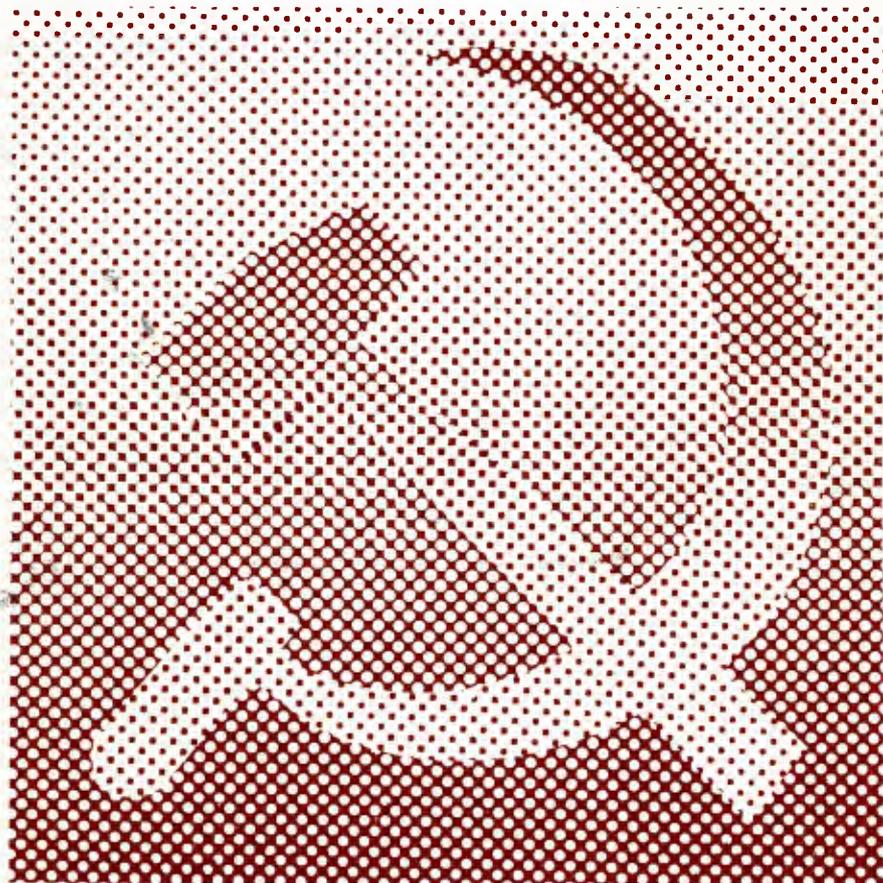


Tactics

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A Soviet View



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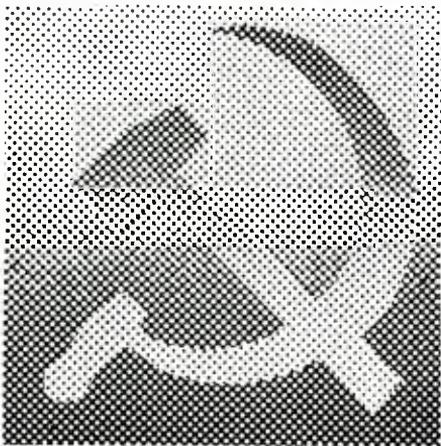
Тактика

*Под редакцией
доктора военных наук,
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A Soviet View.



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Abstract

This work on military theory examines the subject of tactics, its role in the art of war, the material basis of modern combined arms combat, its nature, and the most important principles for conducting it. Principal attention is given to the tactics of offensive, meeting, and defensive engagements, as well as to troop movement.

The book is intended for officers of the Soviet Army and students at higher military educational institutions.

Foreword

The Communist Party and the Soviet government are consistent and persistent in conducting a Leninist peace-loving foreign policy, directed toward relaxing international tension, universal and complete disarmament, and ensuring peace and the security of all nations.

However, reactionary imperialist circles are striving to wreck detente, to prevent disarmament and to provoke a world war. The Communist Party and the Soviet government have therefore devoted unremitting attention to strengthening the defensive capability of the country, improving the Armed Forces of the Soviet Union and maintaining their combat readiness at a high level, thus ensuring the decisive and utter defeat of any aggressor. Accomplishing this task presupposes implementing a large system of measures for equipping the army and navy with materiel, for training commanders, staffs and troops, and for constantly improving the Soviet art of war.

The rapid development of materiel and armaments, essentially new precision weapon systems, and effective methods for employing them are bringing about substantial changes in the essence of modern combined arms combat, in automated troop control systems, in methods of effective fire, in troop actions, and in organizing and implementing comprehensive support—in other words, in tactics. And tactics is a paramount component in the Soviet art of war.

This book brings to light for the reader all the new developments in the material basis and essence of combined arms combat, in the preparation and principles of the conduct of offensive, defensive, and meeting engagements, and in troop movements. New methods for solving problems of modern tactics are presented in such areas as troop control in combined arms combat, comprehensive support of troop combat actions, and the training and indoctrination of personnel.

The theory and practice of combined arms combat is examined in its development and in comparison with earlier views on preparing for and conducting combat; this allows one to trace particular principles and trends in the evolution of tactics.

Modern tactical theory is reflected first of all in the field manuals of the Soviet Armed Forces, which have drawn general principles from the

troops' extremely rich combat experience, from the practice of postwar tactical and command post exercises, and from theoretical research. However, the specific character of the manuals does not allow one to substantiate the situations laid out in them, to support them with examples, proofs and calculations, or to point out preconditions and establish principles for developing methods of combat actions. Meanwhile, knowing the manuals is an important condition for a thorough understanding of modern tactical theory and the nature of combined arms combat. The authors of this book saw one of their tasks to be helping officers to master the art of tactics as they worked on their own.

Today and in the future, the deciding role in combat will belong to the human element—to the soldier with great moral-political, psychological, and fighting abilities who has mastered modern materiel and the art of preparing for and conducting combat in the complex conditions of modern warfare. This raises still further the requirements for training and indoctrinating personnel.

Soviet Armed Forces personnel, including the officer cadres, must be educated in the spirit of boundless devotion to the Motherland and to the Communist Party; they must have a deep understanding of the just aims of war and be ready to perform their duty as soldiers, laying down their lives if necessary.

An officer should be highly educated in terms of military technology; he should know and skillfully apply, in combat, the new methods of action developed by modern tactics; he should be actively involved in the creative pursuit of ways to more fully exploit the growing capabilities of formations, units and subunits of all combat arms; he should participate in developing scientifically based tactical principles and methods of combat actions in line with the possibilities of combat resource development. It is the aim of this book—*Tactics*—to help him in this. And although this work does not claim to be a comprehensive and exhaustive exposition of all questions of tactics, the authors hope that it will serve to improve the tactical training of command personnel and help to broaden their outlook on the operational and tactical level and to systematize progressive training practice; the aim of this is to maintain formations, units, and subunits at a high level of combat readiness and to preserve their ability to begin carrying out a combat mission immediately, should the situation require it.

Chapter I. The Principles of Modern Combined Arms Combat

1. Tactics: The Theory and Practice of Combat

The Soviet art of war includes three components: strategy, operational art, and tactics, each of which has its distinctive specific features for the conduct of armed combat on various scales.

Strategy is the highest domain of the art of war and covers the theoretical and practical aspects of preparing the country and the Armed Forces for war and the planning and conduct of war and strategic operations.

Operational art includes the theoretical and practical aspects of preparation for the conduct of operations (combat actions) by large formations of the Armed Forces. Guided by the demands of strategy, operational art studies the nature of modern operations and the laws, principles, and methods of preparing and conducting them; the organization, capabilities, and principles for the employment of large operational formations; problems of operational support; and the principles of troop control in operations and the logistic support of these operations.

Tactics is the theoretical and practical aspects of preparation for the conduct of combat by the subunits, units, and formations of the various services of the Armed Forces, the combat arms, and the combat service support troops. It is subdivided into general tactics and the respective tactics of the services of the Armed Forces, the combat arms, and the combat service support troops.

General tactics studies the laws of combined arms combat and devises recommendations for its planning and conduct by the combined efforts of the subunits, units, and formations of the various services of the Armed Forces, the combat arms, and the combat service support troops. Ground Forces tactics constitutes the basis for general tactics. The respective tactics of the services of the Armed Forces, the combat arms, and the combat service support troops each address specific problems relating to the combat employment of the subunits, units, and formations of the combat arm

or combat service support troops in question, in both combined arms combat and independent actions.

General tactics is closely interrelated with the tactics of the services of the Armed Forces, the combat arms, and the combat service support troops. General tactics determines the missions to be performed by the subunits, units, and formations of the services of the Armed Forces, the combat arms, and the combat service support troops in combined arms combat, and the procedures and methods for their joint employment, and thus influences the development of their tactics. In turn, changes in the tactics of the services of the Armed Forces, the combat arms, and the combat service support troops exert an influence on the development of general tactics and make it necessary to define the latter's recommendations more closely and to improve them.

Tactics has two aspects: the theoretical and the practical. The theory of tactics investigates the essence and nature of modern combat and discovers laws and principles for conducting armed combat with tactical resources; it studies the combat capabilities of troop units and devises methods of preparing for and conducting combat. The theoretical principles of tactics are reflected in regulations, manuals, textbooks, training aids, and works on military theory. The practical aspect of tactics covers the activities of commanders, staffs, and troops in preparing for and conducting combat. This aspect includes the collection and study of data relating to the situation, decisionmaking and the dissemination of missions to subordinates, planning, the preparation of troops and terrain for combat, the conduct of combat actions, troop control of subunits, units, and formations, and comprehensive combat support.

As the experience of local wars confirms, tactics plays a great role today. This results from the fact that combined arms combat continues to be very important in achieving victory over an enemy, and also from the extensive capabilities at the disposal of the tactical command echelon for carrying out combat missions. Therefore, tactics (tactical training) is a most important component in the combat training of troops and a leading study discipline in military educational institutions.

