement of powerful front battle groups. Therefore operation plans specified that breakthrough sectors should be widened during penetration of the enemy's tactical defense by attacking the flanks exposed as a result of opening up a breach in the enemy's defense. This method of gaining maneuvering room proved to be the most expedient in expenditure of forces. While penetration of the defense required 200-300 guns and mortars, 7-10 rifle battalions and 15-20 close-support tanks per km of breakthrough sector, widening of a breach was accomplished with densities of one third that or less.

The experience of offensive operations conducted in 1941-1942 indicated that the distance between breakthrough sectors should correspond to the force of the planned attacks and the selected method of defeating the enemy forces remaining between axes of advance.

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In the counteroffensive at Moscow and Stalingrad, front attacks were conducted for the most part with the forces of army battle groups, but the enemy forces between them were small and were to be defeated by envelopment and splitting in the course of penetration of the tactical defense, so that after passing through the tactical zone of defense a single, unified front and even interfront breakthrough sector could be established.

In the Stalingrad Operation, for example, the spacing between the breakthrough sectors of the main force of the Southwestern Front and the force grouping of the 21st Army, which was attacking jointly with the 65th Army of the Don Front, was approximately 33 km. This gap was defended by only one and a half divisions. The threat of encirclement of these forces with simultaneous execution of splitting attacks made it possible to defeat them in detail in short order.

An increase in distance between breakthrough sectors was observed with an increase in the power of battle groups. In the Orel Operation, for example, the distance between the breakthrough sector of the 11th Guards Army and that of the 61st Army was 55 km, between the battle groups of the Bryansk Front -- 60 km, and between the southern force of the Bryansk and the force grouping of the Central Front -- 65 km. Envelopment operations aimed at encircling large enemy forces were widely employed in the third period of the war. In determining distances between the breakthrough sectors of battle groups in such operations, command authorities took into account the composition and situation of the force to be encircled, as well as capability, at specified rates of advance, to complete encirclement of the enemy's main forces prior to their withdrawal from the encircled area, swiftly to crush the encircled force and thus to form a breach in the enemy's operational defense in which there would be adequate room for unrestricted maneuver of large forces with the objective of developing operational breakthroughs into a strategic breakthrough, while it would be difficult for the enemy to close the gap with available reserves. Table 16 shows the correlation of mutual spacing of breakthrough sectors with certain parameters of operations in the final period of the war.

Table 16. Correlation of Distance Between Breakthrough Sectors of Forces Executing Envelopment With Certain Parameters of Operations of 1944-1945

Operation	Distance Between Break-through Sectors, km	Distance to Linkup Area, km	Depth of Possible Enemy Withdrawal, km	Width of Breach Formed Following Annihilation of Encircled Force, km	Required Number of Divisions to Close Breach
Vitebsk-Orsha	40	30-40	40	100	5-7
Bobruysk	55	50-60	60	90-100	5-7
L'vov-Sandomierz	70	60-70	45-60	120-140	7-9
Iasi-Kishinev	140	100-120	100	250	12-15
Berlin	50	100	80	160-180	9-12

Note: Calculations are based on diagrams in: "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne" [Operations of the Soviet Armed Forces in the Great Patriotic War], Moscow, Voenizdat, 1958.

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One can conclude from the figures in the table that at a rate of advance of 15-20 km per day, distance between breakthrough sectors was selected to be approximately equal to the distance to the linkup area, where the perimeter of envelopment was to be closed, passing the enemy taking into account initiation of withdrawal from the envelopment area following loss of the tactical zone of defense on the axes of advance, that is, 24-48 hours after our troops commenced the attack.

When executing powerful splitting attacks in an operation (the Vistula-Oder Operation, etc), the distance between breakthrough sectors would be such that in the course of penetrating the enemy's tactical zone of defense his forces defending between breakthrough sectors would lose all stability, and a single common front or interfront breakthrough sector could be formed at immediate operational depth.

3. Massing of Forces and Combat Formation

Battle groups would be formed in the fronts and armies for accomplishing penetration and exploitation in the Great Patriotic War. There occurred a particularly marked shift to actions by battle groups after the Hq SHC directive letter of 10 January 1942 came out, which formulated the most important points pertaining to penetration of the enemy's defense, one of which read as follows: "In order to soften and break up the enemy's defense, we must learn to operate in assault groups."

The strength of front battle groups increased as the war progressed: 8-10-fold in divisions, 10-20-fold in tanks and self-propelled artillery, 10-12-fold in artillery, and 18-25-fold in aircraft. Their qualitative composition also improved greatly, by employing better tanks, self-propelled artillery, guns, mortars, rocket artillery systems, and aircraft. In the counteroffensive at Moscow, for example, the battle group consisted of 3-7 divisions, 35-125 tanks, 160-600 guns, and 50-100 aircraft, while in the Berlin Operation it comprised 42-44 divisions, 1300-2200 tanks and self-propelled guns, 6200-7500 guns and mortars, and 1400-1800 aircraft.

Of the total fighting strength and numerical strength of the fronts, battle groups as a rule would contain 50-70 percent of rifle combined units, 70-80 percent of guns and mortars, and 80-100 percent of a front's tanks and aircraft. By deploying these forces in sectors the width of which comprised one fifth to one twentieth of the width of the front's zone of advance, a decisive massing of men and weapons would be achieved on the axes chosen for penetration, as well as establishment of high densities and decisive superiority over the enemy, which constituted one of the most important factors in successful accomplishment of penetration.

Troop densities steadily increased as the war progressed, in the operations of 1945 reaching 6-7 rifle battalions, 250-300 guns and mortars, and 20-30 close-support tanks and self-propelled guns per km of breakthrough sector. As force densities increased in the breakthrough sectors and as a more advantageous ratio of forces was established, there occurred an overall increase in the rate of penetration of the enemy's tactical zone of defense.

Success and rate of penetration, however, were determined not only by densities of personnel and weapons and establishment of superiority over the enemy, but also by quality of preparation for penetration, the art of troop control, effectiveness of

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employment of weapons, combat equipment and troops, achievement of the element of offensive surprise, maintaining close coordination among combat arms, prompt and timely build-up of efforts, plus other factors.

The combat formation was an important factor in successful penetration and exploitation. It predetermined the force of the initial thrust, which was very important for a successful breakthrough, and the sequence of build-up of efforts to the entire depth of penetration.

Prewar views called for a deep tactical order of battle for the front's troops. Losses sustained by the Soviet Army in the frontier battles, however, and the strategic initiative which was in the hands of the enemy for a certain period of time made it impossible to establish powerful force groupings and to have strong support echelons, mobile groups and reserves in the fronts. On the other hand the enemy's defense was shallow and of a focal-point type, which created certain preconditions for penetration by a single front operational echelon. By virtue of this, in the first two campaigns of the first period of the war, the fronts were organized in a single echelon, with a small reserve designated (Diagram 33).

The experience of offensive operations indicated that although a single-echelon tactical order of battle of the fronts made it possible to penetrate prepared defensive lines, it did not provide for rapid exploitation of a tactical into an operational breakthrough, and the enemy was able to establish new defensive lines at depth. Therefore mobile groups consisting of one or two tank corps (the Pogoreloye-Gorodishche Operation) and stronger reserves appeared in the front's tactical order of battle beginning in the summer of 1942. With the establishment of air armies, there developed considerably greater capabilities to deliver massive airstrikes and provide close air support to ground troops in the course of an offensive.

Quantitative and qualitative growth in the fighting strength of fronts and an increase in the strength and depth of the enemy's defense predetermined subsequent changes in the tactical order of battle of the front. Mobile groups consisting of 1-2 tank armies were established in the fronts for the first time in the counter-offensive at Kursk. In a number of operations in the second period of the war, a support echelon of one and sometimes two combined-arms armies was established in the fronts (the Western Front in the Smolensk Operation).

In the third period of the war the fronts would usually be organized in two echelons when conducting operations on main axes of advance. From two to seven armies would be assigned to the forward echelon, and one or two combined-arms armies to the support echelon. Mobile groups became a mandatory element of the front's tactical order of battle. Their composition varied: 1-2 or even 3 tank armies, 1-2 mounted-mechanized groups or 1-2 tank (mechanized) corps. Sometimes a combined-arms reserve would also be established, consisting of a tank (mechanized), cavalry, or rifle corps. An air army was also included in the tactical order of battle of all fronts.

The tactical order of battle of combined-arms armies changed appreciably (Diagram 34). In 1941-1942 they usually had a reserve or small support echelon (1-2 rifle divisions). In some operations mobile groups were formed, consisting of reinforced cavalry combined units and several tank brigades, and 1-2 tank corps

beginning in the summer of 1942. In 1943 up to 1-2 rifle corps would be assigned to the army support echelon, depending on the army's composition. Many armies had mobile groups consisting of 1-2 tank (mechanized) corps. In addition, long-range (DD), initial massed strike (AR) and rocket launcher unit (GMCh) artillery groups were formed in the army, as well as antiaircraft, antitank artillery, and engineer reserves, and a mobile obstacle construction detachment.

In the offensive operations of 1944-1945, armies executing penetration would most frequently be organized in two echelons. One or two rifle corps would be assigned to the support echelon. In some cases, such as when an attack was to be directed into the flank, armies would even be organized in three echelons (49th Army in the East Prussian Operation and the 3d Guards Army in the Vistula-Oder Operation). Armies were organized in a single echelon, as in the second period of the war, when the enemy had a strong tactical zone of defense but lacked operational reserves on the axis of advance. In these conditions rifle combined units were disposed in greater depth.

In many operations tank and mechanized corps would be placed in operational subordination to combined-arms armies to complete a tactical breakthrough. An army artillery group began to be formed for carrying out fire missions in the army; this group would be divided into subgroups, one for each forward-echelon corps. The artillery group would contain 3-5 cavalry brigades, 2-4 independent artillery regiments, 2-6 rocket artillery regiments, or 180-260 guns, mortars and rocket launchers. This enabled the army commanders to deliver massive artillery fire on important tactical and operational objectives and effectively to influence penetration. As in the past, an army antiaircraft artillery group and various reserves would be formed in the army.

Development of troop combat formations was proceeding in approximately the same directions as the tactical order of battle. In the first period of the war the combat formations of combined units, units and subunits, in conformity with pre-war views, were set up for the most part in two echelons. Such a formation led to assignment of two thirds of rifle companies to the support echelons of advancing divisions, which sharply diminished the striking power of the attacking extended lines of riflemen. Therefore People's Commissar of Defense Order No 306, dated 8 October 1942, introduced organization of combat formations in a single echelon from the company to the division level, with designation of a reserve. The course of combat operations indicated, however, that a single-echelon formation was advisable only for subunits. Units and combined units, with only a small reserve, lacked the capability to build up the force of an attack, which was required by penetration of an increasingly deepening enemy defense. By the beginning of the summer-fall campaign of 1943, deep combat formations had become most typical. Artillery groups, antitank artillery reserves and mobile obstacle construction detachments were established in the combined units and units. Beginning in 1944, close-support tank groups were employed not only in a centralized manner at the division echelon, but also began to be attached to regiments, and toward the end of the war to battalions as well.

On the whole the experience of the Great Patriotic War indicated that penetration of an enemy defense in depth demanded disposition in depth on the part of the

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attacking forces. The army forward echelon was to be capable of independently penetrating the tactical zone of defense to its entire depth, thus creating the prerequisites for successful offensive exploitation. There was an exploitation echelon in the tactical order of battle of the front (army), capable of expeditiously driving into a gap and swiftly exploiting to full operational depth. Each combined-arms commander -- from regimental commander to army commander -- was to have an artillery group under his command. It was most expedient to employ air, especially with a limited number of aircraft available, in a centralized manner, at the level of the front.

4. Delivering Fire on the Enemy

In the battles of the Great Patriotic War, fire was the principal means of breaking up the enemy's defense -- killing his personnel and destroying his weapons, demolishing various fieldworks and obstacles, and destroying the enemy's will to resist.

Artillery provided the bulk of delivered fire. Artillery accounted for 85-90 percent by weight of all ammunition expended in an operation. The most important directions in development of combat employment of artillery were an increase in artillery firepower and effectiveness of artillery support of penetration.

An increase in artillery firepower was achieved chiefly by increasing the density of guns and mortars in breakthrough sectors and increasing expenditure of ammunition. In the course of the Great Patriotic War artillery densities increased from 30-40 to 220-250, and in a number of operations as many as 300 or more guns and mortars per km, or 3-6-fold in comparison with prewar views and 6-10-fold in comparison with the offensive operations of 1941.

Artillery support of penetration was organized on the principles of artilleriyskoye nastupleniye [artillery offensive, attack]. It consisted essentially in neutralizing the enemy's defense and in providing continuous support of infantry and tanks by massed, effective artillery (mortar) fire.² It included three closely inter-linked periods: artillery preparation for the attack, artillery support of the assault phase, and artillery support of infantry and tank actions deep in the enemy's defense.

Essentially these same periods were included in artillery support according to prewar views as well. But the last period had a different name -- artillery actions to support the engagement of second echelons, repel counterattacks, immobilize the rear and impede the approach of enemy reserves.³ The term "artilleriyskoye nastupleniye," however, united all three periods into a continuous process of delivery of fire on the enemy to the entire depth of tactical penetration.

The success of penetration depended in large measure on effectiveness of artillery preparations. It was determined by a number of factors, particularly density of artillery, accuracy of fire, quantity of ammunition allocated, duration, organization and depth of suppression and neutralization of the enemy.

Reliable suppression, neutralization and destruction of the enemy in the course of artillery preparation for the attack demanded a certain total firepower, which increased with an increase in strength of the defense.

With an increase of 6-10-fold in artillery density and ammunition expenditure per gun of 50-100 percent as the war progressed, total artillery firepower per km of breakthrough sector increased 10-15-fold. We should note, however, that total firepower could also have been increased with less artillery density, for the fire capabilities of guns and mortars, based on maximum permissible rate of fire, were only 60-70 percent utilized. With a higher utilization factor, artillery densities or duration of artillery preparation could have been reduced by 30-40 percent.

The bulk of the ammunition allocation would be expended during periods of heavy bombardment. In 1941-1943 they averaged approximately 20 percent of the total duration of artillery preparation, and even less in a number of instances. In the operations of 1944-1945 the percentage share of time allocated to heavy shelling increased to 60 percent or more, but in many cases it did not exceed 25-50 percent.

In 1942-1943, in connection with the fact that the enemy shifted to static defense, duration of artillery preparation steadily increased, in spite of some increase in Soviet artillery densities and expenditure of ammunition allocated for artillery preparation. In the operations of 1941 artillery preparation lasted 10-15 minutes, 60-90 minutes in 1942, while in 1943 it ran as much as 3 hours in such operations as the Belgorod-Khar'kov.

There were important drawbacks to artillery preparation of great duration. In 2 or 3 hours of shelling the enemy would be able to determine the breakthrough sectors, issue the necessary orders to his tactical and immediate operational reserves, and even begin moving them up toward the threatened sectors, which made penetration more difficult. In view of this, efforts were being made to find ways to shorten the duration of artillery preparation without diminishing its effectiveness.

At first ranging, some or all shiftings of fire and silencing of fire were eliminated from artillery preparation, since the latter did not produce the anticipated results. Then battery fire was reduced, at the same time increasing duration of heavy shellings. Finally, during periods of destruction fire and delivery of fire by direct-fire guns, a considerable percentage of the artillery would continue to perform missions of placing suppressive fire on immediate depth. All this made it possible by war's end to reduce the duration of artillery preparation by 2-3-fold, while the First Belorussian Front reduced it 5-7-fold in the Vistula-Oder and Berlin operations.

Brief but massive artillery preparation would exert a very powerful psychological effect on the enemy and his morale and would do a fairly reliable job of softening up the defense. It nevertheless failed to produce the anticipated results, however, when penetrating a strong fortified defense (the Berlin Operation).

The organization of artillery preparation changed considerably in the course of the Great Patriotic War. In order to achieve the element of surprise, command authorities began commencing artillery preparation with extremely heavy shelling, shifting destruction of targets with fire from indirect fire positions to a subsequent time. In order to avoid disclosing the ending of artillery preparation and thus to deprive the enemy of the opportunity to ready his troops to repel an assault, the final period of heavy shelling would have the same intensity of fire as that with which artillery support of the assault phase would begin. Rocket

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artillery salvos would be time-distributed throughout the entire artillery preparation. Duration of the first and last periods of heavy shelling steadily increased, and by war's end had increased to 15-25 minutes, which made it possible to deliver more effective fire on the enemy and to achieve a strong effect on his morale. This was especially important just before the infantry and tanks launched the assault phase. Alternation of massed and battery fires, destruction fires and phony shifts of fire, when they were employed, varied for the majority of artillery preparations.