Tactics is inseparably linked with the other components of the art of war; its theoretical and practical aspects are subordinated to the interests of strategy and operational art and are guided by their demands. In turn, tactics exerts a considerable influence on operational art, and through it on strategy as well, under the influence of the rapid development of weaponry and materiel.

Tactics is the most dynamic domain of the art of war. Moreover, changes in tactics occur at an ever-increasing rate, commensurately with

the acceleration of technical progress and the improvement of weaponry and the morale and fighting efficiency of military personnel. Tactics most closely approximates the practical activities of troops; the level to which it is developed and the quality of the tactical training of officers, staffs, and troops in many respects predetermine the conditions for achieving victory in combat.

The Soviet Army's tactics developed during the Civil War. At that time, its features were crucially dependent on the class nature of the new army and the revolutionary spirit of the personnel. Having assimilated all the best features acquired by the Russian Army, with the firm foundation of Marxism-Leninism as a basis, and verifying the validity of its theory and practice by testing them in the fire of battle, Soviet Army tactics developed continuously in pace with improvements in weapons, in the morale and fighting efficiency of army personnel, and in the organizational structure of forces, also giving due regard to changes in enemy weaponry, equipment, and tactics.

A decisive factor that has shaped the development of tactics and of the art of war as a whole has been the leadership provided by the Communist Party for the Soviet Armed Forces and Lenin's legacy in military theory.

In supervising the defense of the fledgling socialist state, V. I. Lenin was most concerned with problems of strategy. However, reality and the practical aspects of combat compelled him to deal with problems relating to operational art and tactics as well.

V. I. Lenin's pronouncements on the means, methods, and forms of armed conflict, on the dependence of their employment on the specific circumstances, and on the need to master all forms of combat and combine them judiciously in order to achieve victory are of enormous scientific value. V. I. Lenin developed and gave concrete expression to F. Engels' principle concerning the dependence of tactics on the level of war materiel, and more than once emphasized the hopelessness of conducting armed conflict "in the absence of personnel capable of making skillful use of the latest improvements in war materiel."¹

V. I. Lenin considered it necessary to employ various types of combat actions, but he assigned the decisive role here to the offensive. He pointed out more than once that victory could only be achieved by means of determined offensive actions, and considered that the main objective was not to repel the enemy, but to encircle and completely rout him. V. I. Lenin regarded defense as temporary forced actions subordinated to the overall interests of routing the enemy; he demanded that the maximum tenacity, persistence, and self-sacrifice be displayed in defense.

If the situation for the defense was particularly unfavorable, V. I. Lenin admitted the possibility of organized withdrawal. V. I. Lenin attached great importance to material and moral factors, the correct selection of the axis of the main attack, careful study of the enemy, the ability to establish superiority over the enemy in resources in a decisive place at the decisive moment, the achievement of surprise, and a high level of aggressiveness, determination, and boldness in actions. He demanded careful and comprehensive preparation for combat actions and paid much attention to the equipping, training, and indoctrination of the army. Even now, V. I. Lenin's ideas are the basis of our tactics, and of all the Soviet art of war.

During the Civil War, material resources for combat were extremely limited, troops were poorly equipped and trained, and many commanders lacked knowledge and experience, but the revolutionary spirit and initiative of the commanders, commissars, and fighting men and their utter devotion to Soviet power contributed to the appearance of new tactical methods. The development of combat actions over large areas in the absence of continuous front lines led to the extensive employment of mobile forms of combat, troop actions along axes, and maneuver of resources. In these conditions, Soviet forces' tactics were characterized by a variety of methods for conducting combat, the troops' high level of aggressiveness, determination, and swiftness in action, and the judicious initiative and dedication of personnel.

A major contribution to the dissemination of the combat experience acquired in the Civil War and the development of tactics in the postwar period was made by M. V. Frunze, who considered that our army's tactics "have been and will continue to be saturated with aggressiveness in the spirit of bold and energetically executed offensive operations."²

M. V. Frunze considered tactical problems in close connection with the nature of a future war and the means by which it would be waged; he expressed the idea of an increased role for aviation, tanks, and artillery in combined arms combat and examined the influence of materiel on the nature of combat, taking into account not just its immediate effect in combat, but also its effect on morale. His works define the correlation and interconnection between the offensive and defense and between positional and maneuvering forms of combat, and the role of fire, strike, and maneuver in battle; they examine the principles for the employment of various types of combat actions, depending on the situation. M. V. Frunze opposed the even distribution of forces in battle and pointed out the advantages of actions by assault groupings; he resolutely propounded the idea of the need to achieve victory in battle by the joint efforts of all combat arms.

Great contributions to the development of tactics were made by M. N. Tukhachevskiy, S. S. Kamenev, A. I. Yegorov, I. P. Ubovich, and other prominent Soviet military leaders. Their views were reflected in regulations, manuals, and other guidance documents, in which the combat experience of forces in World War I and the Civil War was disseminated, new methods for conducting combat were revealed, and possible courses for the further development of these methods were substantiated. Here the principal attention was given to the study of actions in maneuvering warfare.

In the 1930s, when the technological updating and reorganization of the Army had been put into effect, methods were devised for preparing for and conducting combat with the new technical and material resources. The **theory of engagement in depth**, which in practice made it possible to go over from overcoming enemy defensive positions slowly and gradually to a more effective maneuvering form of combat actions, was developed by the efforts of many military leaders and theoreticians and tested by troops during exercises, maneuvers, and the battles at Halhin-Gol. This was a qualitative leap in the development of the art of war, which revealed a fundamentally new method for the conduct of an offensive engagement by technically equipped troops.

The essence of offensive engagement in depth consisted in the simultaneous and massive employment of weaponry throughout the depth of the enemy's tactical zone of defense, with the aim of encircling and eliminating him. This was achieved by inflicting severe fire damage on enemy battle formations by means of artillery, by exerting continuous pressure on enemy reserves and rear areas by means of aviation, by the nonstop advance of infantry and close-support tanks following fire strikes, by the determined advance of long-range tanks, and by the swift actions of mechanized and cavalry formations (the exploitation echelon) and airborne assault forces behind enemy lines. Success was achieved in an offensive engagement in depth by surprise and the resolute actions of the troops, by a skillful combination of movement, fire of all types, and wide maneuver, by continuous and close cooperation between all combat arms and combat service support troops, and by firm troop control.

The theory of engagement in depth, developed by Soviet military science, was exceptionally important to the Soviet Army. Its basic principles were not only used with success during the Great Patriotic War, but were also subjected to further development, as brought about by the equipping of troops with increasingly improved materiel, changes in organizational structure, combat experience, and consideration of the nature of enemy actions. The tactical skill of the troops and the theory of tactics rose to a new and higher level.

During the Great Patriotic War there was an increase in the aggressiveness and determination of actions, and flexibility and creativity in the employment of materiel and weaponry were fully in evidence. Tactics was enriched by new methods of preparing for and conducting combat in the diverse conditions of a tactical situation. Effective methods for breaking through deeply echeloned enemy defenses, overcoming intermediate defensive positions from the line of march, conducting meeting engagements, and pursuing a withdrawing enemy were developed. Extensive use was made of night actions, and methods for crossing water obstacles, encircling the enemy and eliminating him once this was accomplished, conducting an aggressive defense, moving by march, etc., were developed. The principles embodied in the regulations were applied in combat not in a stereotyped fashion, but in conformity with the specific situation. The selection of methods of action was based on strict consideration of the capabilities of friendly forces and thorough knowledge of the enemy and his strong and weak points. Covert maneuver was skillfully executed and surprise attacks were made.

During the Great Patriotic War, the troops' combat experience was continuously synthesized on the theoretical level. Methods of preparation for and conduct of combat by subunits, units, and formations that had been devised in practice were synthesized and developed in a timely fashion. New tactical principles were reflected in orders and directives, in regulations, manuals, instructions, and other official documents. The validity of the theoretical principles and conclusions was tested in the practice of preparing for and conducting combat in the diverse conditions of a tactical situation.

In the first decade after the Great Patriotic War, tactics developed on the basis of the very rich experience gained during the war, improvements in weaponry and the organizational structure of forces, their complete motorization and mechanization, and also on the basis of due regard for changes in the materiel, force structure, and tactics of probable enemies. The principal attention was given to in-depth investigation and synthesis of combat experience gained by subunits, units, and formations and to improving the methods of preparing for and conducting combat that were employed during the war.

The postwar period was a qualitatively new stage in the development of tactics. Radical changes occurred in the material resources for combat. Fundamentally new weaponry appeared, nuclear weapons began to come into service, available types of materiel were considerably improved, the political, general educational, and military technical level of personnel training rose, and the organizational structure of forces changed substantially; great changes occurred in enemy weaponry, force structure, and tactics. Under the influence of these factors, the firepower, striking power,

maneuverability, and armor protection of forces increased, which led to a radical change in views on the preparation and conduct of combined arms combat by subunits, units, and formations. Troops acquired the capability to simultaneously exert pressure on the entire depth of an enemy battle formation by means of powerful fire weapons, break through the enemy defenses with great momentum, and swiftly exploit successes.

At present, the principal attention is given to theoretical development of new procedures and methods for the combat employment of resources in a nuclear weapon environment and the practical testing of these procedures in combined arms exercises; the nuclear strike has become a new element in combined arms combat. At the same time, work is continuing on improving methods for preparing and conducting combined arms combat with conventional weapons alone, which have also undergone qualitative changes.

Modern tactics is the theoretical and practical aspects of preparing for and conducting combat with all types of weaponry, including the newest types. If an aggressor should succeed in unleashing a war despite the efforts of the USSR and other peace-loving states, tactics will, as before, play a great role in achieving victory. Consequently, the theoretical and practical aspects of combined arms combat must constantly be improved, with due regard for the demands of strategy, operational art, and changes in the material resources for combat; and the level of tactical skill of commanders, staffs, and troops must be raised continuously.

2. The Weaponry Employed in Modern Combined Arms Combat

Weaponry exerts the greatest revolutionizing influence on the nature of combined arms combat and the methods for conducting it, and on the development of tactics as a whole. F. Engels and V. I. Lenin repeatedly emphasized that **military tactics is directly dependent on the level of development of military equipment.**

Modern combined arms combat may be conducted with nuclear weaponry and other weapons or with conventional weaponry alone, which includes all fire and strike resources that make use of artillery, antiaircraft, aircraft, small-arms, and engineer ammunition, as well as conventionally armed missiles and incendiary ammunition and mixtures.³

Nuclear weapons are the most powerful means of destroying an enemy. They make it possible to destroy the enemy's nuclear and chemical strike weapons with a high degree of effectiveness and in short periods of time, to inflict great losses on him in men and equipment, to drastically

change the correlation of forces, and to create the conditions for decisively routing him. They are capable of quickly demolishing fieldworks and other targets, of creating zones of mass destruction and radioactive contamination, barriers, and areas of fire and flooding, and also of exerting strong moral and psychological pressure on personnel.

Nuclear weapons are employed with the element of surprise, and usually in combination with other weapons, on the main axis to destroy enemy force groupings and the most important targets.

Nuclear weaponry includes all types of nuclear warheads and delivery systems. There are nuclear warheads of various yields in service with the armies of a number of states. For example, the US armed forces have nuclear warheads with TNT equivalent yields ranging from 0.01 kiloton to several megatons.

The destruction of enemy targets by means of nuclear weapons in combined arms combat may be accomplished by airbursts (high and low), surface bursts, and underground bursts. Nuclear weapons may be used in combined arms combat to make single, group, or massed nuclear strikes.

The most tactically and economically expedient variation of nuclear strike with regard to means of delivery, yield of the nuclear warhead, and type of burst is selected on the basis of the importance of the target to be destroyed, the extent to which it must be destroyed, the nature of the action and the extent of cover, range, size, mobility, the effectiveness of the enemy air defenses, the missions of friendly forces and their safety, the permissible degree of radioactive contamination on the terrain, physical geographical features, and meteorological conditions.

The factors causing destruction are the shock wave, thermal radiation, immediate nuclear radiation, and radioactive contamination of terrain. Apart from this, nuclear weapons have enormous capabilities for combined destruction.

According to foreign press data, an airburst of a nuclear warhead with a 1-kiloton yield would put personnel in open protective structures and armored personnel carriers, as well as in tanks lacking radiation protection, out of action in a radius of 700-900 meters. The effective radius of a nuclear warhead with a 100-kiloton yield for personnel in open protective structures would be as great as 2700 meters, i.e., one nuclear warhead of this yield could put a battalion out of action in any type of combat. A warhead with a 0.01-kiloton yield would destroy personnel in a radius of 300 meters; consequently, such warheads are expected to be employed to destroy targets in direct proximity with friendly forces.

The enormous destructive force of nuclear weapons makes it possible to drastically reduce the artillery density and number of aircraft for the neutralization (destruction) of a defending enemy. During World War II about a hundred guns and mortars would have to conduct fire for 15-20

minutes and expend several thousand shells and projectiles in order to neutralize the enemy in a company defense area equipped with trenches, but today this mission could be accomplished by one medium-yield nuclear warhead in a few seconds.

The influence of nuclear weapons on the nature of combined arms combat is becoming increasingly significant because of the increase in the number of them in service in a number of armies and the continuous improvement of nuclear warheads and delivery systems. It is noted in the foreign press that over the past 10 years the number of nuclear warheads in formations has increased by a factor of 2, while delivery accuracy of missiles has risen by a factor of 3 to 4. This means that the depth at which simultaneous pressure can be exerted on the enemy and the effectiveness with which he can be destroyed have increased.

At the same time, continuous development and improvement is taking place in the system for combating enemy nuclear weapons, as well as measures for protecting troops against them, and for maintaining and quickly restoring their fighting efficiency.

The creation of **neutron weapons** is considered a new trend in the development of nuclear weaponry in the US armed forces. The characteristic feature of this weaponry is that when a neutron warhead detonates, an enormous number of neutrons is released. Neutrons have great penetrative capabilities, even through protective materials, and a high level of biological activity. Thus, steel armor with a thickness of 100–125 millimeters absorbs about 90 percent of gamma radiation, but only 20–30 percent of fast neutrons. Furthermore, the interaction of the neutrons with the protective materials leads to the formation of strong secondary gamma radiation and induced radioactivity.

A stream of neutrons is also absorbed by elements that are in the soil, and consequently the soil becomes radioactive and may represent a danger to personnel for several hours, or even days. As a result, the effective radii for personnel, including personnel in combat equipment and protective structures, increase significantly.

As has been reported in the foreign press, the detonation of a neutron warhead with a 1-kiloton yield is equivalent in terms of the destructive effect of penetrating radiation to the explosion of a modern nuclear warhead with a yield of 10–12 kilotons, or that of a nuclear warhead of the previous generation with yield of 30 kilotons. In this case, personnel situated in the open would be put out of action in a radius of 1300–1400 meters, while personnel situated in tanks would be put out of action in a radius of approximately 1000 meters.

It should be noted, however, that the energy of neutron radiation decreases rapidly as it moves away from ground zero. At a distance of 1600 meters the neutron stream would have become some tens of thousands of times weaker, regardless of the yield of the warhead; for this reason, the yield of neutron warheads does not exceed 1–2 kilotons.

Moist earth and concrete have effective protective properties against neutron radiation. A concrete cover 25 centimeters thick or a layer of moist earth 35 centimeters thick could weaken a neutron stream by a factor of 10, while a cover double this thickness would weaken it by a factor of 100.

The effect of the shock wave and thermal radiation of a neutron weapon is very limited. The radius of destruction and removal from action for combat equipment, e.g., tanks, amounts to a few dozen meters. This factor is used by the leaders of the US Defense Department for propaganda portraying neutron weapons as humane, concealing from the public the genuine consequences of their combat employment. Meanwhile, the penetrating radiation of a neutron burst has a destructive effect not only on humans and animals, but on plants as well. According to foreign press data, the airburst of a neutron bomb at an altitude of a few hundred meters would destroy approximately 310 hectares of coniferous trees, 140 hectares of meadows, or 110 hectares of jungle (the burst of an ordinary nuclear bomb of equivalent yield would destroy 50 hectares). Many decades would be needed to restore ecological systems affected by neutron radiation.

The US is intensively implementing a program that envisages fitting the nuclear shells for 155 and 203.2 mm howitzers, the warheads of Lance missiles, and, in the long term, Pershing II missiles and cruise missiles with initial radiation enhancement components. Consequently, neutron weapons may see extensive battlefield use in the event of a nuclear war breaking out with the NATO bloc.

The survivability of the main tactical subunits (battalions) in conditions where neutron weapons are employed is to a great extent determined by their dispersion and the setup of their march, prebattle, and battle formations. A motorized rifle (tank) battalion following company columns in the prebattle formation may be completely destroyed by one neutron warhead with a yield of one kiloton, but if formed up in an arrowhead or reversed arrowhead formation, with slightly increased intervals and distances between the companies, it would sustain losses not exceeding 30 percent.

The likelihood of significantly increased personnel losses in units and formations as a result of the employment of neutron weapons makes it necessary for officers to organize the timely discovery and destruction of enemy neutron weapons; to improve the methods for troop dispersion, movement, deployment, and conduct of combat actions; and to make skillful use of the protective properties of equipment and terrain.

The intensive improvement of nuclear weapons and delivery systems and the drastic rise in the number of nuclear warheads that may be employed on the battlefield, permit the conclusion that nuclear weapons

are still the principal and most powerful means for striking the enemy in a nuclear war and will exert a decisive influence on the nature of combined arms combat and the methods by which it is conducted.

This confronts commanders with several tasks of paramount importance: to learn how to skillfully employ nuclear weapons on the battlefield if the enemy should unleash a nuclear war; to exploit the results of friendly nuclear strikes effectively and in good time; to improve methods for conducting troop actions when the enemy makes large-scale use of nuclear weapons and methods of combating his tactical and operational-tactical nuclear weapons; to raise the survivability and steadiness of friendly forces in the face of nuclear weapon effects; and to learn how to quickly restore the fighting efficiency of subunits, units, and formations after enemy nuclear strikes, and to conduct combat actions with a limited complement of personnel and equipment.

Chemical weapons. In 1925, the Soviet government became signatory to the Geneva Protocol, which prohibits the use of chemical warfare agents in war. However, a number of states in the NATO bloc are continuing to develop and accumulate chemical weaponry. This makes it imperative for the personnel of our Armed Forces to study the combat characteristics of chemical weaponry and to know how to conduct combat actions when the enemy employs such weaponry.

According to the classification adopted in the armies of the NATO countries, chemical warfare agents are divided into four groups: lethal agents, incapacitating agents, harassing agents, and training agents.

The lethal agents include yperite, sarin, and VX. In the American military, the group of incapacitating agents includes the psychoactive agent BZ.

The harassing agents are represented in the US armed forces by chloracetophenone, adamsite, and agent CS. The last of these is considered the most effective, while chloracetophenone and adamsite have been transferred to the category of reserve TOE or training agents.

While engaged in aggressive actions in Southeast Asia, the US became the first state in the world to employ chemical substances—herbicides and defoliants—which were sprayed in combat zones to destroy vegetation along roads, canals, and electric power lines, and also to destroy rice paddies and industrial crop plantations in densely populated areas under the patriots' control. These measures made it simpler to observe troop movements, aided in the discovery of troop dispositions, and made it easier to conduct reconnaissance, terrain photography, and aimed fire.

In recent years, the US Defense Department has given particular attention to the development of so-called binary chemical ammunition.

Binary chemical ammunition has a filling that consists of two initial components, each of which in isolation is a nontoxic or marginally toxic chemical substance. During the warhead's time of flight to target, the initial components of the filling mix, and a nerve agent is formed as the result of a chemical reaction.