A steady increase in artillery density in breakthrough sectors and improvement in its qualitative composition made it possible to increase the depth of delivery of effective fire on the enemy's defense. In 1941-1942 the defense was neutralized by massed fire to a depth of 1.5-2.5 km and somewhat deeper, in 1943 -- to a depth of up to 3-4 km, and in 1944-1945 -- to 6-8 km and more. In the concluding operations of the Great Patriotic War depth of neutralization reached 8-10 km, and in the Berlin Operation -- 10-12 km. Suppressive fire was placed on the defense to a depth of 17-18 km in the zone of advance of the 8th Guards Army.⁴

The endeavor to increase the depth of neutralization of the enemy's defense was not always warranted. With a shortage of artillery this led to scattering of fires, as a result of which not even the first position was well neutralized. In addition, delivery of suppressive fire on the enemy at great depth was as a rule little effective, while the morale effect exerted by fire during artillery preparation usually had dissipated by the time the attacking troops reached the enemy.

Methods of artillery support of the infantry and tank assault were selected in each operation in relation to the character of the defense, availability of artillery, especially large calibers, as well as ammunition availability. When penetrating a focal-type defense and when there was a shortage of artillery or ammunition, close support of the assault phase would involve successive concentration of fire. When the enemy shifted to a static defense, more and more frequently a single moving barrage, and subsequently a double moving barrage would be employed in combination with successive fire concentration. Different variations of a moving barrage were worked out and successfully employed on several fronts: creeping fire (Leningrad Front), intensifying moving barrage (Voronezh Front), double successive fire concentration (Third Belorussian Front), etc.

Depth of close support of the assault phase increased from campaign to campaign, and by war's end had reached 2-2.5 km, and as much as 4 km in the Berlin Operation. Artillery support of infantry and tank actions during deep combat was provided by the fires of individual guns, platoons and batteries, self-propelled guns, as well as concentrated and massed fire of battalions, regiments, brigades and artillery groups. The latter sometimes totaled as many as 200 guns and mortars.

Aircraft played an important role in delivery of fire on the enemy. During the war 46 percent of all sorties involved air support of offensive ground actions. Up to 70 percent of these resources were employed on the main axes of advance of the fronts. In the Berlin Operation, for example, 2760 aircraft were operating on the main axis of advance of the First Belorussian Front, or 71 percent of the aircraft of the 16th Air Army. With a shortage of aircraft, as was characteristic of the first period of the war, air resources were for the most part employed for close

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support of infantry and tanks during penetration. Only occasionally did ground-attack aircraft and bombers deliver airstrikes at the end of artillery preparation.

In 1943 the air forces of the Soviet Army transitioned to actions in the form of the air offensive, which included two periods: air preparation and close air support of the assault and advance by infantry and tanks deep in the enemy's defense. Sometimes, in particular when breaking through the blockade of Leningrad and the storming of Sevastopol', preliminary airstrikes were delivered. But a more widely followed practice was the delivery of airstrikes during the night prior to commencement of an offensive. In the operations of 1944-1945 air support was divided into preliminary airstrikes and close support.

Preliminary airstrikes would begin long before the offensive commenced and would involve concentrated strikes and actions by small groups and single aircraft on a broad front, day and night, with the objective of killing and exhausting enemy personnel, particularly in the tactical zone of defense and at reserve force concentration locations, as well as artillery disposition areas, command and control facilities, and other targets.

During close air support of the assault, on which usually one third of total resources would be expended, primarily targets in the breakthrough sectors would be hit. Airstrikes would as a rule be timed to occur toward the end of artillery preparation. The aim was to overlap the moment artillery shifted from artillery preparation to close support of the assault, when tanks and infantry were initiating the assault. The majority of airstrikes were against artillery and mortar batteries, to prevent them from delivering fire to cover the forward edge of the battle area with a curtain of fire immediately prior to the assault phase.

When providing close support to the attacking infantry and tanks, aircraft would deliver concentrated and massed airstrikes, attacking in waves. As the fronts received increasing numbers of ground-attack aircraft and bombers, they began employing with increasing frequency massed airstrikes, the operational effect of which was considerable.

Successful offensive air support was achieved primarily by the power of airstrikes, by teamwork and cooperation, and by skilled coordination of air support missions with artillery in place, time, and target. Supplementing artillery fire in those areas where delivery of artillery fire was difficult or impossible, aircraft performed very important operational-tactical missions.

5. Breaking Through the Tactical Zone of Defense

In the first offensive operations of the Great Patriotic War, troops frequently would undertake penetration from approach march, as recommended by the 1936 Provisional Field Service Regulations. Experience indicated, however, that attacking a defending adversary from approach march involved enormous difficulties and produced little results. Reconnaissance was unable to gain a thorough picture of the enemy's defense, and artillery was unable to place adequate suppressive fire. Mutual coordination was inadequately organized. Units would take casualties while approaching the enemy's forward positions, and the assault phase would be conducted in a disconnected manner, which frequently led to failure. An attack from approach

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march proved to be possible only in conditions of an unstable enemy defense and when the attacking troops were able to approach undetected (10th Army of the Western Front in the counteroffensive at Moscow), as well as during exploitation in an offensive operation or during penetration of defensive positions at depth.

The principal mode of initiation of the attack during penetration of a prepared defense was commencement of attack from close contact with the enemy, following good suppressive fire on the enemy's defense by artillery and airstrikes, with subsequent buildup of efforts from depth (Diagram 35). As a rule the infantry and tank assault would begin simultaneously across the entire breakthrough sector and would be conducted with continuous close artillery support. The depth of the attack steadily increased with an increase in power of fire delivered on the enemy and heavier saturation of the attacking troops with tanks, close support guns, and engineer subunits, as well as improvement in the quality of organization of teamwork and cooperation, reaching 3-4 km in the third period of the war. The attack did not proceed without a halt to such a depth across the entire breakthrough sector, however, because the degree of neutralization of the enemy and his resistance to the attacking troops were not the same everywhere.

Deep offensive exploitation in the first period of the war was usually accomplished by engaging the support echelons of regiments and divisions, which was supported by a lengthy period of heavy shelling. Their efforts were frequently focused directly on strongpoints. When wide and close envelopments were employed, deep offensive exploitation was more successful. Sometimes close and wide envelopments would end in encirclement of enemy strongpoints. But assignment of substantial forces to take strongpoints, especially from the attack echelon, adversely affected deep offensive exploitation and consequently the rate of penetration of the main defensive zone as well.

In spite of the fact that beginning in the summer of 1942 the enemy's main defensive zone was only 3-4 km deep, in order to complete penetration of this zone it was often necessary to repeat the assault several times, while penetration to full depth of this zone was accomplished in the course of 48 to 72 hours, and only occasionally (the Pogoreloye-Gorodishche Operation) would be completed in a single day.

The protracted character of penetration of the main defensive zone was also due to the fact that the attacking troops, having expended ammunition on artillery preparation and close support of the assault, would have little artillery fire support. When tanks were in short supply, the highly vulnerable infantry would sustain heavy casualties and advance slowly; battle groups lacked strong motorized mobile groups, while those formed of cavalry combined units did not possess the requisite penetrating power to complete breaking through the defensive zones.

Combat experience acquired by the Soviet troops, increased reliability of delivery of effective fire on the enemy during artillery preparation, improvement of close fire support methods, greater numbers of tanks in close support of infantry, and the appearance of strong mobile groups in battle groups made it possible to penetrate without pause not only to full depth of the main defensive zone but also frequently to full depth of the entire tactical zone of defense. In the counteroffensive at Stalingrad, for example, the majority of tank corps were engaged to

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accomplish offensive exploitation or to complete penetration of the main defensive zone. This made it possible to build up the efforts of the rifle divisions and rapidly to reach the enemy's main artillery position areas. With a high rate of advance by the tank brigades, the enemy's artillery was unable to prepare to repel their attacks, which created favorable conditions for the entire battle group to advance deep into the enemy's defense.

Offensive exploitation changed with a shift to static defense. In connection with the fact that the forward echelon of the regiments would only break through the first two trenches with a deep penetration attack, the support echelons of the regiments would be engaged to complete penetration of the entire first position and to capture the second. In some cases, when the forward echelon of the regiments succeeded in capturing the entire first position, the support echelons of the regiments would be engaged for penetration of the second position. But most frequently the support echelons of the divisions would be brought into action to accomplish this mission -- into the gaps between the forward-echelon regiments or, in exceptional cases, by leapfrogging past their combat formations.

The problem of completing penetration of the second defensive zone and offensive exploitation into the second zone would usually be resolved by committing the support echelons of the corps or mobile groups. But considerable time was required to put the support echelons of the corps into battle; they did not possess adequate mobility and striking power, and therefore they were slow in accomplishing offensive exploitation toward the second zone, on foot. In order to deprive the enemy of the time and opportunity to organize continuous defense in the second zone, and thus to localize the breakthrough, the Soviet command authorities, basing their thinking on theory of the operation in depth, engaged mobile groups of armies, and in a number of cases of fronts as well to complete penetration of the main defensive zone and to advance into the second zone. Possessing good cross-country capability, they would advance in columns to the start line, deploy into combat formations without a halt and, together with infantry, closely supported by specially designated artillery, would complete penetration of the main defensive zone. Massed employment of tanks exerted great psychological effect on the enemy, and he usually was unable to withstand their attack.

The problem of penetration of the second zone during the Great Patriotic War arose in 1942, when the enemy began establishing such a zone in his defense. The second zone was usually situated beyond the range of the bulk of artillery; it could not be observed from ground observation posts, and reconnaissance of targets in this zone could be accomplished only by air; on the presumed axes of advance it would be occupied in advance by reserves, or their advance would be timed to coincide with the fighting for the main defensive zone. The difficulty in breaking through the second zone also lay in the fact that the entire battle group had to advance 10-15 km, to prepare for penetration almost anew, or to conduct the offensive action in such a manner as to reach the zone before enemy reserves had taken up positions, and to prevent the enemy from reestablishing a continuous front.

Various modes of penetration of the second zone were employed in the operations of the Great Patriotic War: without a halt in attack position, with a limited-timetable preparation for an assault, and following deliberate preparation for attack. Penetration without a halt in attack position was the principal mode. When this mode was employed, troops would usually take advantage of unoccupied or

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lightly-occupied sectors of the second zone of defense and would continue to advance without delay. No more than 24 hours would be allocated for preparing for an attack on a limited timetable. Penetration with deliberate preparation would be employed in those cases where the second zone had been occupied in advance by strong reserves, and one or two days would be expended on preparations for the breakthrough.

In order to speed up preparation for penetrating the second zone of defense, beginning in the summer of 1944 breakthrough planning was conducted during preparations for the operation, while the adopted plans would be refined by the army commanders during completion of penetration of the main defensive zone. After plans had been refined and detailed, operation orders would be issued first of all to the forward detachments, the principal mission of which was to advance as swiftly as possible to the second zone, avoiding combat with the enemy's retreating troops and rear guards, and seizing in the second zone ground from which penetration would be exploited by the forward echelons of the combined units. If combat by the forward detachments indicated that the enemy was firmly entrenched in the second zone, the corps commanders, on the basis of instructions from the army commander, would make the decision to penetrate the zone with limited-timetable preparation for the assault, or with deliberate preparation.

When advancing into the enemy's second defensive zone attacks as a rule would be delivered at weak points -- points unoccupied or hastily occupied by enemy troops, even if they were less easily accessible, or where the stability of the defense had been broken by the actions of forward detachments or mobile troops.

Success in penetrating the second zone would be determined in large measure by skilled massing of troops.

The number of breakthrough sectors would be determined by the conditions in which offensive actions in the tactical zone of defense had taken place. Usually one breakthrough sector would be designated for the corps, for the most part at the boundary between advancing combined units, which made it possible to concentrate at this point the bulk of personnel and weapons in the process of approaching the second zone. Sometimes more breakthrough sectors would be designated, if several sectors had been captured in the second zone. But when the enemy succeeded in defending firmly in the second zone, the army would break through the defense in a single sector, in which the efforts of two corps and the army proper would be combined.

The experience of the war indicated that if the second zone was occupied by the enemy even in haste, penetration would be successfully accomplished when a substantial superiority was established: 5-8:1 in artillery, and 2-3:1 in infantry and tanks. Such a superiority could usually be achieved with the following troop densities: up to 3 rifle battalions, approximately 100 guns and 6-10 close-support tanks per km of breakthrough sector. In the mobile group densities in the breakthrough sectors would run 50-90 guns and mortars, 30-50 tanks, and 1-2 motorized rifle battalions.

The second defensive zone would be softened up for the most part with a period of heavy shelling or 20-40 minutes of artillery preparation, during which infantry and tanks would approach the enemy's defense and, when shelling ended, would assault

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the forward positions. Close support of the assault phase would usually involve a rolling barrage or fire on request. But if intelligence established that the second zone was being solidly defended, a moving barrage would be employed to support the assault.

The problem of breaking through the enemy's second defensive zone in the last war was successfully solved by the troops of the Soviet Army, thanks to which battle groups would be able to advance to adequate maneuvering room on the first or second day of the offensive.

6. Development of Tactical Into Operational Breakthrough

Development of a tactical into an operational breakthrough required solving two problems: faster offensive exploitation to depth, with the aim of thwarting enemy attempts to reestablish the tactical defense or to established organized resistance on new lines, and widening of the breach toward the flanks to the extent where approaching operational reserves together with retreating troops could not form a continuous front during the entire time of execution of penetration.

The first problem was the most important and difficult one. It would be handled for the most part by mobile groups in close coordination with rifle troops, artillery and air. Prior to the battle of Kursk, the functions of development of tactical into operational penetration were for the most part assigned to combined-arms and tank armies of mixed composition. Experience indicated, however, that tank (mechanized) corps, advancing at a rapid pace, would get considerably ahead of the rifle divisions, and coordination between them would be disrupted, while command and control of combined units of differing mobility was difficult. In addition, development of tactical into operational penetration within the framework of an army operation was further complicated by the fact that the army lacked the aircraft which were extremely essential to provide close support for the advance of mobile troops which had outstripped the rifle combined units.

In view of this, at the beginning of 1943 uniform tank armies were established, consisting of 1-2 tank corps and 1 mechanized corps. Such tank armies were a resource of Hq SHC and would be attached to fronts which had begun performing the main functions of development of a tactical into an operational breakthrough. Usually a front operating on the most important axis would receive one or two, and sometimes (Uman'-Botosani, Proskurov-Chernovtsy and L'vov-Sandomierz operations) three tank armies. They would comprise a mobile group and were designated for exploitation of tactical to operational success.

Tank armies would be committed to battle with the objective of completing penetration of the main or second defensive zone, or following penetration of the entire tactical zone of defense. The character of employment of tank armies was also determined in large measure by the personal views on this matter by the various commanding generals of the fronts. Mar SU I. S. Konev, for example, always advocated employment of tank armies to complete penetration of the tactical zone of defense. But early commitment of armies to battle sometimes resulted in loss of up to 30-40 percent of tanks just during tactical penetration, which diminished their combat capabilities during exploitation to operational penetration.

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Hq SHC and the commanding generals of a number of fronts sought to complete penetration of the tactical zone of defense with rifle combined units reinforced by close-support tanks and artillery, as well as by army mobile groups. Mounted-mechanized groups would most frequently be committed beyond the second defensive zone, for their engagement into a penetration gap usually would involve heavy cavalry losses, which led to loss of those qualities essential for swift actions at operational depth.

Engagement of front mobile groups following penetration of the tactical zone of defense, especially when a "clean" breach was formed, enabled them to advance swiftly to depth, splitting the enemy's operational front, which led to greater results than the commitment of mobile groups within the enemy's tactical zone of defense.

In those cases where tank armies were employed to complete penetration of the enemy's tactical zone of defense, echelon-by-echelon engagement of their forces was the most advisable: initially the forward brigades of tank (mechanized) corps -- to complete penetration of the main defensive zone together with the forward echelons of the combined-arms armies, and subsequently the main forces -- to break through the second defensive zone. In this case rifle troops continued to retain sufficient offensive capabilities to complete opening a breach in the most solidly defended area in the tactical zone of defense, with moderate artillery reinforcement and the assistance of tank combined units. Tank (mechanized) corps, assigning part of their forces to forward detachments, would be able, together with infantry and close-support tanks, to smash the enemy's final powerful antitank gun line, formed by his artillery fire positions, to assault the third position without delay, where the enemy had not been able to set up a continuous defense and, with penetration of this position, to create favorable conditions for swift advance by the main forces to the second zone, which was the most important prerequisite for its penetration without a pause, and consequently for developing tactical into operational penetration.

Successful engagement of tank and mechanized combined units also depended to a considerable degree on the width of the breach opened up in the enemy's defense. According to prewar views, a breach should be from 20 to 25 km wide for a mechanized corps, 6-8 km of which would be designated for the movement of tank divisions and 6-8 km for protecting tanks from effective hostile light-artillery fire from the flanks.⁵

The experience of the war indicated that not more than 2-3 km was needed to protect advancing tank columns from fire from the flanks, that is, the effective direct-fire range of artillery and tank guns from each flank. This made it possible successfully to engage a tank army in an 8-12 km zone, and independent tank corps in a 4-6 km zone.