According to the assessment of foreign military experts, the combat effectiveness of binary chemical ammunition is lower than that of chemical ammunition filled with ready-made agents, since the chemical warfare agent formed when the components mix is less in terms of mass than the total mass of the initial components because of incomplete reaction.

The means employed to deliver chemical warfare agents may be most diverse. It has been noted in the foreign press that in the American armed forces the Air Force has the greatest capability for employing chemical weaponry, being equipped with chemical bombs, cluster munitions, and aircraft-mounted spraying devices. For the employment of chemical warfare agents in the US ground forces, there are chemical warheads for missiles, chemical artillery and rocket projectiles, chemical hand grenades, aerosol generators, chemical mines, and toxic smoke generators.

The US command puts a high value on the effectiveness of employing chemical weaponry. By employing chemical warfare agents, an artillery battalion can strike enemy personnel in an area 10 times larger than when employing conventional ammunition; one fighter-bomber employing chemical weapons could strike personnel in an area of about 8-10 square kilometers.

In the view of the NATO command, employment of chemical weaponry is contemplated in both offensive and defensive actions. In an offensive, the nonpersistent agent sarin would see the most extensive use. The persistent agents VX and yperite may be employed primarily over areas that the enemy does not intend to capture in the short term, on advancing reserves and logistics units, and also in defense. Sarin would be employed on counterattack axes.

The effectiveness of chemical weaponry can be significantly reduced by warning troops of surprise chemical strikes in time, by making use of protective equipment, and by implementing other measures for the protection of troops against chemical warfare.

The employment of **bacteriological (biological) weapons**, as is the case with chemical weapons, is condemned by the Soviet government, which is a signatory to the 1925 Geneva Protocol and the 1972 Convention on the prohibition of the development, manufacture, and stockpiling of bacteriological (biological) and toxin weapons and on their destruction. However, some imperialist states are secretly developing such weaponry, and envisage its employment for strategic, operational, and tactical purposes.

The casualty effect of bacteriological (biological) weaponry stems from the properties of the bacteriological agents, which include pathogenic

microbes and the toxins (poisons) produced by them. According to foreign press data, the characteristic features of this weaponry are as follows: the capability to cause mass infectious diseases, prolonged action, difficulty of detection in the external environment, and the existence of a period of latent action (incubation).

In the opinion of foreign military experts, bacteriological agents may be employed by aircraft, missiles, and groups of saboteurs, by means of contaminating water sources, food supplies, and buildings, as well as by spreading infected vectors—insects, mites, and rodents.

The employment of bacteriological (biological) weapons would represent a severe threat both to troops and the population of the rear areas. In some respects, they are even more dangerous than chemical or nuclear weapons. UN experts, in a comparative assessment of the casualty effects of nuclear, chemical, and bacteriological (biological) weaponry, have concluded that one strategic bomber can strike an unprotected population in an area of 30 square kilometers with nuclear weapons, in an area of 60 square kilometers with chemical weapons, and in an area of several thousand square kilometers with bacteriological (biological) weapons.⁴

Timely protection against this weaponry will drastically reduce troop losses. Therefore, when implementing a system of measures for the protection of troops against nuclear-biological-chemical [hereafter NBC—U.S. Ed.] weapons, commanders at all levels must pay particular attention to the timely discovery of enemy bacteriological (biological) weapons, to warning troops of the immediate threat and beginning of their employment, to providing notification of bacteriological (biological) contamination, to medical and veterinary measures, and to discovering and eliminating the effects of the employment of such weapons.

Tactical and operational-tactical missiles are employed in combined arms combat primarily as a delivery system for nuclear warheads. However, they may be used to deliver conventional warheads. For example, in the US Army not only have nuclear and chemical warheads been developed for the Lance missile system, but also high-explosive fragmentation (463kg) and cluster warheads (850 fragmentation bombs), and warheads with hollow-charge elements and homing heads. The development of such a complex of warheads and the employment of homing systems make it possible to employ conventionally armed missiles not only against area targets, but point targets as well, and to assign missile battalions missions to destroy tactical nuclear weapons, artillery, and control posts, and to neutralize personnel situated in the open and nonarmored equipment.

Tactical and operational-tactical missiles in the armies of the NATO countries are becoming an important weapon in the reconnaissance-strike and reconnaissance-fire complexes that are under development.

Aircraft and helicopters participate in combined arms combat as a part of front and army aviation, and sometimes as a part of military transport aviation as well.

Front aviation is employed to strike enemy troops and aviation, to support the combat actions of friendly forces by destroying nuclear weapons, reserves, and control posts, to destroy important ground targets in the operational and tactical depth, to destroy enemy aircraft and helicopters on the ground and in the air, and also to land and support airborne assault forces, to conduct reconnaissance, and to cover troops and other targets against enemy air strikes.

Army aviation is employed to conduct air support of forces by destroying ground targets, for the most part mobile ones, on the forward edge and in the tactical depth, by landing airborne assault forces, by laying minefields from the air, by conducting aerial reconnaissance, and by carrying out other missions.

Military transport aviation is the main airlift resource. It is employed to land airborne assault forces, to airlift troops, weaponry, ammunition, and other material resources over long distances, and for casualty evacuation.

In terms of the missions that may be performed by aviation and the performance and combat characteristics of the aircraft, aviation is subdivided into bomber, fighter-bomber, fighter, reconnaissance, and special purpose aviation, and in foreign armies into ground attack aviation as well.

Bomber aviation has a significant operating range and the capability of striking with great destructive force; it is assigned to destroy (strike) enemy groupings and to destroy important enemy ground (sea) targets, primarily in the deep rear and operational depth.

Bomber aviation is equipped with subsonic and supersonic aircraft capable of significant flying altitudes and with a large load-carrying capacity.

Modern bomber aviation is now capable of striking more accurately than formerly targets situated out of visual observation—from behind cloud cover and while flying in clouds, and in inclement weather day and night; when aircraft are equipped with air-to-surface missiles, such strikes can be delivered without a run over the air defense zone of the target under attack.

Fighter-bomber aviation, equipped with various types of fighter-bomber aircraft that have high speed and altitude capability and powerful weaponry, is a multipurpose asset of front aviation. It is employed to destroy (strike) enemy troops and ground (sea) targets in the tactical and operational depth, and also to destroy enemy aircraft, helicopters, and remotely piloted vehicles in the air, and to conduct reconnaissance.

Ground attack aviation is equipped with ground attack aircraft and combat helicopters. In the view of foreign military experts, it is the principal means for close air support of combined arms formations and units and for interdicting the approach of reserves. Ground attack aviation is assigned to strike mainly small and mobile targets close to the forward edge and in the tactical and immediate operational depth. It may also be used to combat enemy helicopters, to conduct reconnaissance actions, and to lay minefields from the air.

The American A-10A ground attack aircraft can carry up to 7260 kilograms of diverse weaponry on external pylons—high-explosive, incendiary, and illumination bombs, cluster ammunition and dispensers, and air-to-surface and air-to-air guided missiles. The aircraft also has a built-in seven barreled 30mm cannon. Its maximum flight speed is 720 km/h, and its radius of action while performing close support missions is 480 kilometers (loiter time 2 hours).⁵

Combat helicopters are an effective means of combating enemy tanks and striking other ground targets. The combat helicopter fleet is made up of fire support helicopters and troop carrier helicopters.⁶

Ground forces gain a high level of tactical mobility from the large-scale employment of fire support helicopters, as well as of troop carrier helicopters, assigned to land tactical airborne assault forces, to supply troops with materiel, and to evacuate the wounded. For this reason, the quantity of army aviation is constantly increasing. For example, a US division already has more than 140 helicopters, of which 42 are equipped with antitank guided missiles [hereafter ATGM—U.S. Ed.].

The main fire support helicopter in the US Army at present is the AH-1S Cobra/TOW, which is armed with 8 TOW ATGMs. It has a maximum flight speed of 315 km/h, a service ceiling of 3720 meters, a transport load capacity of up to 1520 kilograms, and a range of 500 kilometers. In 1983 a new fire support helicopter, the AH-64A, began to come into service; it is armed with 16 laser-guided Hellfire ATGMs.⁷

Besides antitank combat, fire support helicopters can also be employed for close support of friendly forces by striking enemy personnel and fire positions, by escorting troop carrier helicopters and securing the landing of assault forces or the unloading of weapons and materiel, by conducting reconnaissance to discover important enemy targets on the battlefield in the interests of the ground forces, by ascertaining the effects of strikes against enemy strongpoints in the tactical depth, by destroying

enemy helicopters in the air, by engaging in electronic jamming, and by performing other combat missions.

Fighter aviation is one of the principal means for destroying enemy aircraft, helicopters, and remotely piloted vehicles in the air. Apart from carrying out missions to cover troops and rear installations, fighter aviation can be employed to strike various ground targets situated in the open (nuclear missiles, aircraft, personnel, combat equipment, and radar equipment), and to conduct reconnaissance as well.

Modern fighters are capable of supersonic speeds and high flying altitudes. They are generally armed with guided missiles and automatic cannon and are capable of employing aerial bombs of various designations. Specialized guidance equipment installed in the guided missiles automatically corrects aiming errors, takes account of changes in the position of an airborne target, and ensures a high degree of hit accuracy.

The American F-16A fighter has a maximum flight speed of 2100 km/h at an altitude of 11,000 meters, a service ceiling of 16,000 meters, a maximum range of 3700 kilometers (with external fuel tanks), and an 800-kilometer radius of action. Depending on the missions to be performed, the following armaments may be suspended from external pylons: air-to-air missiles, conventional aerial bombs, bombs with laser homing heads, launcher pods for 70mm unguided rockets, pods containing laser guidance system apparatus and surveillance equipment, and auxiliary fuel tanks. The aircraft is armed with a six-barrelled 20mm aircraft cannon, guided missiles, and aircraft rocket projectiles.⁸

The reconnaissance aviation of foreign armies is for the most part equipped with various modifications of the same types of aircraft that are in service in the other categories of aviation, which are, however, equipped with specialized equipment. It is also equipped with remotely piloted reconnaissance vehicles.