Engagement of tank armies, tank and mechanized corps would be supported by artillery fire and a substantial number of the front's aircraft. After crossing the tactical zone of defense, mobile groups would advance swiftly toward the army defensive zone and would push toward important operational objectives or toward a mobile group advancing from another direction, with the aim of closing the pincers.

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Combined arms large units and formations would also take part in development of tactical into operational penetration with a deep offensive thrust, breaking through the second defensive zone and exploiting to operational depth with their forward detachments, which would consist of up to a reinforced tank brigade sent out from the corps or army. In some operations combined-arms armies in the front's support echelon would also be employed to exploit to operational depth.

Widening of the breakthrough sector would usually begin with penetration of the strongest defensive line, when weakly defended flanks would be discovered, presenting the opportunity to smash the defense on the flanks without large expenditure of personnel and weapons. During penetration of a shallow defense of the focal-point type, this would be performed during penetration of the first position, for which part of the forces of the flank combined units would be utilized.

When the enemy shifted to a static defense, opportunities to attack in the direction of exposed flanks would usually arise following penetration of the main defensive zone, but more often following penetration of the entire tactical zone of advance.

Widening of the breakthrough sector was a component part of the conduct of penetration and played an important role in opening up operational breaches. It therefore would be planned in advance, and appropriate manpower and weapons would be allocated for this mission.

7. Development of Operational Into Strategic Breakthrough

Soviet forces accomplished a strategic breakthrough on five occasions during the Great Patriotic War: in the Southwestern Sector in the winter of 1942/43, in the Right-Bank Ukraine in the winter of 1944, in Belorussia and Romania in the summer of 1944, and in Poland in January 1945. A strategic breakthrough was the result of an offensive by several fronts, when their operational breakthroughs were linked up into a single common breakthrough, which forced the enemy to begin a retreat in the zone of an army group and to take measures to reestablish a strategic front along a new line.

Development of operational breakthroughs into a strategic breakthrough would be accomplished by conduct of a number of successive or simultaneous operations, in which an important role would be played by operations to envelop and annihilate encircled enemy forces.

In the winter campaign of 1942/43, as a result of the encirclement and subsequent annihilation of a very large enemy strategic force at Stalingrad, an enormous breach was formed in the enemy's defense. In November 1942, however, our fronts did not possess adequate forces for simultaneously crushing the encircled force and offensive exploitation on the outer envelopment perimeter. As a result of the lull which ensued, the enemy succeeded in temporarily closing the gap with combined units from the newly-formed Army Group Don.

Rout of the enemy in the Northern Caucasus and on the Upper Don, which followed soon thereafter, disintegrated the strategic front in the Southwestern Strategic Sector; in order to restore this front the enemy was forced to redeploy large forces from Germany and a number of countries in Western Europe.

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The strategic breakthrough in the Right-Bank Ukraine in the winter campaign of 1944 was accomplished by a series of successive operations. In the Zhitomir-Berdichev, Kirovograd, Korsun'-Shevchenkivskiy and Rovno-Lutsk operations, the enemy's defense was shattered on a 1000 kilometer front, and the enemy sustained heavy casualties. Unexpected splitting offensive drives by the three Ukrainian fronts in March 1944 led to the collapse of the enemy's strategic front in the Right-Bank Ukraine, as a result of which he was pushed back into the Western Ukraine, to the Carpathians and the Romanian border. In order to reestablish a strategic front, the enemy was forced to redeploy a great many combined units from Romania, Hungary, Yugoslavia, France, Denmark, Germany, and SHC Reserve.

In the summer-fall campaign of 1944 development of operational breakthroughs into a strategic breakthrough was accomplished by enveloping and destroying large enemy forces, with simultaneous deep offensive exploitation, which led to the formation of huge, deep breaches in the enemy's strategic defense. One specific feature of this method consisted in the fact that development of breakthroughs from tactical to strategic was taking place continuously, which constituted a new quality in the development of Soviet Army offensive operations.

In the winter of 1945 the enemy's strategic front in the Western Sector was crushed by powerful, swift splitting offensive drives by the troops of the First and Second Belorussian and First Ukrainian fronts, with the assistance of the Third Belorussian and Fourth Ukrainian fronts. On breakthrough of the tactical zone of defense, a number of battle groups began pursuit, and on the third day of the operation common front and interfront breakthrough sectors were formed, in which swift deep drives developed, which led to the total collapse of the enemy's strategic front and the advance of the troops of the Soviet Army and the Polish Army to the Oder and Neisse.

In two campaigns Soviet forces failed to achieve a strategic breakthrough. In the winter of 1941/42 the Soviet Army did not yet possess large tank and mechanized combined units, which made it impossible swiftly to surround large enemy forces, to split his front in the Western Sector, and thus to form a strategic breach in his defense. In addition, Hq SHC was guilty of a certain scattering of men and weapons.

In the summer-fall campaign of 1943 the Soviet Army conducted a number of successive operations on a front up to 2000 km wide. The overall advance ran 200-700 km, and a number of prerequisites were created for developing operational breakthroughs into a strategic breakthrough in the Southwestern Sector, the most important one. Soviet forces did not however, succeed in completing the process of achieving a strategic breakthrough.

One of the reasons for this was the fact that expenditures of personnel and weapons on accomplishing operational-tactical breakthroughs in the enemy's static defense were considerable. In addition, the turn to a counteroffensive at Kursk was made following heavy defensive battles. By virtue of all this, when the conditions arose for the conduct of operational pursuit, the large strategic formations did not yet possess sufficient troops, especially mobile troops, to punch into the enemy's defense, to penetrate deep into his dispositions, to smash his retreating columns, and thus to establish and widen areas unoccupied by enemy troops.

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Another important reason was the fact that the selected forms of operational breakthroughs failed to provide for envelopment of large enemy forces, the annihilation of which would immediately form a wide gap in the enemy's strategic defense. There were still insufficient forces available to crush the entire strategic front with splitting offensive drives. In spite of the fact that in the course of the campaign 118 divisions were routed, only 14 divisions were totally annihilated,⁶ while the number was 45 divisions in the winter campaign of 1942/43.⁷

Another reason for the failure to accomplish a strategic breakthrough was the fact that at the moment when Soviet troops had shifted to operational pursuit in a number of sectors, their path was blocked by the wide Dnieper. It enabled the enemy to gain from 6 to 8 days, to survive the crisis and to lose only a number of important areas on the west bank of the river.

FOOTNOTES

1. V. I. Lenin, "Poln. Sobr. Soch." [Complete Works], Vol 40, page 6.
2. See "Boyevoy ustav pekhoty Krasnoy Armii" [Red Army Infantry Field Service Regulations], Part II, Moscow, 1942, Article 423.
3. See "Taktika artillerii" [Artillery Tactics], Part I, Moscow, Voenizdat, 1941, page 253.
4. See "Sovetskaya artilleriya v Velikoy Otechestvennoy voyne" [Soviet Artillery in the Great Patriotic War], pp 689, 757.
5. See "Taktika tankovykh voysk" [Tactics of Tank Troops], Moscow, Voenizdat, 1940, page 125.
6. See "Operatsii Sovetskikh Vooruzhennykh Sil v Velikoy Otechestvennoy voyne" [Operations of the Soviet Armed Forces in the Great Patriotic War], Vol 2, page 467.
7. Ibid., page 465.

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CONCLUSION

The experience of the numerous operations conducted by the troops of the Soviet Army in the Great Patriotic War indicated that penetration was the most difficult stage of an offensive operation and required thorough, comprehensive preparation, detailed planning, thorough knowledge of the enemy, his defense system and modes of action, skillful employment of available personnel and weapons, firm, flexible, and continuous troop control.

A deliberate defense possessed great strength and stability. The art of penetrating such a defense was expressed first and foremost in skilled concentration of personnel and weapons on the selected axis and in the selected sector, and establishment of decisive superiority over the adversary. This was achieved by courageous weakening of secondary sectors, redeployments within a front and within an army, as well as maneuver of SHC Reserve manpower and weapons. A high degree of skill in massing men and weapons was displayed by those commanders who possessed a thorough understanding of the essence and nature of penetration.

Fire, and particularly artillery fire constituted a decisive means of breaking up the enemy's defense. Fire would be delivered in preparation and continuous close-support accompaniment of an infantry and tank offensive drive to full depth of penetration. The orderly system of offensive artillery and air support developed during the war years, with precise calculation of shells, bombs, and sorties by target and objective, dimensions of the area under fire and time, reliably ensured effective damage to the enemy's defense and successful advance by the attacking troops. The experience of the war indicated that matters pertaining to delivering fire on the enemy should constantly occupy the center of attention of commanders and staffs at all levels, and the combined-arms commander must possess thorough knowledge of the combat capabilities of weapons and skillfully utilize them in the attack.

A mandatory condition for successful penetration of the enemy's defense was attack with the element of surprise, which would catch the enemy unawares, paralyze his will, induce confusion, disorganization, and prevent the enemy from fully utilizing the capabilities of the defense. Therefore concealed preparation for penetration, deceiving the enemy regarding true intentions and employment of forms and modes of action unknown to him constituted an inseparable part of operations planning and were a special concern of Hq SHC, the commanding generals of the fronts (armies), the commanders of combined units, units, as well as staffs.

Participation in penetration by large forces of the various arms, aviation, and special troops, with their diversified weapons and combat equipment, demanded precise unification and coordination of their efforts in objective, place and time to full penetration depth. Poor organization of teamwork and cooperation and imprecise allocation of missions would lead to uncoordinated actions by the combat troops, to scattering of their efforts, incomplete utilization of combat capabilities, and to limited results. Therefore thorough organization of coordination of all forces and weapons participating in penetration was a primary obligation of commanders at all echelons and one of the decisive factors in achieving success.

The experience of the war indicated that initiated penetration had to be conducted aggressively, with determination, at full effort, in order to achieve deep penetration as rapidly as possible. Therefore prompt and timely buildup of efforts, execution of maneuver, and response countermeasures to enemy efforts to close a breach with reserves constantly occupied the attention of commanders during conduct of penetration.

Most frequently penetration of the defense would be accomplished in a nonuniform manner. Prompt and timely exploitation, taking advantage of weakened points, gaps and breaks in the enemy's defense for the purpose of widening and deepening the breach by attacking with fresh forces or shifting the direction of efforts by the advancing troops constituted one of the important conditions for successful penetration of the defense to its full operational depth.

Continuous achievement of success was of great importance not only for disrupting the enemy's defense but also for increasing superiority of morale over the enemy. Successful penetration boosted the spirits of our troops and diminished those of the defending enemy forces. At the same time the experience of the war indicated that any forward movement should be prepared for and closely coordinated with fire. Assaults on an enemy force which was unsuppressed or little suppressed by fire would usually lead to substantial casualties and failure, which always had a negative effect on the fighting spirit of the attacking troops, and would lead to slowed, cautious actions, which in turn led to a decrease in the rate of advance.

No matter how great the initial success might be, no matter how hard the enemy was hit, he would continue offering stubborn resistance and frequently undertake crafty actions. Therefore, alongside a determined advance to operational depth, commanders sought to maintain vigilance and precise organization in their troops, which protected them from unexpected attacks. Those commanders who allowed themselves to relax upon achieving breakthrough of the enemy's operational defense, who forgot about the enemy's craftiness and cunning, frequently would get into a difficult predicament, and would suffer setbacks, even if only temporary, setbacks which, however, would have a negative effect on the end results of the operations in progress.

On the whole the experience of the last war showed that the commander should thoroughly understand the complex nature of combat, should have the ability to estimate the situation quickly and correctly and to make appropriate decisions, should possess a high degree of professional training, Communist conviction, willpower and organizer abilities, should display innovativeness and initiative, and should

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have the ability to train, indoctrinate and lead his men into battle in order to achieve victory.

A thorough study of the wealth of combat experience of the last war is an indispensable means of developing such qualities, understanding the processes which are taking place in military affairs in present-day conditions, improvement of military thinking and expanding of military knowledge. Innovative utilization of this combat experience, taking into account the changes in military affairs which are taking place, is of great significance for further increasing the combat might of our Armed Forces, for strengthening the country's defense capability, and for further development of military affairs.

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KEY TO CYRILLIC DESIGNATIONS ON DIAGRAMS

A -- army	армейская авиация -- army aviation
ak -- army corps	положение войск к -- position of
ТГр -- panzer group, tank group	troops on
и -- and	утру -- morning
мк -- mechanized corps	исходу -- evening
гр.ген -- general... 's group	части -- units
yd -- assault	орудий и минометов -- guns and
cd -- rifle division	mortars
лв -- guards	
kk -- cavalry corps	
md -- panzer division, tank division	
nd -- infantry division	
md -- mechanized division	
резерв -- reserve	
сбр -- rifle brigade	
мбр -- tank brigade, panzer brigade	
kd -- cavalry division	
охр -- security	
р -- reserve	
мсбр -- motorized rifle brigade	
mk -- tank corps, panzer corps	
гр -- group	
ДД -- long-range	
сп -- rifle regiment	
ТА -- tank army	
ВА -- air army	
mn -- tank regiment	
ВФ -- air force	
Ф -- front	
ММГ -- mounted-mechanized group	
ck -- rifle corps	

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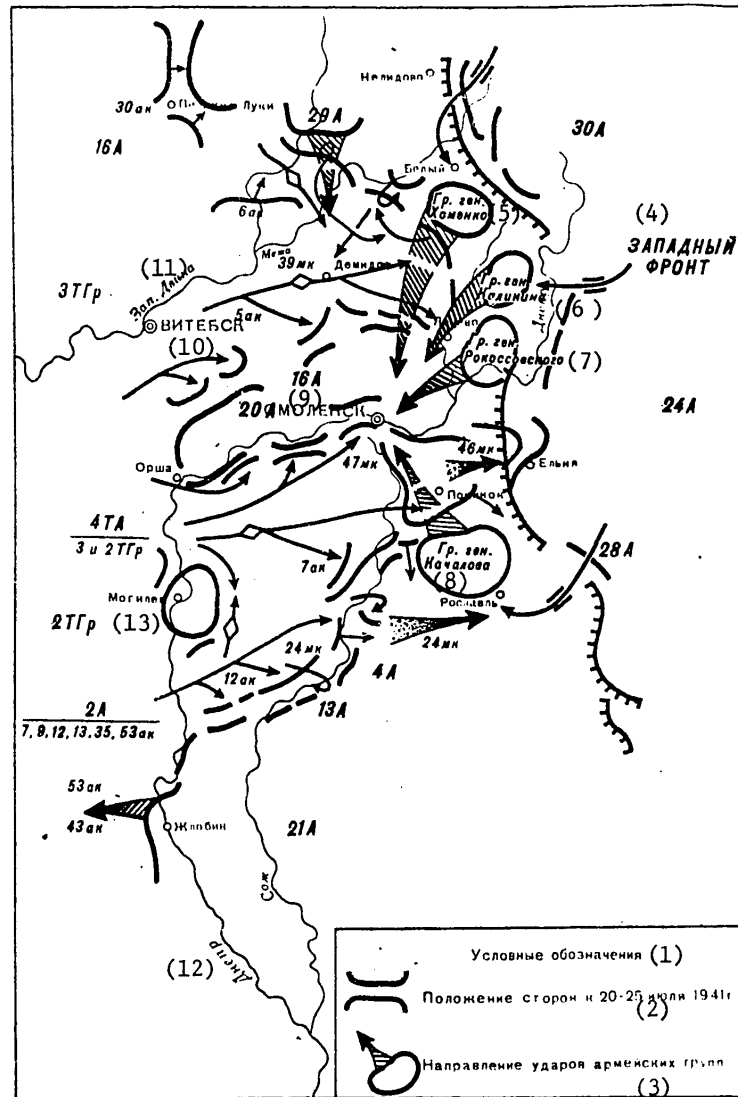


Diagram 1. Situation in the Western Strategic Sector, 20-25 July, and Forms of Operational Breakthrough in the First Offensive in the Smolensk Area

Key:

- | | | |
|--|-------------------|-------------|
| 1. Legend | 6. Kalinin | 12. Dnieper |
| 2. Position of the opposing sides, 20-25 July 1941 | 7. Rokossovskiy | 13. Mogilev |
| 3. Axes of advance of army groups | 8. Kachalov | |
| 4. Western Front | 9. Smolensk | |
| 5. Khomenko | 10. Vitebsk | |
| | 11. Western Dvina | |

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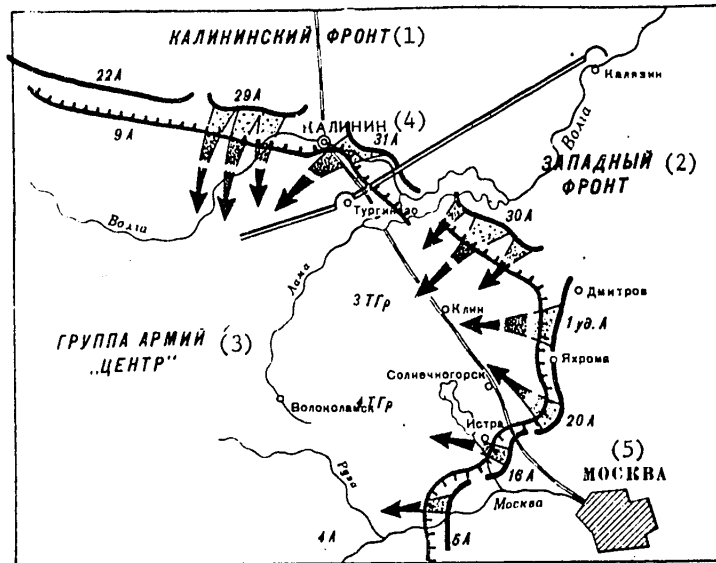


Diagram 2. Concentration of the Efforts of the Armies of the Western and Kalinin Fronts When Commencing the Counteroffensive at Moscow

Key:

- | | | |
|------------------|----------------------|-----------|
| 1. Kalinin Front | 3. Army Group Center | 5. Moscow |
| 2. Western Front | 4. Kalinin | |

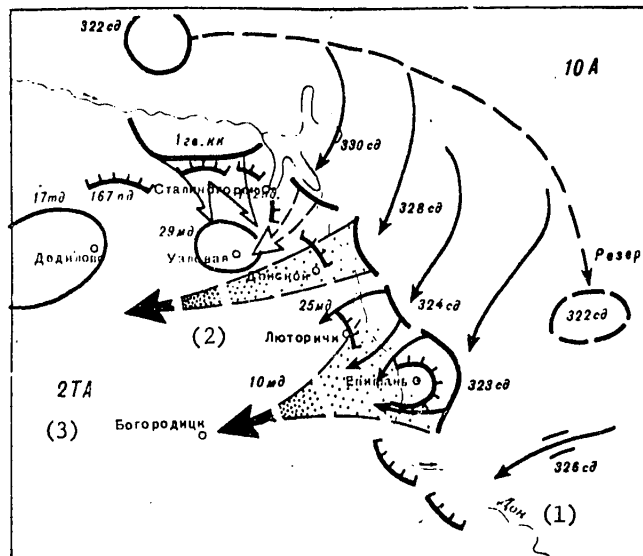


Diagram 3. Plan of Commanding General of the 10th Army for Breaking Through Defensive Line on the Don

Key:

- | | | |
|--------|---------------|----------------|
| 1. Don | 2. Lyutorichi | 3. Bogoroditsk |
|--------|---------------|----------------|

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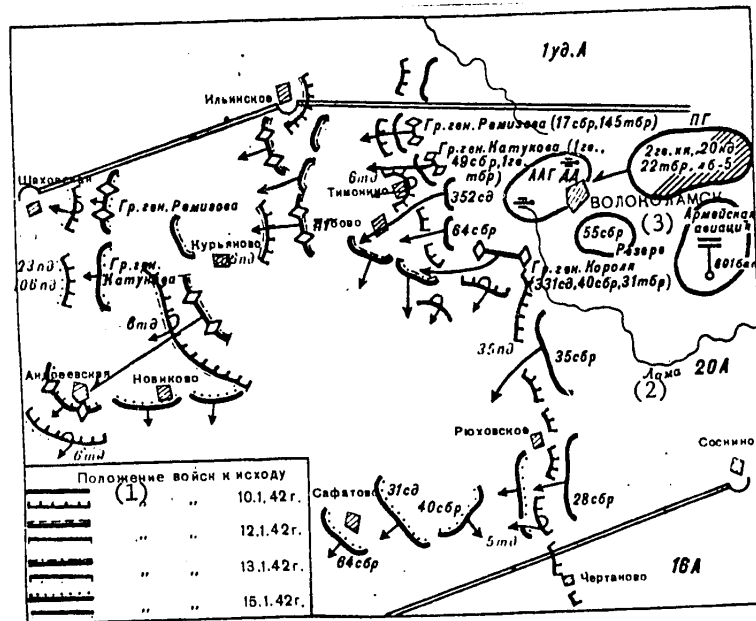


Diagram 4. Penetration of the Enemy's Defense by the Forces of the 20th Army on the Lama River (January 1942)

Key:

- | | |
|----------------------------------|----------------|
| 1. Position of troops by evening | 2. Lama |
| on | 3. Volokolamsk |

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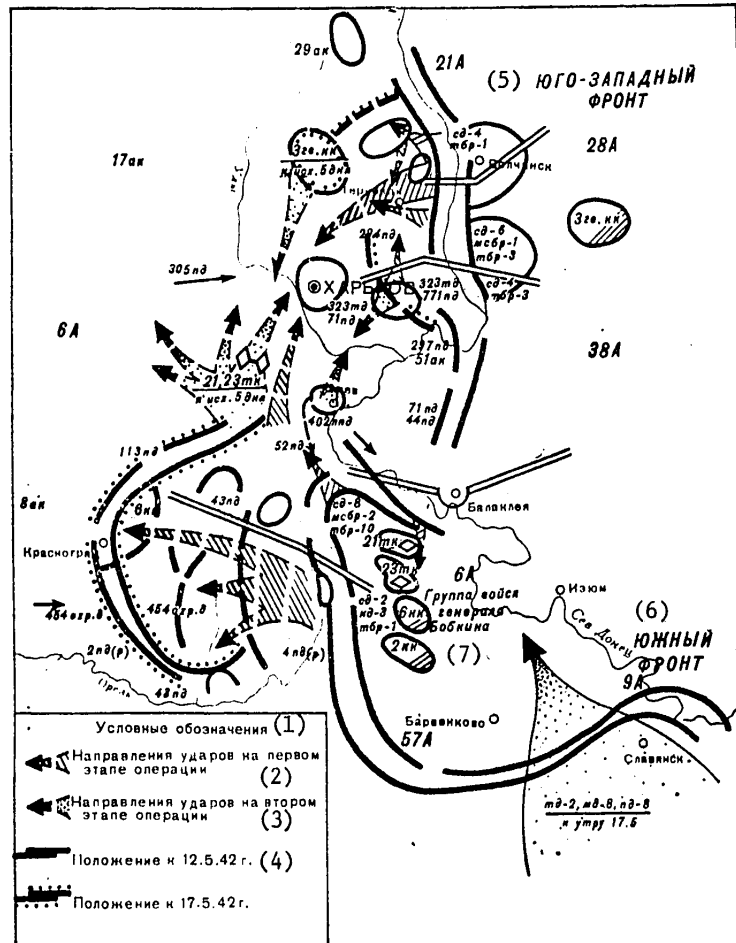


Diagram 5. Concept of Khar'kov Operation and Depth of Advance by Forces During Penetration (May 1942)

Key:

- | | |
|---|-------------------------------------|
| 1. Legend | 4. Status on |
| 2. Axes of advance at first stage of operation | 5. Southwestern Front |
| 3. Axes of advance at second stage of operation | 6. Southern Front |
| | 7. General Bobkin's group of forces |

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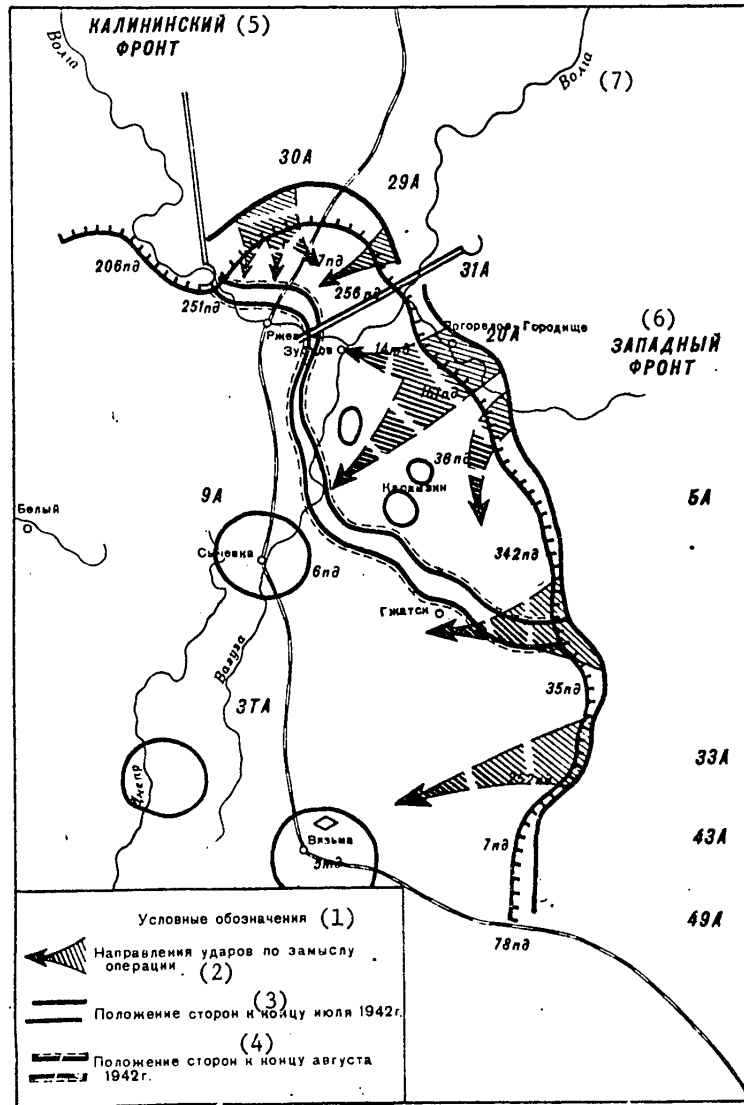


Diagram 6. Concept of the Rzhev-Sychevka Operation (August 1942)

Key:

- | | |
|---|---|
| 1. Legend | 4. Position of opposing sides at end of August 1942 |
| 2. Axes of advance according to operation concept | 5. Kalinin Front |
| 3. Position of opposing sides at end of July 1942 | 6. Western Front |
| | 7. Volga |

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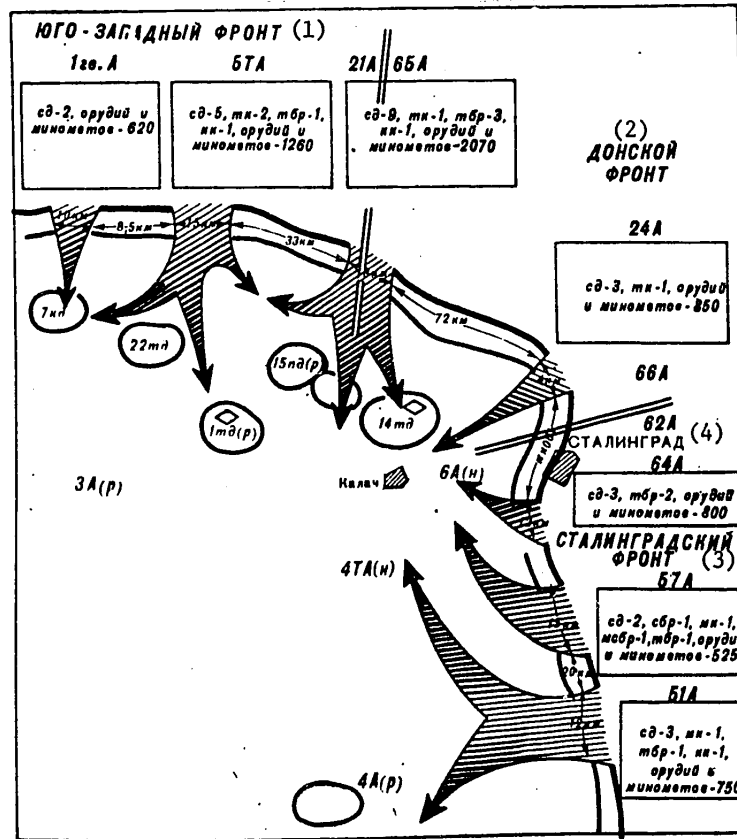


Diagram 7. Composition of Battle Groups, Width of Breakthrough Sectors and Their Spacing in the Counteroffensive as at Stalingrad

Key:

- | | |
|-----------------------|---------------------|
| 1. Southwestern Front | 3. Stalingrad Front |
| 2. Don Front | 4. Stalingrad |

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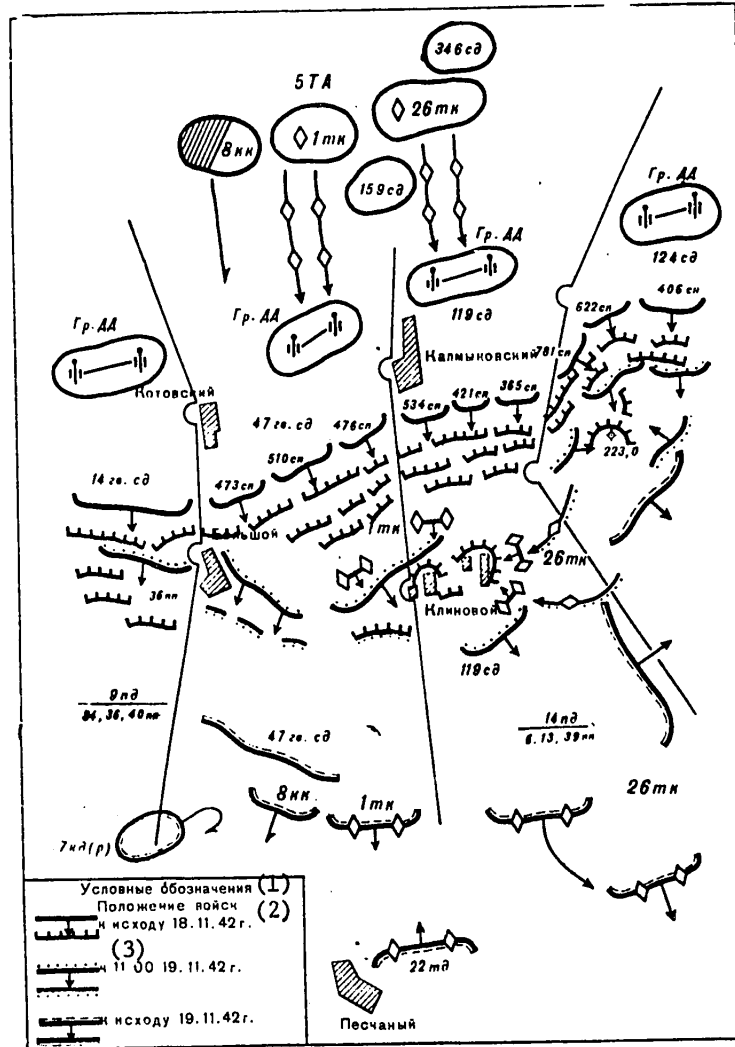


Diagram 8. Combat Actions of Combined Units of the 5th Tank Army During Penetration (November 1942)

Key:

1. Legend

2. Position of troops

3. By evening on

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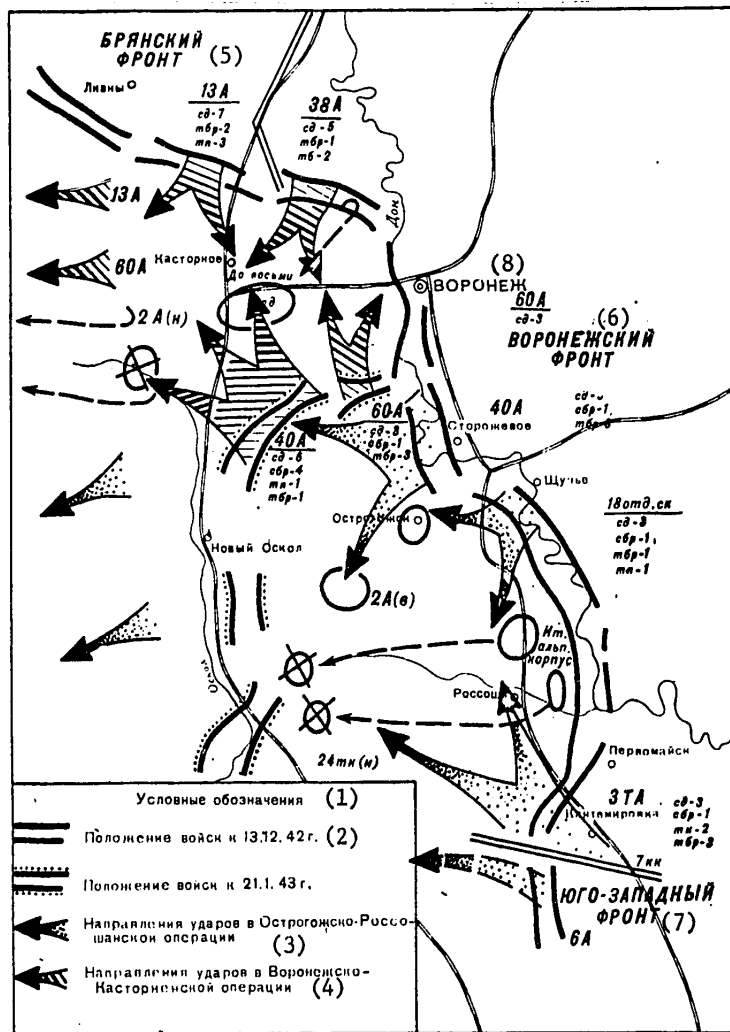