In the opinion of foreign military experts, the integrated navigation systems of reconnaissance aircraft, which include a computer, an inertial system, and a forward-looking radar, ensure accurate air navigation day and night and in visual flight rule and instrument flight rule weather conditions.

The surveillance equipment of reconnaissance aircraft consists of aerial photographic, infrared, and radar equipment, whose integrated employment provides for carrying out reconnaissance missions in various weather conditions, at night, and when visibility is poor.

Reconnaissance aviation's role is continuously growing. With the development in the armies of the NATO countries of reconnaissance-fire and reconnaissance-strike complexes, reconnaissance and control aircraft are becoming one of the most important elements providing for the acquisition

of reconnaissance data (in real time) and the precision guidance of weapons to enemy targets discovered.

Transport aviation, which is equipped with transport aircraft and helicopters, lands airborne assault forces, transports troops and cargoes, and provides for the maneuver by air and combat actions of troops. It can also be employed to carry out special missions.

The American C-130 tactical transport aircraft (payload 20.4 tons) is capable of transporting 92 soldiers with equipment or 74 wounded and 6 medical orderlies, or one 155mm howitzer.

Strategic transport aircraft have considerably greater capabilities. The American C-5A (payload 120 t) can transport 345 soldiers with equipment, two M60 tanks, or 10 Pershing missiles, as well as other types of weaponry and equipment.

The American CH-47B Chinook troop carrier helicopter (payload 10 t) can transport 44 soldiers with equipment.

The presence of large quantities of air transport resources in modern armies has led to an increase in the depth of modern combined arms combat and to the emergence of new elements in the battle formation—tactical airborne assault forces and antiassault landing reserves. The combat actions of tactical airborne assault forces, which carry out a vast range of combat missions, have become an important component of modern combined arms combat, and have led to considerable changes in its essence and scope and the methods of conducting it.

Thus, aircraft, combat helicopters, and troop carrier helicopters considerably increase troop firepower and mobility and also, as noted by foreign military experts, make it possible to employ various methods of hitting the enemy with fire strikes and to employ new methods of conducting combat using a third dimension—air space—to envelop the enemy by air.

At the same time, the complex problem of combating enemy army aviation and airmobile troops has also arisen. This problem is becoming an integral element in the commander's decision in offensive and defensive engagements and an important part of his work in organizing cooperation.

The mission of **artillery** is to destroy (neutralize) enemy nuclear weapons, artillery, tanks, antitank and other fire weapons, personnel, control posts, air defense weapons, and electronic equipment and to demolish enemy defensive installations.

Artillery continues to be an important asset for delivering fire strikes on the enemy, having, as it does, great firepower and accuracy, a great capacity for quick preparation for action, and a capability for wide ma-

neuver and rapid concentration of fire on the most important targets. Artillery forms the basis of the firepower of formations and units in the ground forces of the NATO armies and includes tube artillery (self-propelled and towed), multiple rocket launcher systems, and mortars.

In recent years, self-propelled artillery has seen the most development in the ground forces of the armies of many countries. It has excellent all-terrain performance, maneuverability, and survivability in a nuclear weapon environment, and the crews have a high degree of protection from bullets and shell fragments.

The most widely used self-propelled gun in the NATO forces is the American-manufactured M109A1 155mm self-propelled howitzer, which has a range of 18 kilometers. A modernized version of the howitzer, the M109A2, has a range of 22 kilometers;⁹ the unit of fire that it can carry includes two Copperhead laser-guided shells, apart from 22 standard and 12 rocket-assisted rounds.

Another type of 155mm self-propelled howitzer, the SP70, has been developed by West Germany, the UK, and Italy and will enter service in the mid-1980s. It has a range of 24 kilometers, and about 30 kilometers when using rocket-assisted shells.¹⁰ The howitzer's all-terrain performance and running speed correspond with the analogous characteristics of the Leopard tank.

Together with armored self-propelled artillery, armies are also equipped with a considerable quantity of towed artillery. In the armies of the NATO countries, this consists for the most part of American towed guns from World War II and the 1950s and 1960s, with calibers of 105, 155, and 203.2 millimeters and ranges of 12–15 kilometers.¹¹ In recent years, a number of new towed artillery systems have been developed or are in the developmental stage.

The new Anglo-Italian-West German FH70 155mm howitzer and the American M198 155mm howitzer have ranges of 22 and 24 kilometers respectively with high-explosive fragmentation shells and about 30 kilometers with rocket-assisted shells. They can engage in antitank combat not only by direct fire, but also from indirect fire positions, using cluster ammunition. These howitzers can be transported by C-130 aircraft and by CH-47C helicopters (suspended externally).¹²

Multiple rocket launcher systems are becoming increasingly widespread in the armies of the NATO countries. In the opinion of foreign experts, they may be effectively employed in area fire to strike personnel, armored vehicles, command posts, and other targets. For example, one battery of eight Lars 36-tube 110mm rocket launchers of the West Germany army can strike targets in an area of about 100 hectares within 18 seconds (the time taken to fire one salvo).¹³

The improvement of multiple rocket launcher systems is proceeding by way of extending the sphere of their employment, as is attested by the development for such systems of cluster ammunition for antitank combat

and the remote mining of terrain and of fuel-air explosive munitions for striking personnel and fire weapons, and for clearing minefields.

The capabilities of multiple rocket launcher systems for remote mining are quite considerable. For example, two batteries of Lars multiple rocket launchers of the West German army are capable of laying a minefield on a front of 4–5 kilometers. Multiple rocket launcher systems have even greater capabilities for striking personnel and fire weapons situated in the open.

According to the estimates of foreign experts, one battalion of the new MLRS multiple launch rocket system of the American military has a firepower 10 times greater than that of a battalion of 203.2mm howitzers. The range of the MLRS is about 32 kilometers. The rocket has a shaped charge fragmentation warhead. Besides this, a cluster warhead with terminally guided submunitions is being developed. In the opinion of American experts, the firepower of this system will be equivalent to that of 27 203.2mm howitzers.

Mortars are an important type of artillery equipment in modern armies. They are considered the most effective infantry close support weapon.

Mortars have a number of advantages as compared with other artillery systems. They are simple in construction, have a steep trajectory and a relatively light weight, and make it possible to employ high-explosive projectiles with a high relative mass of high-explosive filling (important for demolishing solidly constructed fieldworks). They also ensure a large area of destruction when fragmentation and high-explosive fragmentation projectiles are fired. However, they also have some inherent shortcomings: limited range, large dispersion, etc. Work is in progress to eliminate them.

For the most part, modern mortars use high-explosive fragmentation, smoke, and illumination projectiles. The maximum range of mortars ranges from 3.5 to 7.5 kilometers.

Artillery **ammunition** has undergone significant development in the armies of the NATO countries in the past 10–15 years. Rocket assisted shells and projectiles have been developed that have made it possible to increase ranges by 17–33 percent. An increase in the power of certain shells has been achieved. As a result, the degree of damage to targets has been increased by 10–15 percent compared with conventional shells. The development of shells with lethal arrow-shaped elements has raised the effectiveness of strikes against enemy personnel situated in the open by a factor of 2–3.

A fundamentally new type of munition has been developed in the US and certain other countries: the fuel-air explosive munitions. Their casualty-producing elements are a blast wave that is propagated with a velocity of about 2200 m/s and creates an excess pressure of the order of 50–60 kgf/cm², a heat pulse of 1000–2000°C, a carbon monoxide excess of

more than 1.5 percent and a carbon dioxide excess of more than 12 percent, as well as an oxygen deficiency of less than 6 percent.

According to the results of investigations by American researchers, the blast wave formed by detonation of a first-generation fuel-air explosive device exceeds that formed by detonation of the TNT equivalent by a factor of 2.7-5. Since 1973 the Americans have been working on development of second-generation fuel-air explosive munitions in an attempt to raise the excess pressure index to 100 kgf/cm² or more, thereby exceeding the TNT equivalent by a factor of 10. At the same time, third-generation fuel-air explosive munitions are being developed for employment against surface vessels.

The degree of destructive effect on a target and the severity of the casualty effect on personnel resulting from the detonation of a fuel-air explosive munition are determined by the mass of fuel, the height of the burst, the distance of the target from the center of the burst, the resistance of the target to the casualty producing factors, with allowance made for its terrain layout, as well as weather conditions.

In Vietnam, the American aggressors would completely devastate an area about 30 meters in diameter in dense jungle with a CBU-55B 277-kilogram bomb, containing three canisters with 36.6 kilograms of aerosol-forming liquid each. Later they were able to increase the blast wave and employ fuel-air explosive munitions for mine clearing.

Tests are now being conducted on a 30-tube launcher for mine clearing with fuel-air explosive munitions. In the assessment of American researchers, such a launcher is capable of creating a minefield gap 8 meters wide and 100 meters deep with one salvo.

Hence, fuel-air explosive munitions are capable of striking enemy personnel and combat equipment, knocking out important targets in fortified areas, and bridges, clearing areas in forests, and making minefield gaps in shorter periods of time and more reliably.

Recently, active developmental work has been conducted on Copperhead laser-guided shells, which are employed to engage armored targets.

As has been noted in the foreign military press, the employment of a laser-guided shell would ensure a direct hit on moving tanks from the first round at maximum range. In the opinion of foreign experts, such a shell would convert a howitzer into a sniper's weapon that fires hollow-charge shells. This would undoubtedly exert enormous pressure on enemy morale.

Laser-guided munitions are still being improved. For example, development is taking place in the US on munitions with mid-course guidance and terminal homing in inclement weather conditions; research is also

being conducted on homing systems, with particular attention given to their resistance to jamming.

It has been reported that the employment of laser-guided shells increases the accuracy of artillery fire from indirect fire positions and reduces shell consumption in striking individual targets, the number of guns committed, and the time taken to accomplish missions.