Diagram 9. Forms of Operational Breakthrough in the Ostrogozhsk-Rossosh and Voronezh-Kastornoye Operations and Composition of Battle Groups

Key:

- | | |
|---|-----------------------|
| 1. Legend | 5. Bryansk Front |
| 2. Position of troops on | 6. Voronezh Front |
| 3. Axes of advance in Ostrogozhsk-Rossosh Operation | 7. Southwestern Front |
| 4. Axes of advance in Voronezh-Kastornoye Operation | 8. Voronezh |

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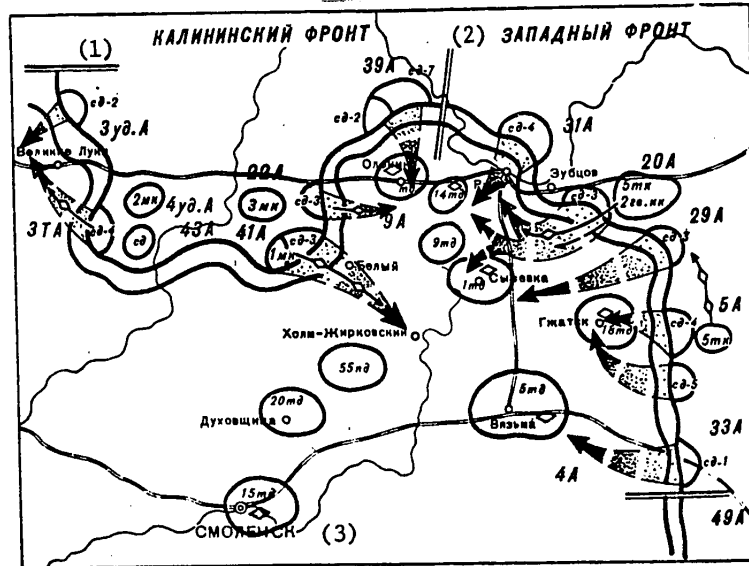


Diagram 10. Concept of Operation "Mars" (1942)

Key:

1. Kalinin Front

2. Western Front

3. Smolensk

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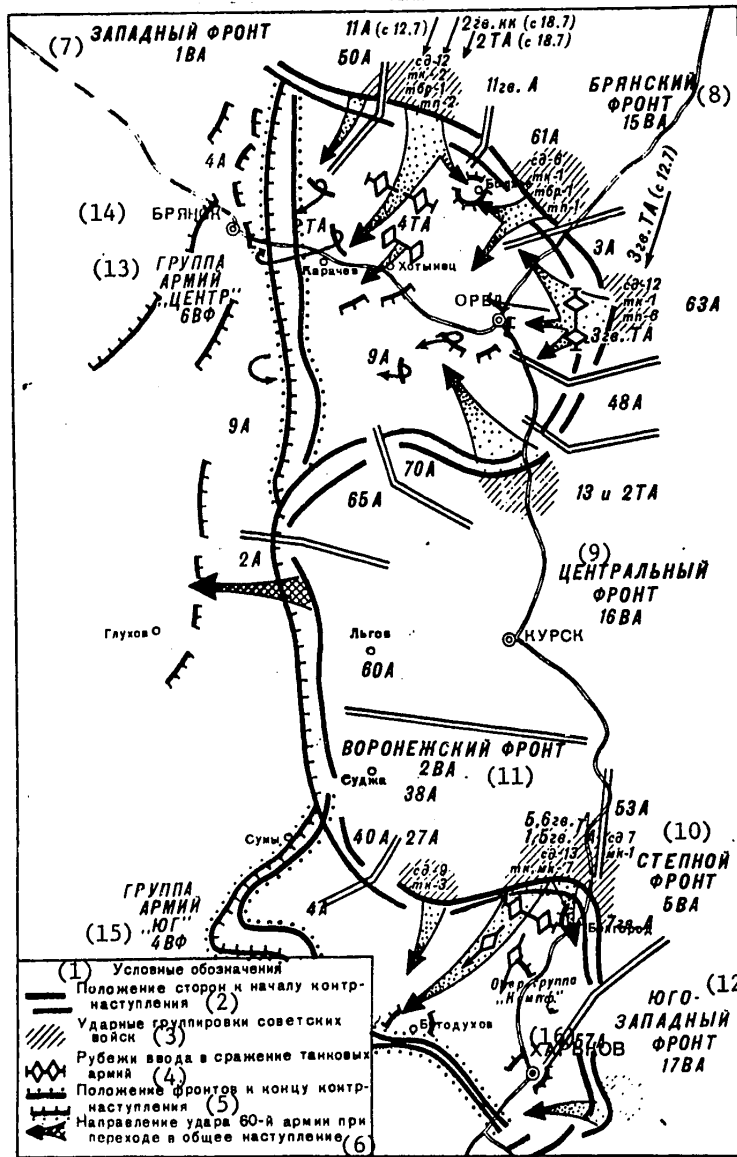


Diagram 11. Forms of Operational Breakthroughs in the Counteroffensive at Kursk and Composition of Battle Groups

Key:

- | | | |
|--|--|------------------------|
| 1. Legend | 6. Axis of advance of 60th Army when launching general offensive | 10. Steppe Front |
| 2. Position of opposing sides at beginning of counteroffensive | 7. Western Front | 11. Voronezh Front |
| 3. Soviet battle groups | 8. Bryansk Front | 12. Southwestern Front |
| 4. Points of engagement of tank armies | 9. Central Front | 13. Army Group Center |
| 5. Position of fronts at end of counteroffensive | | 14. Bryansk |
| | | 15. Army Group South |
| | | 16. Khar'kov |

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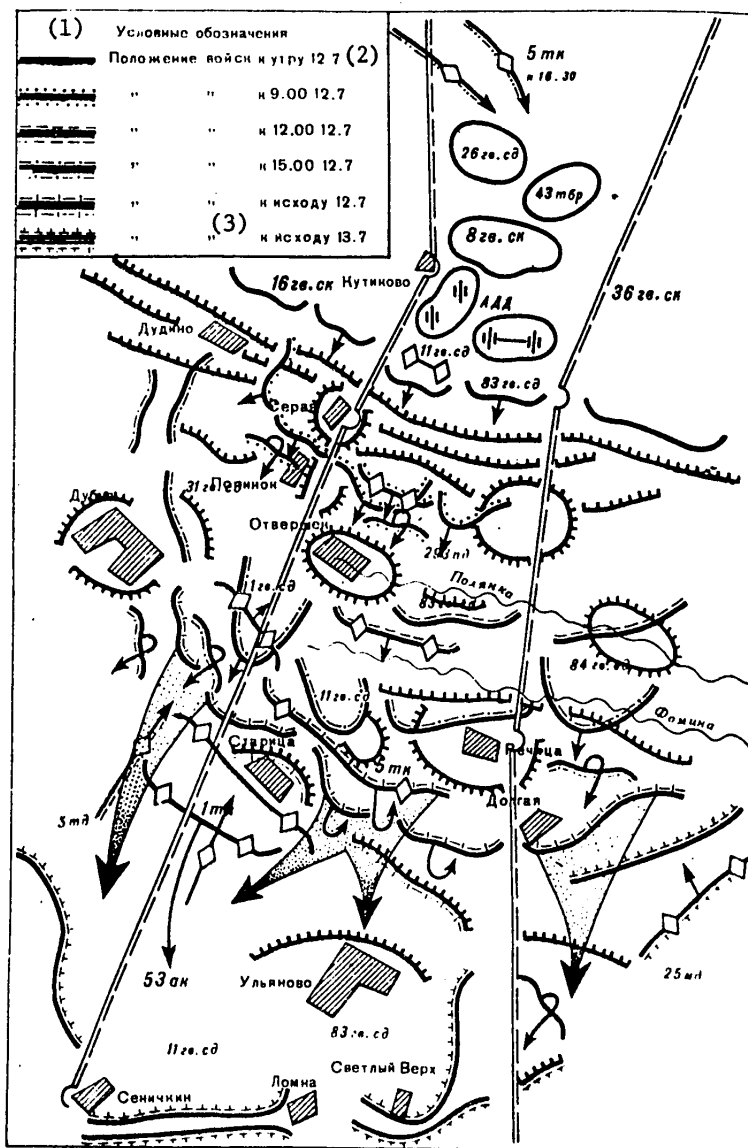


Diagram 12. Penetration of Enemy Defense by the 8th Guards Rifle Corps (July 1943)

Key:

1. Legend

2. Position of troops on morning

3. By evening

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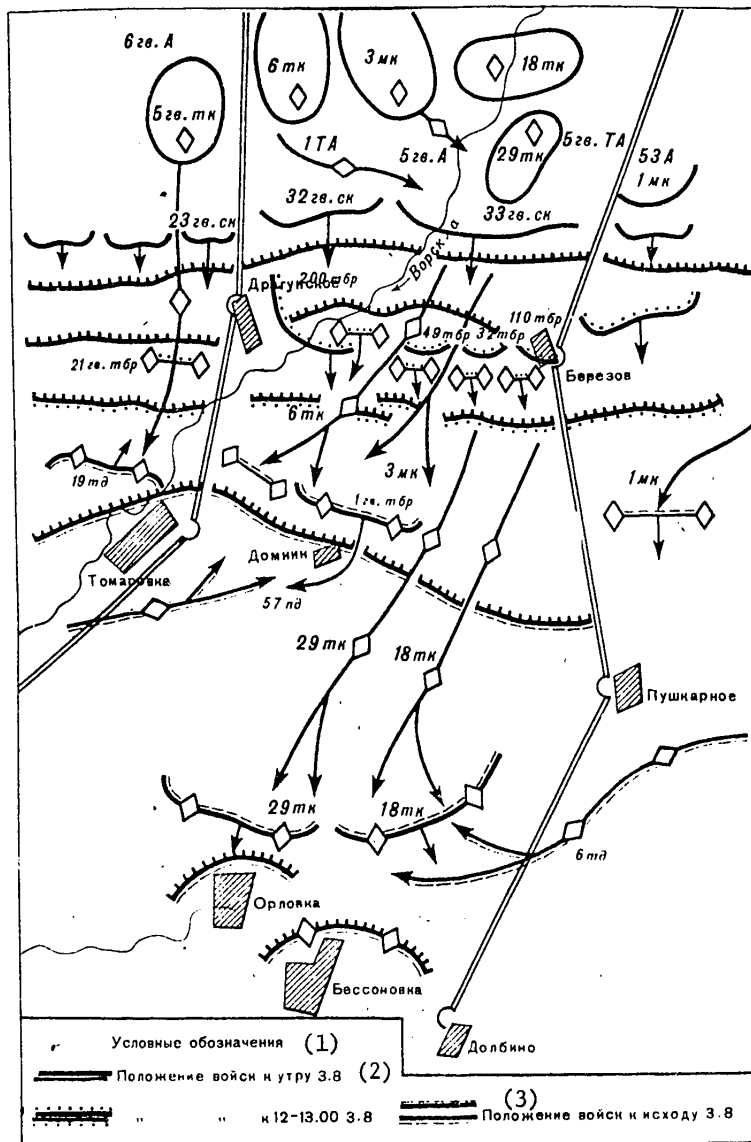


Diagram 13. Actions of Tank Armies When Exploiting Penetration in the Belgorod-Khar'kov Operation (August 1943)

Key:

1. Legend

2. Position of troops on morning
3. Position of troops by evening

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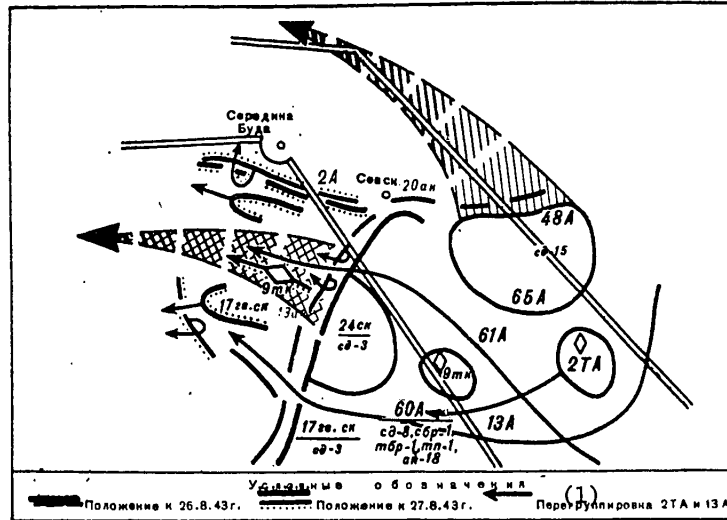


Diagram 14. Penetration of Enemy Defense by Troops of the 60th Army (August 1943)

Key:

1. Redeployment of

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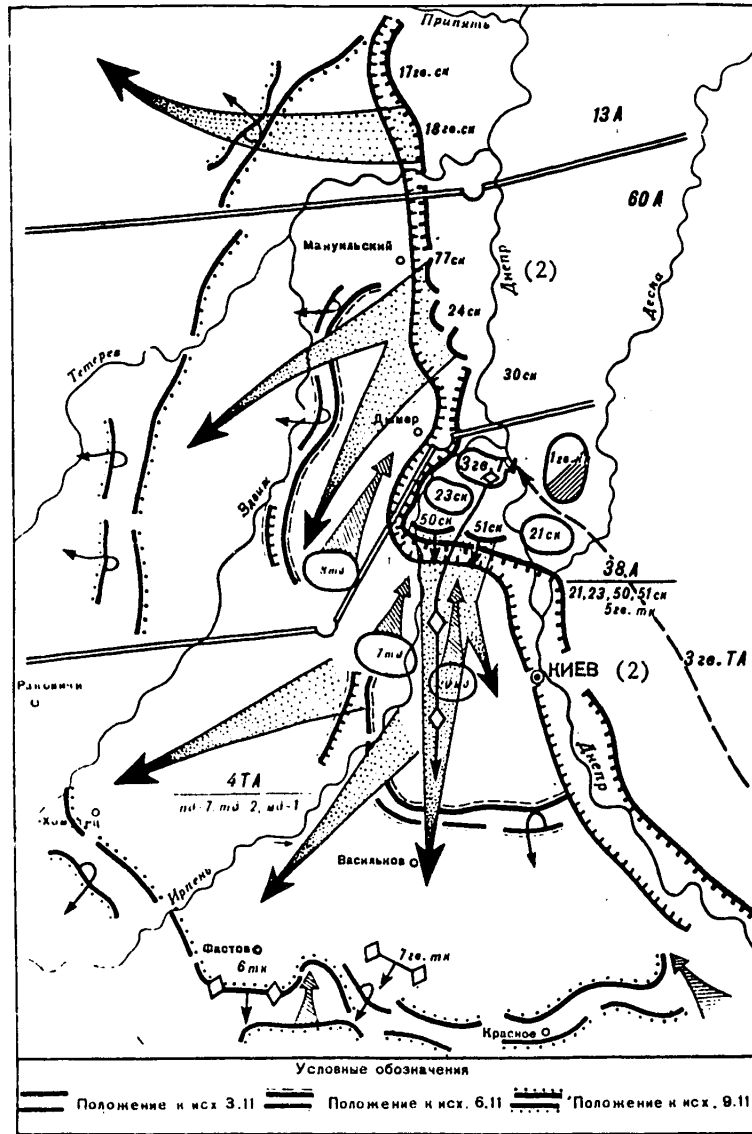


Diagram 15. Penetration of Enemy Defense in Kiev Operation (November 1943)

Key:

1. Kiev

2. Dnieper

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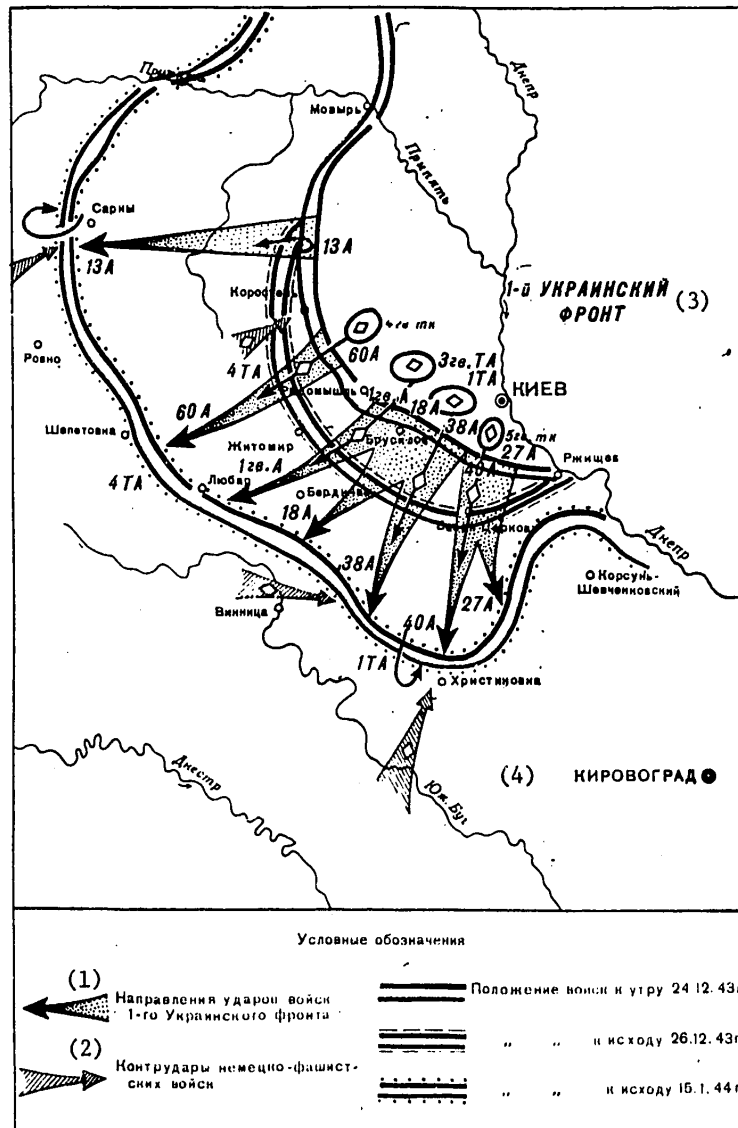


Diagram 16. Splitting Attacks on a Wide Front in the Zhitomir-Berdichev Operation

Key:

- | | |
|---|--------------------------|
| 1. Axes of advance of troops of the First Ukrainian Front | 3. First Ukrainian Front |
| 2. Counterthrusts by German-fascist forces | 4. Kirovograd |

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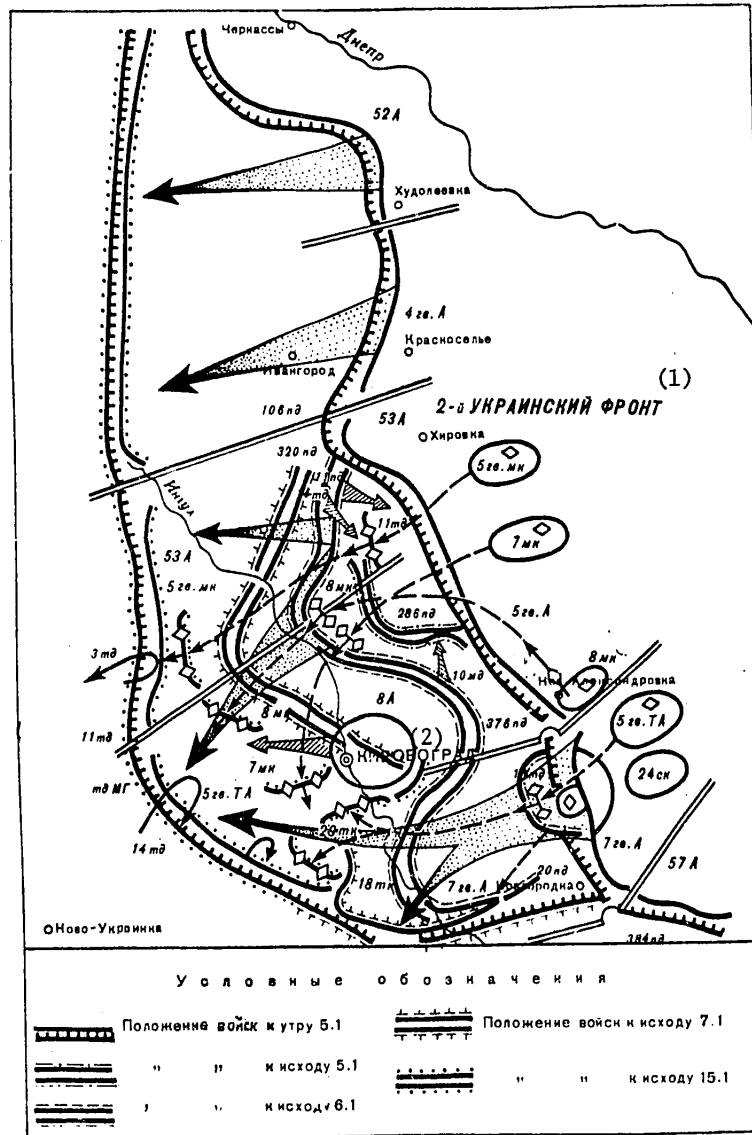


Diagram 17. Penetration of Enemy Defense in Kirovograd Operation (January 1944)

Key:

1. Second Ukrainian Front

2. Kirovograd

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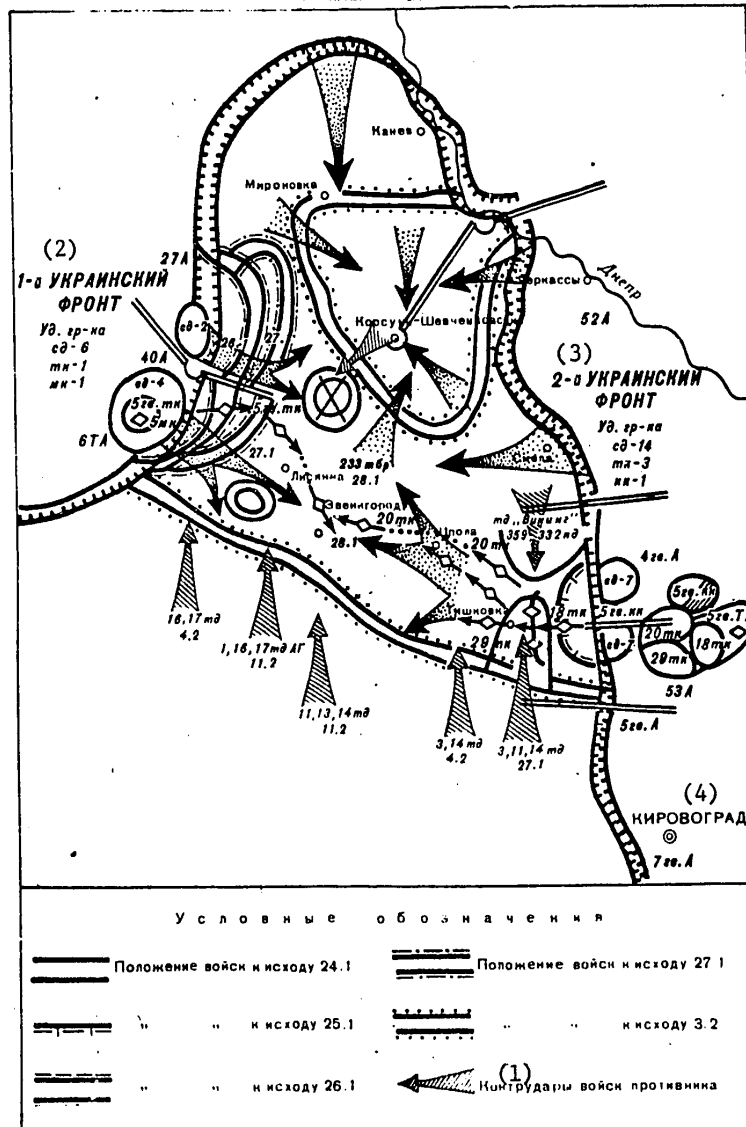


Diagram 18. Penetration of Enemy Defense in Korsun'-Shevchenkovskiy Operation (January 1944)

Key:

- | | |
|-----------------------------------|---------------------------|
| 1. Counterthrusts by enemy forces | 3. Second Ukrainian Front |
| 2. First Ukrainian Front | 4. Kirovograd |

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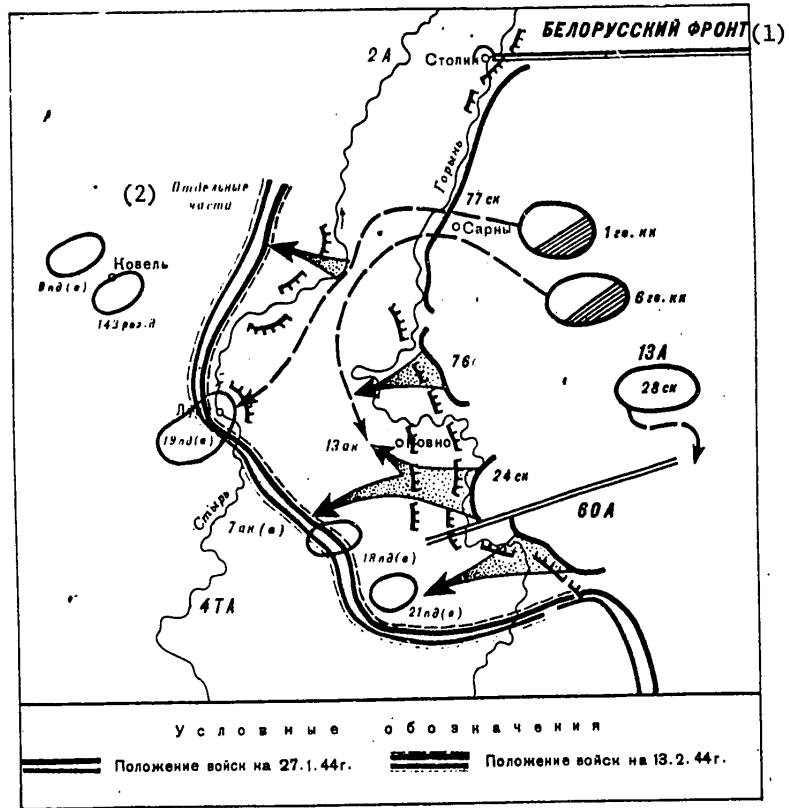


Diagram 19. Offensive by Forces of Right Side of First Ukrainian Front in the Rovno-Lutsk Operation (January 1944)

Key:

1. Belorussian Front

2. Independent units

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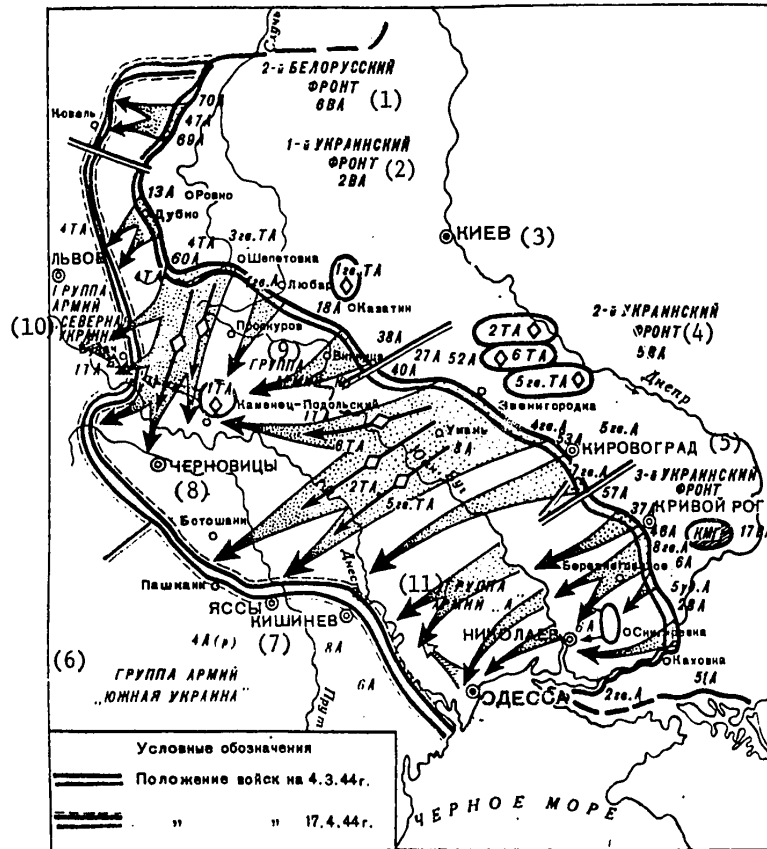


Diagram 20. Penetration of Enemy Front in the Spring of 1944

Key:

- | | |
|--------------------------------|---------------------------------|
| 1. Second Belorussian Front | 7. Kishinev |
| 2. First Ukrainian Front | 8. Chernovtsy |
| 3. Kiev | 9. Army Group South |
| 4. Second Ukrainian Front | 10. Army Group Northern Ukraine |
| 5. Third Ukrainian Front | 11. Army Group A |
| 6. Army Group Southern Ukraine | |

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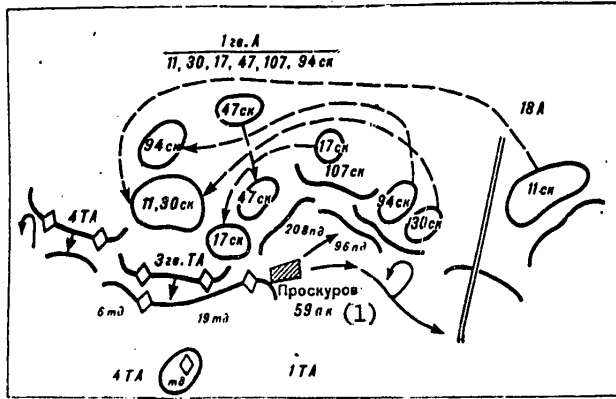


Diagram 21. Formation of Battle Group of 1st Guards Army for Penetration of Defensive Line During Operation (March 1944)

Key:

1. Proskurov

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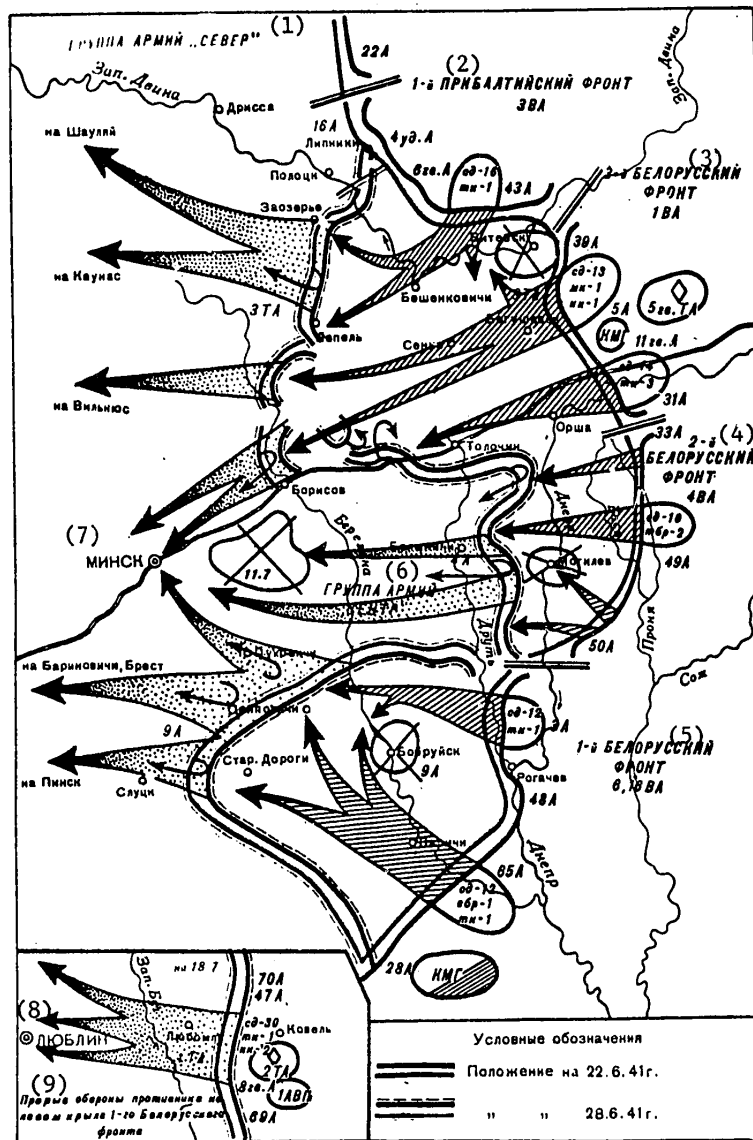


Diagram 22. Penetration of Enemy Defense in the Belorussian Operation (June 1944)

Key:

- | | |
|-----------------------------|---|
| 1. Army Group North | 6. Army Group Center |
| 2. First Baltic Front | 7. Minsk |
| 3. Third Belorussian Front | 8. Lublin |
| 4. Second Belorussian Front | 9. Penetration of enemy defense on left side of First Belorussian Front |
| 5. First Belorussian Front | |

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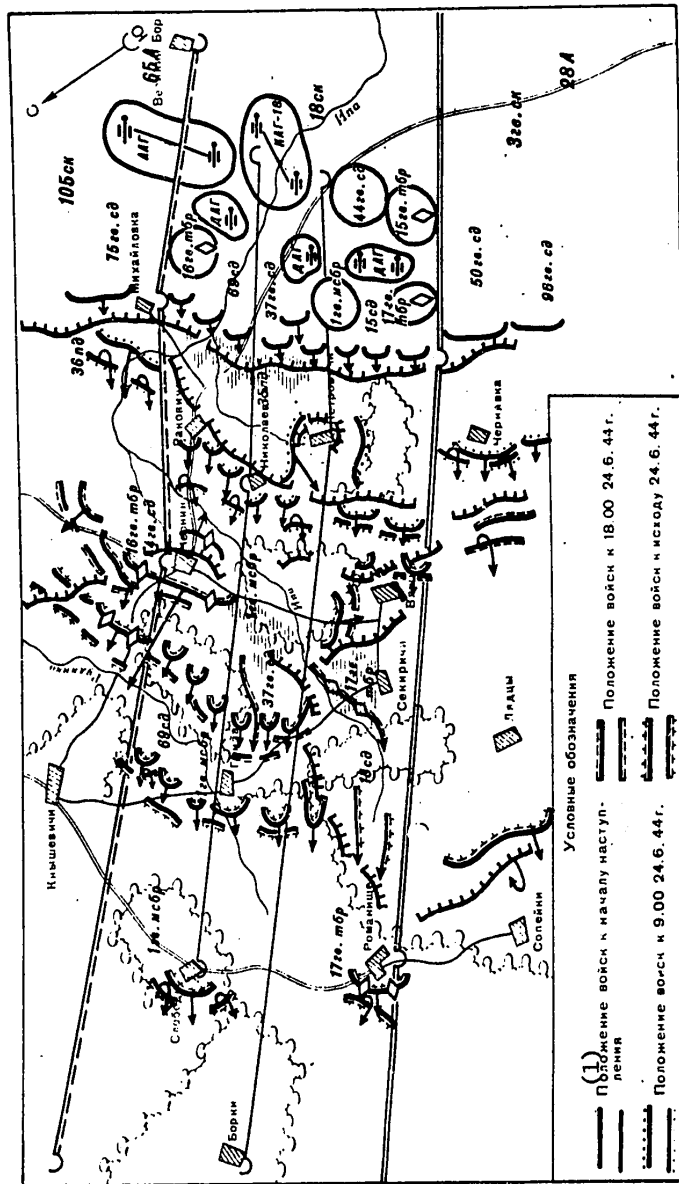


Diagram 23. Penetration of Enemy Defense by the 18th Rifle Corps of the 65th Army in the Bobruysk Operation (June 1944)

Key:

1. Position of troops at beginning of operation

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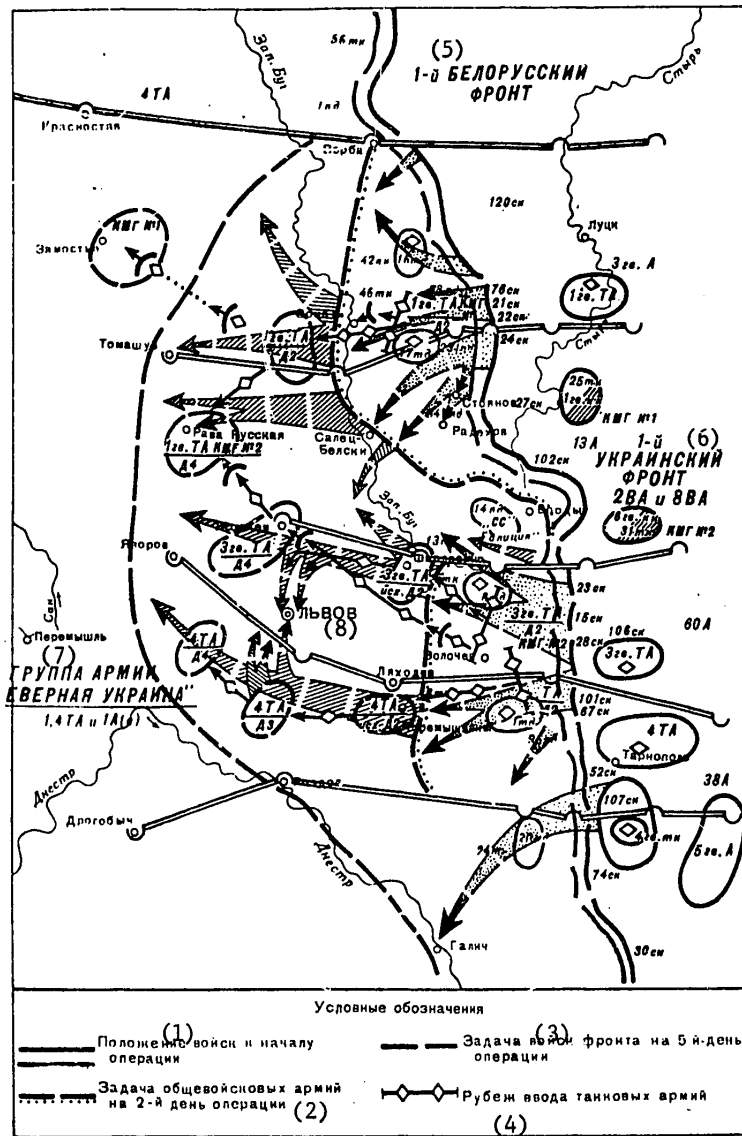


Diagram 24. Breakthrough Plan of Commanding General of the First Ukrainian Front in the L'vov-Sandomierz Operation (July 1944)

Key:

- | | |
|--|--------------------------------|
| 1. Position of troops at beginning of operation | 5. First Belorussian Front |
| 2. Objective of combined-arms armies for second day of operation | 6. First Ukrainian Front |
| 3. Objective of front's troops for fifth day of operation | 7. Army Group Northern Ukraine |
| 4. Point of engagement of tank armies | 8. L'vov |

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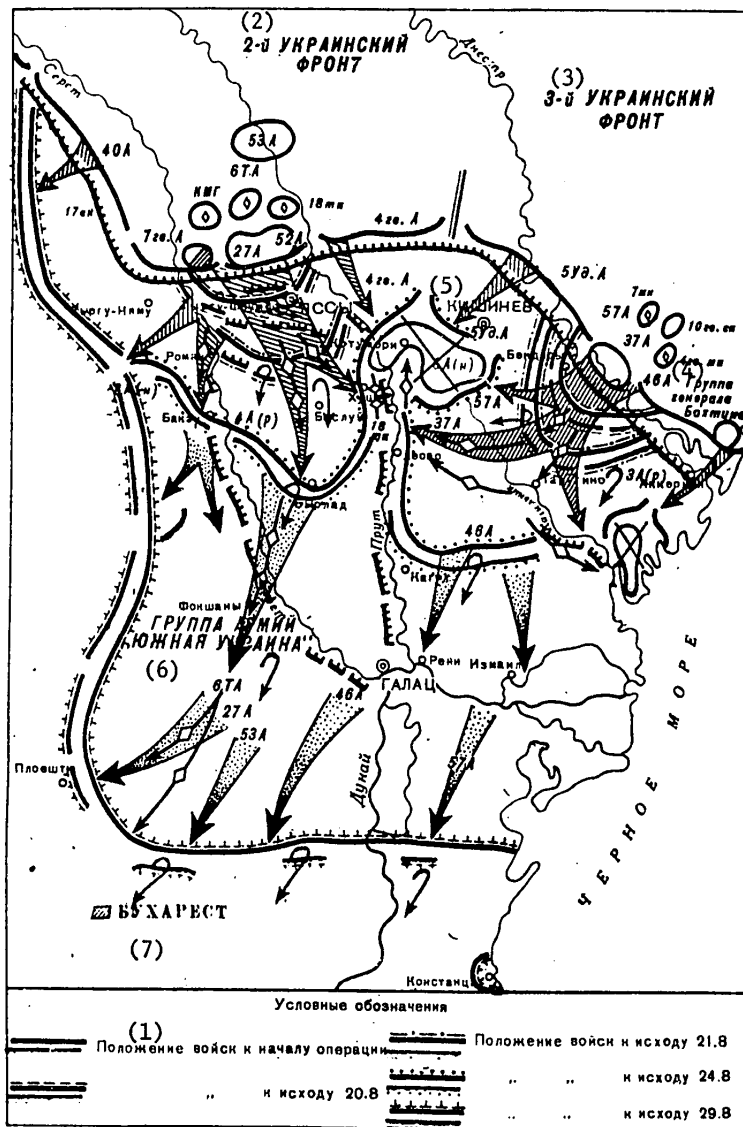


Diagram 25. Concept of Hq SHC and Progress of Penetration in Iasi-Kishinev Operation (August 1944)

Key:

- | | |
|---|--------------------------------|
| 1. Position of troops at beginning of operation | 5. Kishinev |
| 2. Second Ukrainian Front | 6. Army Group Southern Ukraine |
| 3. Third Ukrainian Front | 7. Bucharest |
| 4. General Bakhtin's group | |

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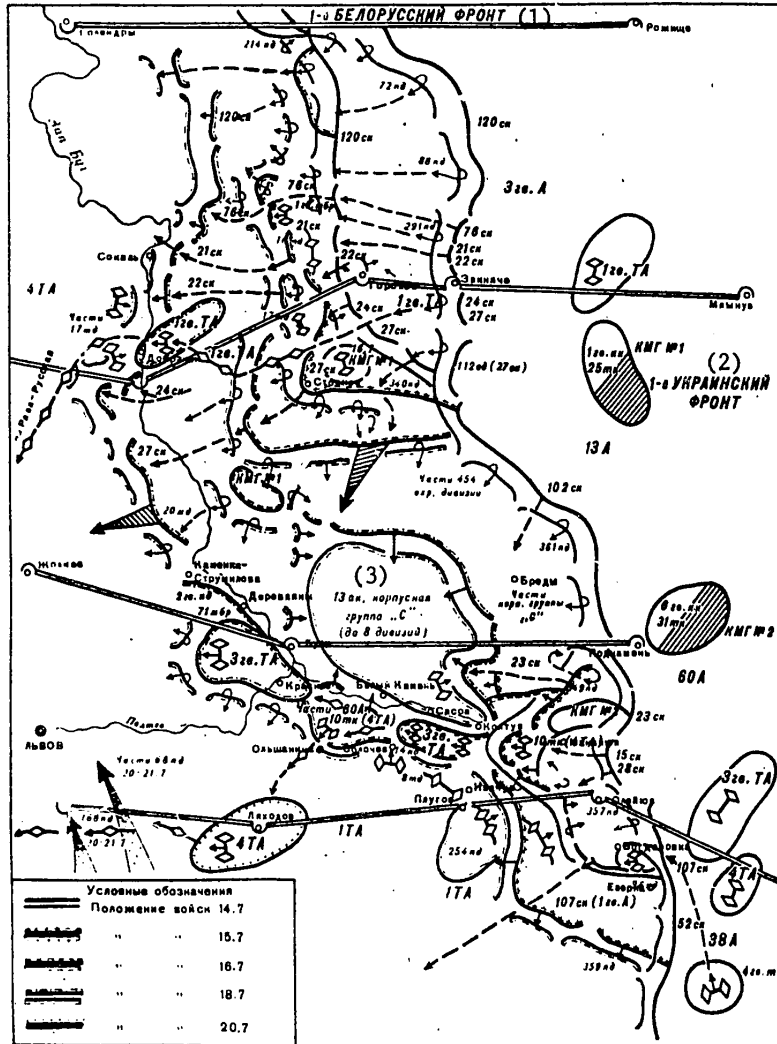


Diagram 26. Penetration of Defense and Engagement of Tank Armies in L'vov-Sandomierz Operation

Key:

1. First Belorussian Front

2. First Ukrainian Front

3. Corps Group C (up to 8 divisions)

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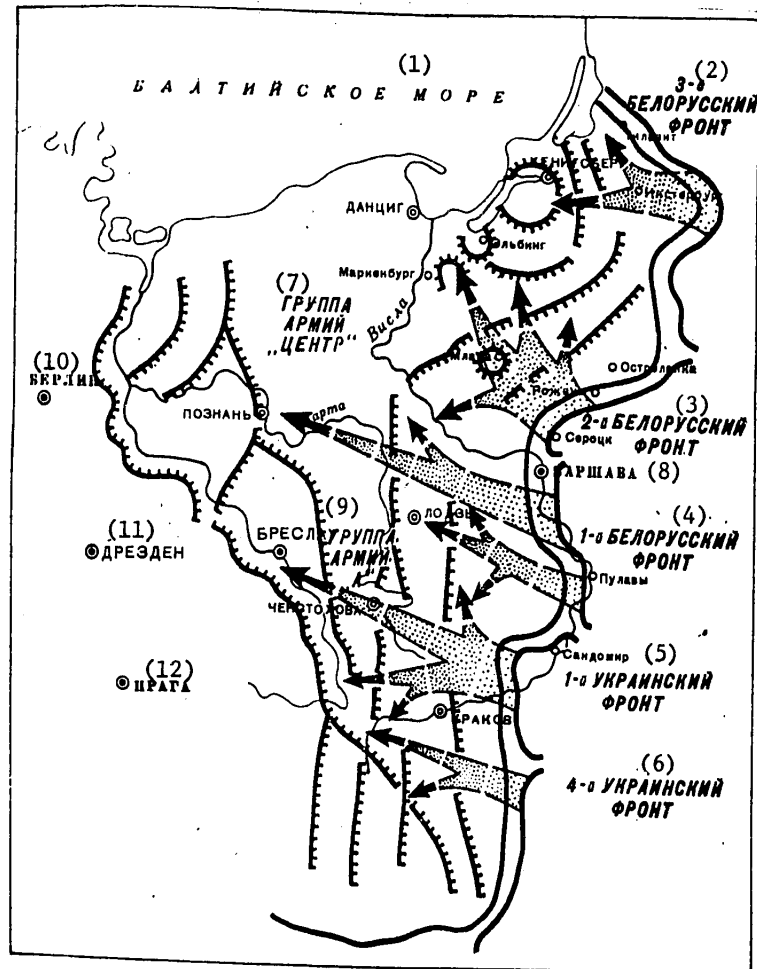


Diagram 27. Concept of Hq SHC for Penetration of Enemy Strategic Front on Berlin Axis (January 1945)

Key:

- | | |
|-----------------------------|----------------------|
| 1. Baltic Sea | 7. Army Group Center |
| 2. Third Belorussian Front | 8. Warsaw |
| 3. Second Belorussian Front | 9. Army Group A |
| 4. First Belorussian Front | 10. Berlin |
| 5. First Ukrainian Front | 11. Dresden |
| 6. Fourth Ukrainian Front | 12. Prague |

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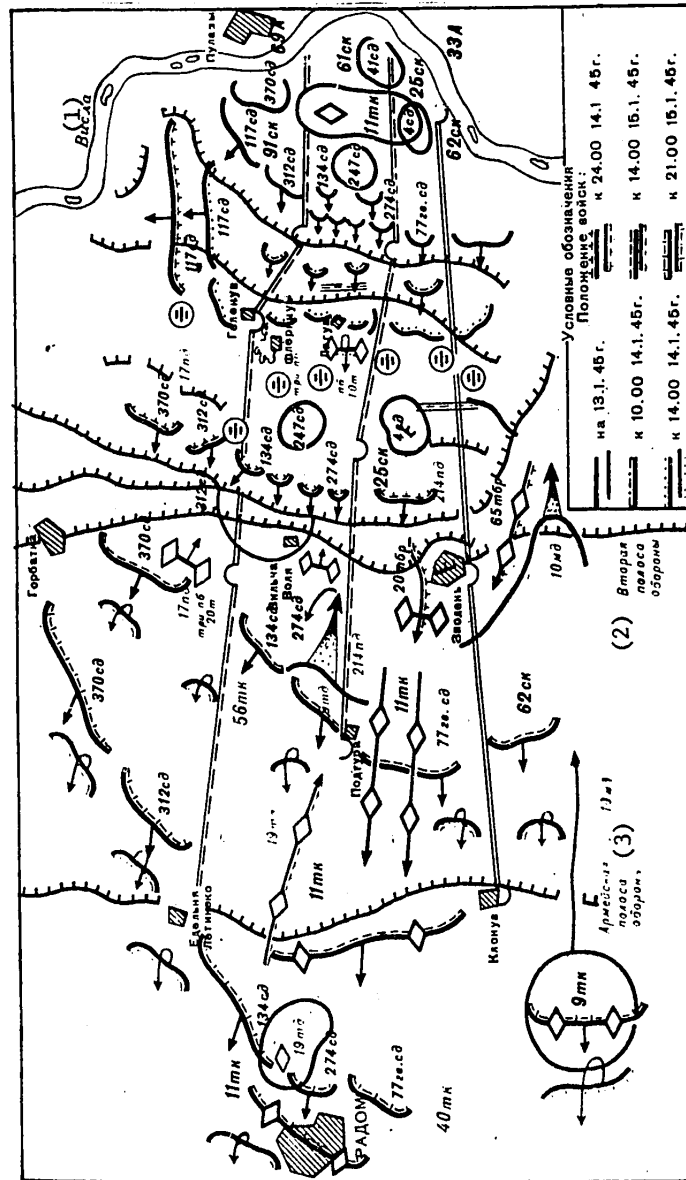