Thus, the increased firepower of modern artillery, which is equipped with qualitatively new artillery, mortar, and multiple rocket launcher systems, makes it possible to carry out fire missions in modern combined arms combat within shorter periods of time and at greater depth. This makes combined arms combat increasingly more dynamic and fast-moving, increases the depth to which the enemy can be hit with simultaneous fire strikes, and increases the importance of long-range firefights.

In the opinion of foreign military experts, antitank guided missiles—ATGMs, with which tanks, infantry combat vehicles, armored personnel carriers, and helicopters are equipped—are the most promising of the **antitank weapons** for engaging armored targets on the battlefield. Some subunit ATGMs are portable.

In developing ATGMs, foreign military experts are attempting to reduce their minimum range of engagement and increase their maximum range of engagement and also to improve the guidance systems. An operator firing a first-generation ATGM (range 400–1000 meters) had to track the projectile and the target continuously, while an operator firing a second-generation ATGM (range 25–6000 meters) tracks the target only. The hit probability of modern ATGMs is close to 90 percent.

The TOW (US) and the HOT (France, West Germany) are considered the most sophisticated ATGMs abroad. The TOW ATGM strikes targets at ranges of 65–3750 meters, or about 4000 meters when fired from a helicopter (the Cobra/TOW). The HOT ATGM has a range of 75–4000 meters. The TOW and the HOT have semiautomatic wire guidance systems and an armor penetration capability of 500–800 millimeters.¹⁴

The influence of ATGMs on the nature of modern combat is increasing not only because of their high level of effectiveness, but also on account of the drastic rise in the number of them in service. For example, the number of ATGM launchers in the US Army has recently risen by a factor of four.¹⁵ There are long-term plans for US divisions to be equipped with 730 ATGM launchers, of which 380 will be ground-based Dragons and TOWs and 350 will be helicopter-launched. Here, each mechanized infantry battalion will have 71 ATGM launchers.

One sees a process of intensive qualitative improvement in ATGMs and the development of new systems. An improved warhead and a jam-

resistant guidance system have been developed for the TOW ATGM. In 1981 the US began production of the heliborne Hellfire ATGM, which has a semiactive laser guidance system and considerably surpasses the TOW ATGM in flight speed, range (about 7000 meters), and armor penetration (over 600 millimeters).

At the same time, the US military is conducting experimental tests on the Assault Breaker antitank system, which is based on the integrated employment of homing projectiles and missiles and includes the Lance missile, ground-launched cruise missiles, tactical aviation aircraft, multiple rocket launcher systems, and the Patriot surface-to-air missile system. The specialized T-22 (for the Lance 2) and T-16 (for Patriot) terminal-homing missiles provide for armored target kills at ranges of about 150 and 200 kilometers respectively.

There is continuing improvement of antitank artillery in the sense of increasing flat-trajectory range, developing more powerful antitank shells, and improving accuracy.

Because of the large concentration not only of tanks, but of other armored targets as well, in the battle formations of modern forces, the role of close-combat antitank weapons is increasing. Their development in the armies of NATO countries is proceeding along the lines of producing an antitank weapon for every soldier—antitank grenade attachments for personal small arms—and increasing the range to which these grenades can be projected. Subunits are being equipped with new and lighter portable antitank rocket launchers with great accuracy and increased range and armor penetration.

The new American Viper antitank rocket launcher has an effective range of about 300 meters (prospectively about 500 meters) and a hit probability of 0.9 at a range of 250 meters. The rocket has a flight speed of 257 m/s. It can penetrate the armor of a modern tank.¹⁶

The great number of antitank weapons—and tanks—in the divisions of the NATO armies makes it possible to create high average densities of them—about 50 units per kilometer of front and 1.5–2 times more on the axis where the main efforts are being concentrated.

This means that combat against enemy antitank weapons is acquiring decisive significance for success in combined arms combat today. The destruction of these weapons can only be achieved by the combined efforts of all weapon systems, including artillery, aviation, and the fire weapons of the attacking troops. Overall, in the opinion of foreign military experts, the solution to the problem of overcoming a modern antitank defense is to be sought in ensuring closer cooperation between tanks and mechanized infantry, artillery, combat helicopters, and subunits of other combat arms that participate in combined arms combat.

Tanks as a combat resource are assigned to carry out a wide range of missions encountered in modern combat. With powerful weaponry, reliable protection, and great mobility, they are capable by means of fire on the move, fire from the short halt, and stationary fire of destroying enemy tanks, other armored targets, and personnel, of demolishing enemy defensive installations, of engaging low-flying targets, and of performing other missions.

In modern armies, tank forces constitute the main striking power of the ground forces. They are capable of exploiting the effects of nuclear and fire strikes to the fullest and of achieving the final objectives of an engagement or operation in short periods of time. The combat capabilities of tank formations, units, and subunits make it possible for them to conduct aggressive offensive actions day and night when considerably separated from other forces, to defeat the enemy in meeting engagements, and to negotiate extensive zones of radioactive contamination and water obstacles from the line of march. Tank forces are also capable of swiftly setting up a solid defense and of successfully withstanding an offensive by superior enemy forces.

The increase in the tank's role in modern combat has led to a considerable increase in the number of them in service. For example, a US Army mechanized division has 270–306 main battle tanks and an armor division 324–360, while a West German motorized infantry division has 245 and a tank division 305.

Modern tanks are developed with due regard for the latest scientific and technical achievements and on the basis of modern technology; their improvement proceeds along the lines of increasing their firepower, protection, and mobility and of improving their operating characteristics.

Tank firepower is increased by installing large-caliber guns (about 152mm) that provide high muzzle velocities, by producing ammunition with great target kill capabilities, by equipping tanks with instruments and mechanisms that raise hit probability, rate of fire, and the speed at which fire can be adjusted and shorten the time required to prepare initial firing data and open fire and by improving crew habitability conditions.¹⁷

The majority of tanks in foreign armies (the American M60A1 and M1, the West German Leopard 1, the French AMX-30, the Japanese 74, etc.) have a 105mm rifled gun as the main armament. The British Chieftan tank is armed with a 120mm rifled gun. The American M60A2 and Sheridan light tank are equipped with a 152mm rifled gun/launcher, which fires conventional high-explosive fragmentation shells and launches ATGMs through the barrel. There are prospects that tanks can be fitted with both rifled and smoothbore guns with calibers of 120 millimeters and higher.

Foreign military experts note that the first-round hit and kill probability in tank gunnery is drastically increased by high muzzle velocities (and

consequently long flat-trajectory ranges), the employment of stabilization systems, the use of various rangefinders to determine ranges to target, and the fitting of ballistic computers that automatically prepare the initial fire settings.

Full-caliber tank rounds are capable of penetrating armor with a thickness 1.2–1.3 times greater than their caliber at ranges of about 1000 meters, while armor-piercing discarding sabot rounds are capable of penetrating armor with a thickness 2–3 times greater than their caliber. The employment of armor-piercing discarding sabot rounds from tanks against armored targets is effective at longer ranges as well—about 1500–2000 meters. Hollow-charge rounds penetrate armor with a thickness 3.5–4 times greater than their caliber, irrespective of range.¹⁸ Armor-piercing high-explosive rounds are highly effective against both armored and soft targets.

Work is in progress in some capitalist countries on the development of combined missile and gun tank weapon systems.¹⁹ In the opinion of a number of foreign experts, the scientific and technical prerequisites for the employment of tank-launched guided missiles as the main armament have already been met. The availability of such weaponry increases still further the range at which enemy armored targets can be destroyed.

Antiaircraft machine guns, with which the majority of modern tanks are equipped, are employed to engage low-flying targets, including helicopters.

The employment of night vision devices and other equipment to a great extent ensures surprise and concealment of nighttime actions for tanks.

Armor protection and the presence of collective NBC defense systems drastically increase the tank's resistance to weapon effects and ensure its survivability in combat actions.

The presence in tanks of systems that protect the crew and internal equipment from the blast wave of a nuclear burst, ventilation filters that prevent radioactive dust and chemical and biological agents from penetrating into the tank, and a system for protecting the crew against penetrating radiation makes tanks most suitable for employment in a nuclear weapon environment. A tank provides its crew with complete protection against thermal radiation and significantly reduces the effect of the blast wave and penetrating radiation.

Fitting tanks with smoke generating equipment contributes to their individual and collective defense against many weapons.

Tank firefighting equipment is called on to prevent the tank from being damaged beyond repair after the outbreak of fire caused by hits from antitank weapons.

With the rise in the number and effectiveness of antitank weapons, armor protection is being increased not just on recently developed tanks, but also on some modernized ones. In the armies of the NATO bloc, armor protection is increased by using a differentiated distribution of armor thickness based on the probability of the tank being fired on from various directions; by increasing the thickness and angles of slope of the front portions of the hull and turret; by using spaced armor, i.e., successive placing of armor plates at a certain distance from one another; by employing composite or laminated armor consisting of various materials; and by armor plating battle stowage areas and fuel compartments.²⁰

Foreign experts consider that, along with design solutions, active and passive tactical methods can be used to protect tanks against antitank weapons in modern combat conditions.

Active methods for the defense of tanks include neutralizing (destroying) antitank weapons, primarily ATGMs, at their fire positions by means of nuclear weapons, air strikes, and artillery and tank fire; by active jamming of ATGM guidance systems, and by destroying ATGMs in flight with the tank's auxiliary or main armament. Also effective are tactical methods that make it difficult for the enemy to employ ATGMs, and the use by tank subunits of terrain that makes it impossible or difficult for the enemy to employ antitank weapons. Foreign experts consider it possible to fit tanks with systems that detect and destroy ATGMs in flight.²¹

The following are possible passive methods for the defense of tanks: employment of smoke screens for screening or blanketing, deployment of decoy targets as a countermeasure against projectiles fitted with homing heads, and reduction of heat signature against the background of the surrounding terrain.

The great mobility of tanks has a considerable influence on the march capabilities of troops and increases the significance of the struggle to gain time when units are deploying in their battle formation and of the struggle to forestall the enemy in opening fire. The maximum road speed of individual tanks is as high as 50–70 km/h, while the average cross-country speed is 30–45 km/h. The mobility of tanks makes it possible to execute swift maneuvers that surprise the enemy, essentially on any terrain and at any time of day or night.

The mobility of modern tanks is achieved through the large power-to-weight ratio of the engines, the employment of sophisticated transmission

systems, control drives, and hull suspension systems, and the improvement of visibility. Tanks are also provided mobility by their capability to negotiate various natural and manmade obstructions, including water obstacles.

The high dynamic characteristics of tanks are determined by the large power-to-weight ratio of their engines and the sophistication of their transmission systems. It has been reported in the foreign press that the M1 tank can attain a speed of 32 km/h in 6.1 seconds. The high acceleration and braking characteristics demand speed in detecting an enemy tank, preparing the firing data, and opening fire, especially in the case of a tank operating on broken terrain.

A tank must negotiate water obstacles. In the Soviet Union, underwater driving tests were conducted even before World War II began, and during the Great Patriotic War tanks would negotiate water obstacles by deep fording. Modern tanks fitted with special equipment can negotiate water obstacles 4–5 meters deep.

Another important quality of modern tanks is a long road range—400–600 kilometers.²²

The majority of modern tanks have multifuel engines. For example, our Soviet T-72 tank has an engine that runs on both diesel fuel and kerosene or gasoline. The multifuel capability of tank engines increases their autonomy of action when separated from supply subunits and makes it simpler to organize fuel supply during combat actions.

An analysis of tank combat characteristics shows that, in close cooperation with other assets that engage in combined arms combat and given fire support and reliable cover against air strikes, they can achieve victory on the battlefield. Tanks are still an important means for increasing the dynamic and maneuvering nature of modern combat and for improving the methods of conducting it.

Infantry combat vehicles have considerably increased the maneuverability, striking power, firepower, and protection of motorized infantry. Modern infantry combat vehicles have reliable armor protection against small-arms fire and shell fragments, excellent cross-country performance (they can negotiate 30° slopes), and running speeds (about 60–75 km/h). They are air-portable and can negotiate water obstacles at speeds of 6–7 km/h (except the West German Marder infantry combat vehicle). Infantry combat vehicles have 264–600 h.p. diesel engines and a fairly high power-to-weight ratio (approximately 20 h.p./t).²³

The main armament of foreign infantry combat vehicles is made up of 20–25mm automatic cannon with cyclic rates of fire of 570–1000 rounds per minute and muzzle velocities of over 1000 m/s. As auxiliary armament, infantry combat vehicles have 1–2

machine guns and smoke grenade launchers. Equipped with armor-piercing discarding sabots and fragmentation rounds for their automatic cannon, infantry combat vehicles can successfully engage armored targets (armor penetration over 20 millimeters at a range of 1000 meters, and 40 millimeters at 600 meters), as well as enemy artillery, ATGM launcher crews, and infantry and provide effective fire support for tanks.

According to foreign press data, the process by which the infantry combat vehicle is being upgraded is aimed at raising its firepower and increasing its protection. The first of these tasks is accomplished by increasing the caliber of the main armament, raising the power of the ammunition, stabilizing the armament and vision devices in two or even three planes, and by arming infantry combat vehicles with ATGMs. In order to increase the protection of infantry combat vehicles, more extensive use of new materials, special armor plate designs (composite and spaced armor), and layout solutions that increase the vehicle's survivability are anticipated.²⁴

The excellent combat characteristics of infantry combat vehicles and their large-scale introduction into service make it possible for motorized rifle subunits to rapidly exploit the effects of nuclear and fire strikes, to engage in combat independently or in close cooperation with tanks, providing them with effective assistance in combating enemy antitank weapons, artillery, and infantry combat vehicles, to make extensive use of maneuver on the battlefield, and to negotiate water obstacles and contaminated sectors of terrain from the line of march.

Troop air defense weapons with which surface-to-air missile [hereafter SAM—U.S. Ed.] and anti-aircraft artillery units and subunits are equipped are capable of decisively striking the enemy in the air, covering troops and important rear installations, and creating favorable conditions for achieving success in combat.

SAM systems of various ranges constitute the main troop air defense resource. SAM systems are highly effective against airborne targets and, depending on the type, are capable of destroying airborne targets at low, medium, and high altitudes and in the stratosphere.

Man-portable SAM systems constitute an effective subunit air defense resource.

The American Stinger SAM system, which came into service in 1980, is designed to hit targets flying at speeds of about 1200 km/h at ranges of 300–5000 meters and heights of 30–3000 meters on head-on and dog courses, with a 0.3–0.5 kill probability. Each motorized infantry, tank, and reconnaissance battalion has a section that includes five such systems and 30 missiles for them.

The short-range Roland self-propelled SAM system (West Germany, France) has a range of 500–6200 meters, a maximum height of 20–3000 meters, and a 0.5–0.6 kill probability.²⁵

The Patriot SAM system, now in service with the American military, is capable of striking airborne targets at ranges of between 4-5 and 50 kilometers at heights of 60-24,000 meters, with a kill probability of 0.8.

Antiaircraft artillery systems are designed to destroy airborne targets at low and medium altitudes. They include self-propelled antiaircraft guns and antiaircraft gun systems of small (20-60 millimeters) and medium (60-100 millimeters) caliber. Antiaircraft artillery can also be called on to engage enemy ground forces, including tanks.

In the opinion of the foreign press, the most sophisticated representative of antiaircraft artillery abroad is the Gepard self-propelled antiaircraft gun (West Germany). This twin-barreled 35mm system was developed from the Leopard tank. It is an autonomous all-weather antiaircraft gun system designed to hit aircraft and helicopters at heights of up to 3 kilometers and at ranges of about 4 kilometers, with a kill probability of 0.3-0.4. Onboard equipment provides for stationary fire and fire on the move.²⁶ In the US, the DIVAD self-propelled antiaircraft gun was put into service in 1981; it has approximately the same combat characteristics.

Radar equipment is employed for the timely detection of enemy aircraft and warning of air defense resources and troops about them, and also for supporting the combat actions of fighter aviation, antiaircraft artillery, and SAM systems. Existing radars make it possible to detect aircraft at great distances and determine their coordinates and movement characteristics at any time of day or night in the most inclement weather and in a complex electronic situation.

Judging from foreign press reports, the improvement of air defense weaponry is proceeding along the lines of further increasing their effectiveness in destroying manned aircraft and remotely piloted vehicles, helicopters, and operational-tactical, tactical, and cruise missiles. During World War II medium caliber antiaircraft artillery would expend 400-500 rounds to destroy one aircraft, and small-caliber artillery 700-800 rounds, while today one to three SAMs may be enough to destroy an aircraft. The number of target and missile channels in each firing element and the dimensions of their impact zones and coverages, especially in the case of low-flying targets and targets with small reflecting surfaces, are being increased; air defense weapons are also being upgraded in terms of their jam resistance, all-weather capability, autonomy of operation, survivability, and operational reliability.

Small arms remain, as before, the mass weapon of personnel in motorized rifle subunits, and are widely used in close combat.

The small arms of modern armies are fully automatic, have a relatively high level of standardization (one cartridge for various types of weapon), excellent maneuver characteristics, relatively simple design; they are simple and easy to use, reliable and trouble-free in operation, conve-

nient for firing on the move and from infantry combat vehicles (armored personnel carriers), and multipurpose.

The development of small arms is proceeding along the lines of improving existing types, developing new automatic weapon systems and ammunition for them, and improving antitank rocket launchers.

The main trends in the development of small arms abroad are as follows: reduction in the external dimensions and mass of the weapon at the expense of a reduction in caliber; development of caseless cartridges; increase in firepower and weight of fire by increasing rate of fire and using two-, three-, and multiple-ball cartridges; increase in accuracy and grouping; increase in the lethal effect of ammunition (small caliber and arrow-shaped bullets that lose their stability on impact with body tissue and cause severe lacerated wounds); and reduction in the variety of types of small arms used.

The NATO countries are putting special efforts into finding the optimum calibers for rifles, machine guns, and pistols.

The standard caliber for small arms in the NATO forces is still 7.62 millimeters. However, small-arms types with a caliber of 5.56 millimeters have been developed abroad in recent years. In the US, for example, a 5.56mm automatic rifle and light machine gun are being produced; a new rifle grenade launcher has been taken into service; the development of aluminum cases for rifle cartridges with arrow-shaped lethal elements and cartridges with flechettes is in progress; and a new flamethrower is being tested. In West Germany, a 4.7mm rifle with a range of about 300 meters has been developed; it fires caseless cartridges made up of a pressed nitrocellulose casing into which the ball is fixed.²⁷

Motorized rifle subunits equipped with modern small arms can conduct combat in any situational conditions, whether nuclear weapons are employed or not, and have great firepower and maneuverability.

In the opinion of NATO, electronic warfare exerts a significant influence on the development of tactics; specialized **electronic suppression assets** engage in electronic warfare. They are equipped with jammers that suppress ground forces radio and radio relay communications, the radio communications and short-range radio navigation of tactical aviation, and the onboard radars of aircraft, with jammers for disrupting radio fuzes, and with optoelectronic jammers.

By suppressing electronic intelligence and communications systems, modern electronic suppression assets afford secrecy in preparing and surprise in beginning combat actions, reduce the effectiveness of enemy weapons, and make it difficult for the enemy to maneuver his resources and adjust his fire. Electronic suppression assets contribute to a significant reduction in personnel and equipment losses by blinding enemy ATGW operators and by suppressing SAM guidance systems, aircraft and artillery

radars, aircraft and missile instruments, laser reconnaissance and missile (bomb) guidance equipment, television, and other control and guidance equipment. Foreign military experts note that during the aggressive war in Vietnam, the US was able to achieve a 50-percent reduction in Air Force losses by implementing comprehensive electronic warfare measures.

In the NATO armies, electronic warfare is considered an integral part of combat operations, since the disruption of troop and weapons control systems is considered a guarantee of victory.