Diagram 28. Penetration of Defense by 61st Rifle Corps of 69th Army in Vistula-Oder Operation (January 1945)

Key:

- 1. Vistula
- 2. Second defensive zone
- 3. Army defensive zone

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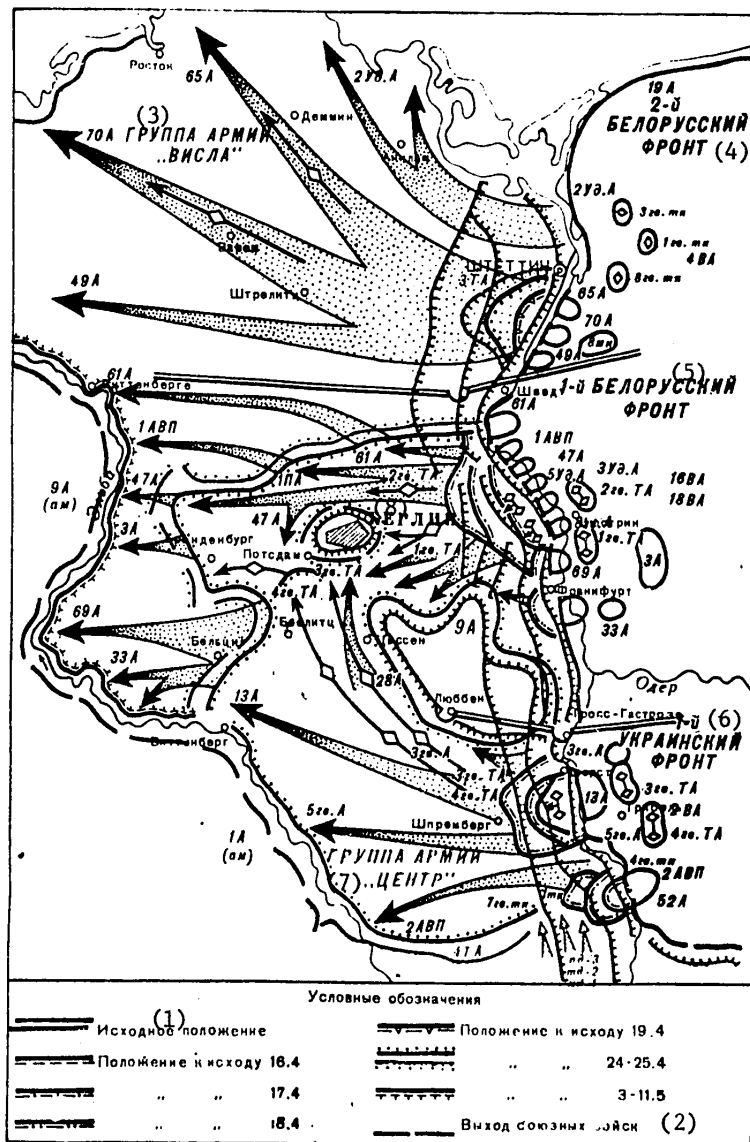


Diagram 29. Penetration of Enemy Defense in Berlin Operation (April 1945)

Key:

- | | |
|-----------------------------|----------------------------|
| 1. Initial position | 5. First Belorussian Front |
| 2. Advance of allied troops | 6. First Ukrainian Front |
| 3. Army Group Vistula | 7. Army Group Center |
| 4. Second Belorussian Front | 8. Berlin |

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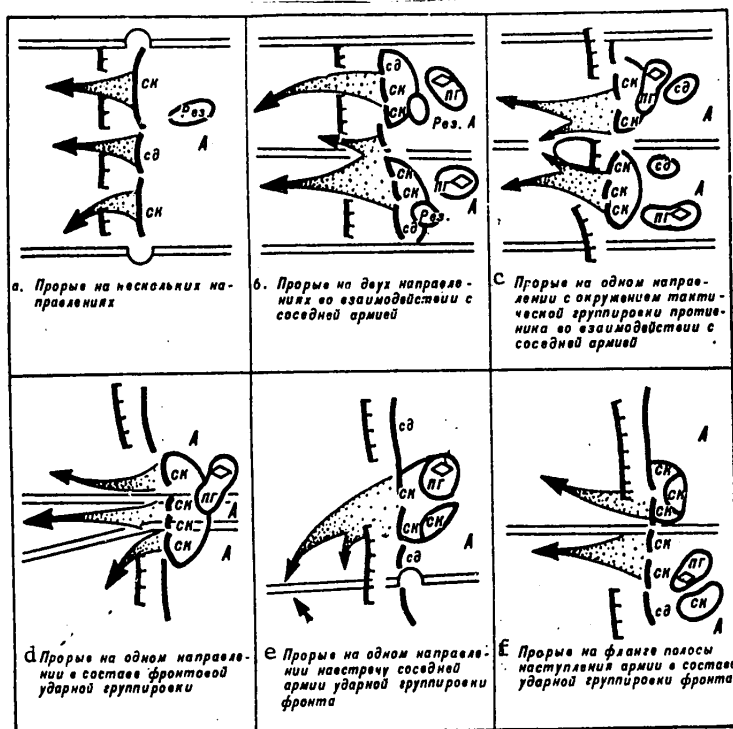


Diagram 30. Forms of Operational Breakthrough Employed in Army Offensive Operations:

- a) breakthrough in several sectors; b) breakthrough in two sectors, working in coordination with adjacent army; c) breakthrough in one sector with envelopment of enemy tactical force, in coordination with adjacent army; d) breakthrough in one sector, by front force; e) breakthrough in one sector, toward adjacent army, by front battle group; f) breakthrough on flank of army zone of advance, by front battle group

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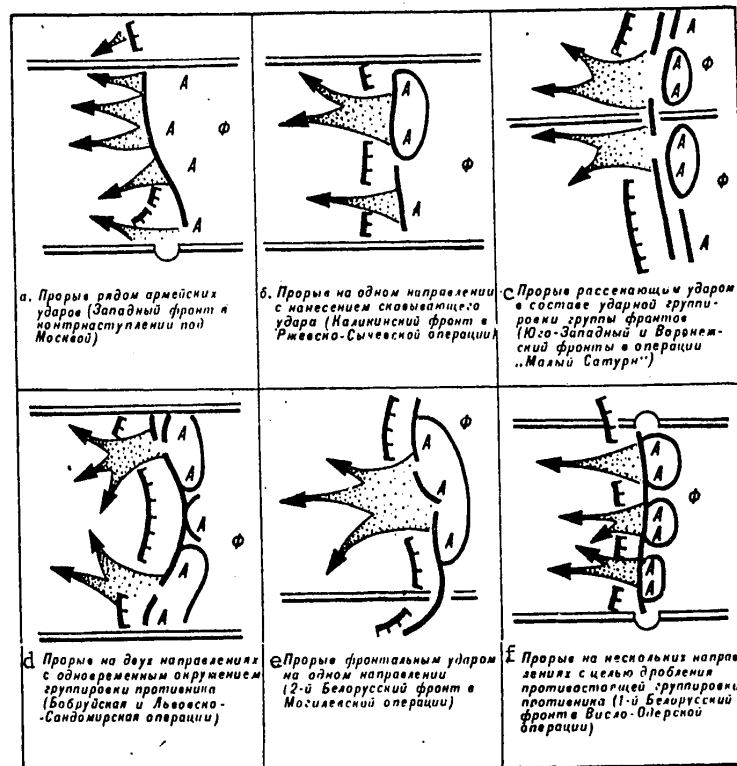


Diagram 31. Forms of Operational Breakthrough Employed in Front Offensive Operations:

a) breakthrough with a number of army thrusts (Western Front in the counteroffensive at Moscow); b) breakthrough in one sector with pinning attack (Kalinin Front in the Rzhev-Sychevka Operation); c) breakthrough by splitting attack, by battle group of group of fronts (Southwestern and Voronezh fronts in operation "Little Saturn"); d) breakthrough in two sectors with simultaneous envelopment of enemy force (Bobruysk and L'vov-Sandomierz operations); e) breakthrough by frontal attack in one sector (Second Belorussian Front in Mogilev Operation); f) breakthrough in several sectors with the objective of splitting up the opposing enemy force (First Belorussian Front in the Vistula-Oder Operation)

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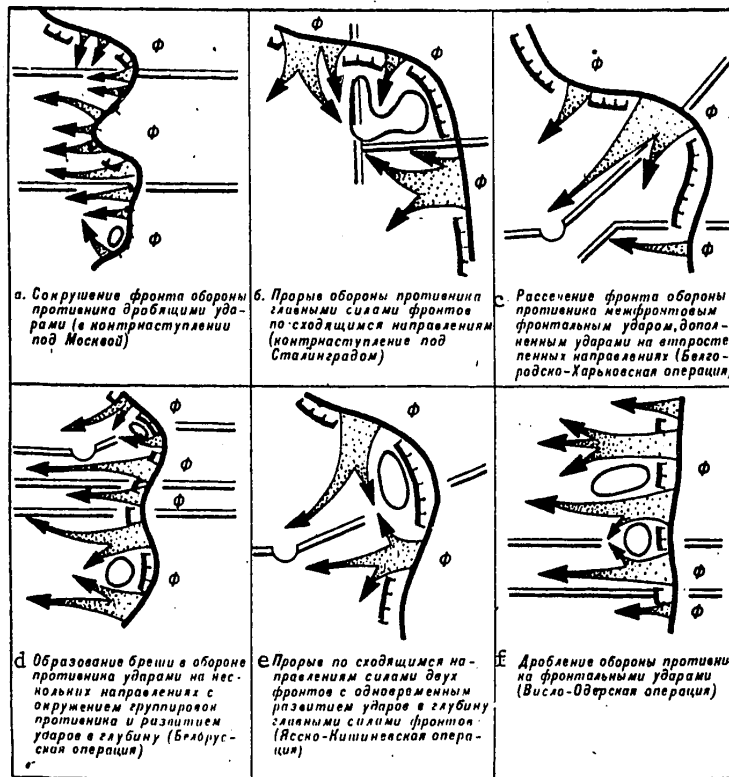


Diagram 32. Forms of Breakthrough Employed During the War in Strategic Operations of a Group of Fronts:

- a) smashing enemy defensive front with splitting attacks (the counteroffensive at Moscow);
- b) breaking through enemy defense by the main forces of fronts on converging axes (counteroffensive at Stalingrad);
- c) splitting enemy defensive front with an interfront frontal attack supplemented by thrusts in secondary sectors (Belgorod-Khar'kov Operation);
- d) opening a breach in the enemy's defense with attacks in several sectors, with envelopment of enemy forces and deep offensive exploitation (Belorussian Operation);
- e) penetration on converging axes by the forces of two fronts, with simultaneous deep exploitation by the main forces of fronts (Iasi-Kishinev Operation);
- f) splitting up the enemy's defense with frontal attacks (Vistula-Oder Operation)

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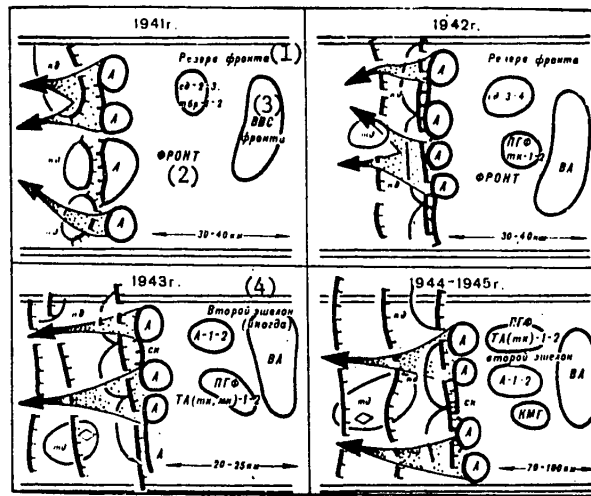


Diagram 33. Development of Front Tactical Order of Battle in Offensive Operations of the Great Patriotic War

Key:

- 1. Front reserve
- 2. Front
- 3. Front air forces
- 4. Support echelon (sometimes)

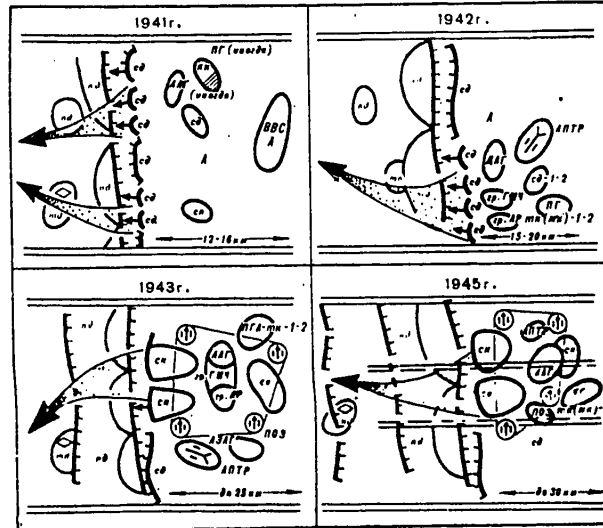


Diagram 34. Development of Army Tactical Order of Battle in Offensive Operations of the Great Patriotic War

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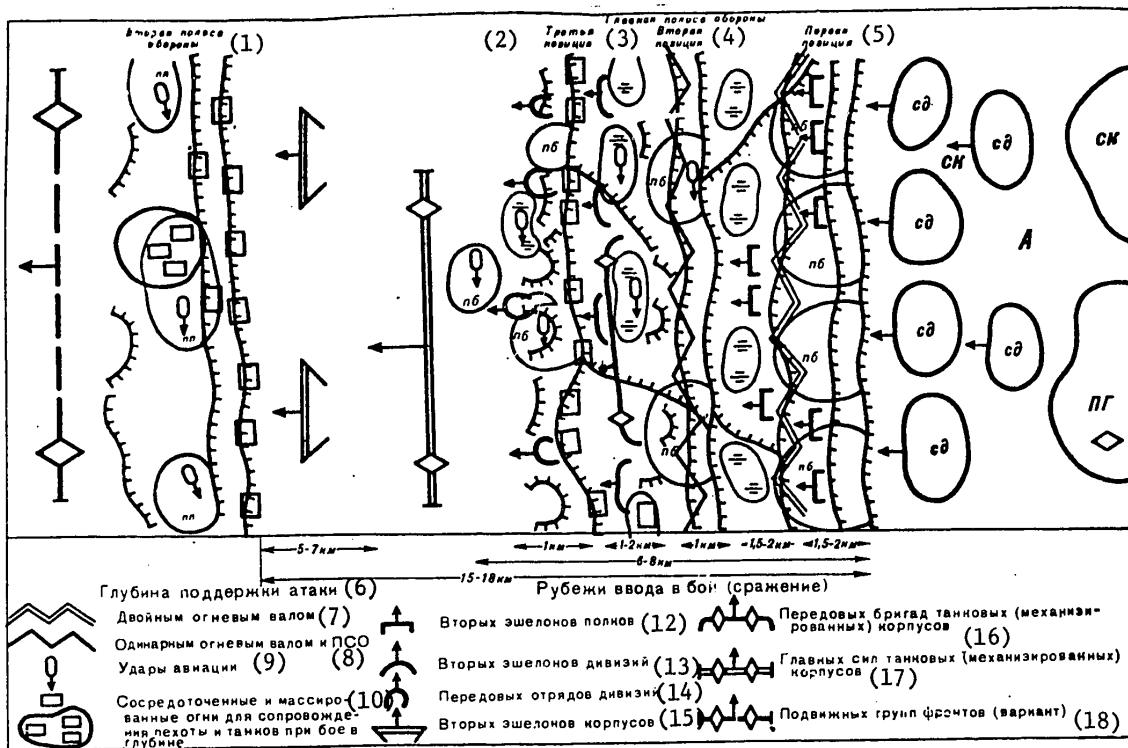


Diagram 35. Schematic Diagram of Penetration of the Enemy's Tactical Zone of Defense in 1944-1945

Key:

- | | |
|--|--|
| 1. Second defensive zone | 9. Airstrikes |
| 2. Third position | 10. Concentrated and massed fires for supporting infantry and tanks during combat at depth |
| 3. Main defensive zone | 11. Start lines |
| 4. Second position | 12. Support echelons of regiments |
| 5. First position | 13. Support echelons of divisions |
| 6. Depth of close support of assault | 14. Forward detachments of divisions |
| 7. Double moving barrage | 15. Support echelons of corps |
| 8. Single moving barrage and successive fire concentration | 16. Forward brigades of tank (mechanized) corps |
| | 17. Main forces of tank (mechanized) corps |
| | 18. Mobile groups of fronts (variation) |

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