The helicopter-mounted Quick Fix II system and the ground-based TACJAM system are considered the most promising electronic warfare equipment abroad. A reconnaissance and electronic warfare battalion equipped with powerful shortwave and ultrashortwave communications jammers has been introduced in the US division.

All of this means that a sort of "electronic battle" will be conducted in a tactical combat zone. The commander must take timely measures for successful suppression of enemy electronic equipment and protection of friendly equipment from suppression by the enemy. The effective employment of weaponry, and the success of troop actions as a whole, will in many respects depend on the outcome of this "battle."

The weaponry that may be employed in combined arms combat has become qualitatively different: its destructive power, striking power, and maneuver capabilities have increased drastically. The development of conventional weapons is proceeding along the lines of developing highly accurate homing and automated systems that drastically increase fire capabilities for hitting important enemy targets with the first round and approach NBC weapons in terms of their effectiveness. All this changes the essence and nature of combined arms combat and gives rise to a need to improve existing methods of preparing for and conducting such combat, and to seek new ones.

3. The Nature and Forms of Modern Combined Arms Combat

Combat is organized armed conflict between the subunits, units, and formations of belligerents and is the main form of tactical actions on land, in the air, and at sea; it manifests itself in strikes coordinated in terms of objective, place, and time, fire, and maneuver aimed at routing (destroying) the enemy or taking him prisoner and of taking or holding important areas (lines, objectives). Combat is the only means of achieving victory.

The objective of an engagement is achieved by powerful strikes made by weapons of all types, by aggressive and resolute actions on the part of the troops participating in it, by the complete exertion of the moral and physical forces of personnel, and by their cohesion in action and inflexible will to win.

Modern Ground Forces combat is combined arms combat, since subunits, units, and formations of all combat arms and combat service support troops, aviation, and—in the case of actions on coastal axes—Navy ships as well, participate in it.

The nature of combat is determined primarily by the level of development of weaponry and military equipment. The basic substance of modern combined arms combat is made up of nuclear strikes, if combat actions are conducted with nuclear weapons; fire from conventional weapons; and strikes and maneuver on the part of troops. The electronic suppression of enemy troop and weapons control systems is becoming an integral part of combat.

A nuclear strike is made up of one or several nuclear bursts produced within a short time in the interests of carrying out a tactical mission. The capability of nuclear weapons to inflict full defeat on the enemy within a given radius makes them a most important element in modern combined arms combat.

But however powerful nuclear weapons are, it is not possible to accomplish all missions in combat by means of them alone. In fact, this would be inexpedient. Fire by conventional weapons, whose power has increased drastically, is an important means of completing the enemy's rout in a nuclear war, and the main means of defeating him while conducting combat actions without the use of nuclear weapons.

The role of fire in modern combined arms combat has increased appreciably. Fire is used to prepare for and support strikes carried out by troops, thus constituting an integral part of such strikes, affords swift exploitation, and creates the necessary conditions for carrying out maneuvers. The growing capabilities of fire weapons make it possible to carry out long-range firefights, and this may exert a substantial influence on the nature of combined arms combat and the methods by which it is conducted.

A troop strike is a combination of fire and movement by tank and motorized rifle subunits and units aimed at completing the enemy's rout and taking an assigned area (line, objective). The force of a strike by attacking (counterattacking) subunits and units is primarily determined by the firepower of their weapons.

Maneuver is the organized movement of forces or the shifting of the fire of weapons in the interests of creating favorable conditions for conducting combat actions. In modern combined arms combat, "maneuver" would also refer to those ground and air actions that make it possible to

swiftly rout the enemy with coordinated strikes from various directions, including the rear.

Electronic suppression is considered by foreign military experts to be a system of measures and troop actions implemented to disrupt enemy control of units (subunits) and of weapons and to reduce the effectiveness with which the enemy can employ his electronic systems and equipment by means of affecting their electromagnetic radiation. This is achieved by electronic jamming, by employing dummy targets and decoys, by reducing the radar, optical, heat, and acoustic contrast of materiel and installations, and by means of radio deception.

By acting on receivers, electronic jamming distorts signals or images, hinders or disrupts radio voice communications and the detection of targets by electronic equipment, and reduces the operating range of surveillance equipment and the accuracy with which automatic weapon guidance systems function.²⁸

Combined arms combat usually forms part of an operation or battle and only sometimes is conducted in order to achieve a special objective outside their framework. It is still one of the most important ways of achieving operational and strategic successes, for, as a rule, the implementation of the plans devised by operational art and strategy is initiated, executed, and completed by means of combat conducted by combined arms formations, units, and subunits. This determines the significance of combined arms combat as one of the most important ways to achieve final victory in modern war.

In order to achieve victory over the enemy, formations, units, and subunits use various methods of action and procedures and every possible combination of them. However, despite the diversity of combat actions, it is possible to classify them by type, taking their most essential features into account. Such features include the objective that may be pursued in combat, the methods by which it is achieved, and the nature of the actions by troops of the opposing sides, taken as a whole. Depending on this, two types of combat are distinguished in tactics: the offensive and defense.

The offensive is the main type of combat. It is of decisive importance for victory over the enemy. Only a determined offensive, carried out at high momentum and in great depth, ensures the complete rout of the enemy. A rapid offensive makes it possible to frustrate the enemy's concept and to exploit the effects of friendly nuclear and fire strikes to the fullest.

The objective of an offensive is the complete rout of an opposing enemy force in a short period of time and the capture of important terrain

areas (lines, objectives). The objective of an offensive is achieved by destroying the enemy's offensive nuclear and chemical weapons and major groupings by means of strikes by missile troops, aviation, and artillery fire, and also by the swift advance of tank and motorized rifle subunits, units, and formations to a great depth in cooperation with aviation and airborne assault forces, and by these elements boldly breaking out to the enemy's flanks and rear, encircling and dispersing him, and defeating him in detail.

Depending on the situation and the missions assigned, an offensive may be conducted against a defending, advancing, or withdrawing enemy force.

The offensive against a defending enemy is the main type of offensive engagement. It includes the following: nuclear and fire strikes against the enemy, the employment of airborne assault forces, going over to the offensive from close contact with the enemy or by advancing from the depth, breaking through the defensive positions, exploitation in depth or in the direction of a flank, encircling the enemy, dispersing his battle formation, and defeating him in detail.

The offensive against an advancing enemy force is conducted by means of a meeting engagement. **A meeting engagement occurs when both sides strive to carry out assigned missions by attacking** and is characterized by its own methods of defeating the enemy and completing his rout by means of attack by tank and motorized rifle subunits and units.

An offensive against a withdrawing enemy force is for the most part carried out by pursuing it, which consists of a combination of some of the forces routing the enemy covering subunits and the main body carrying out rapid actions along routes parallel with the enemy's withdrawal. A defending enemy usually conducts delaying actions with the aim of covering the withdrawal of the main body.

Defense is a type of combat that has the objective of breaking up or repelling an offensive (strike) by superior enemy forces, inflicting significant losses on them, and holding important areas (lines, objectives), and thereby of creating favorable conditions for going over to a determined offensive. This is achieved by means of nuclear strikes and fire from conventional weapons, by wide maneuver of resources and of fire, and by counterattacking while stubbornly holding the main areas (lines).

Defense may be forced or intentional. It is employed in those cases where an offensive is impossible or inexpedient and also when it is necessary to economize on resources on some axes in order to provide conditions for an offensive on other more important axes. Defense can be

prepared ahead of time or organized while combat is in progress, either in or out of close contact with the enemy.

The radical changes in the essence of combined arms combat that have resulted from the new level of development of weaponry and materiel are reflected in the employment of nuclear weapons and qualitatively new conventional weapons. This increases the combat capabilities of subunits and units and exerts a substantial influence on the nature of modern combined arms combat and the principles by which it is conducted.

4. The Characteristic Features of Modern Combined Arms Combat

Modern combined arms combat is characterized by resoluteness, great maneuverability, intensity and fast evolution, rapid and drastic changes in situation and a diversity of methods by which it can be conducted, and the development of high-momentum combat actions on the ground and in the air, on a broad front and in great depth.

The **resoluteness** of combat actions is predetermined by the resoluteness of political objectives, the acute class nature of a future war, the special features of the Soviet Army as an army of a new type that defends the state interests of the socialist Motherland, the excellent political and moral qualities of Soviet soldiers, and the employment of powerful modern weaponry.

Resoluteness manifests itself in the objectives of combat and the methods by which they are achieved, in the selfless actions of troops, and in their unyielding drive to accomplish their mission in any situation.

It is vitally important to indoctrinate officers in a spirit of resoluteness, boldness, and perseverance, the ability to implement decisions without hesitation, the willingness to assume responsibility for initiative displayed and to use every means to accomplish a combat mission. Indecisiveness and passivity in combat lead to defeat.

The **great maneuverability** of modern combat results from the employment of powerful weaponry, the increased mobility of combined arms units and formations because of their complete motorization and high degree of mechanization, and the absence of a continuous front line in defense and attack.

Modern weaponry makes it possible to inflict heavy losses on the enemy in a short time, and the great mobility of combined arms units and formations makes it possible to swiftly exploit the effects of nuclear and fire strikes, to attack the enemy from the line of march, and to advance rapidly to the depth while extensively maneuvering resources, including by air.

In the past, the maneuver of troops was usually limited to movement with the aim of taking up a more advantageous position with respect to the enemy in order to make strikes against him. Now it is also used for the timely exploitation by troops of the effects of nuclear and fire strikes; for the swift transfer of efforts into the depth or onto a new axis; for the negotiation of zones of radioactive contamination, barriers, demolished areas, and areas affected by fires and flood; for the withdrawal of troops in the face of enemy nuclear strikes; and for the replacement of units and subunits that have sustained heavy losses and lost their fighting efficiency.

Favorable conditions for maneuver were limited in the past because of the presence of continuous defensive zones. The first-echelon formations and units, operating in narrow zones, were initially forced to carry out a frontal attack and to break through continuous enemy defenses, i.e., to create a breach in his formation for carrying out a close or deep envelopment.

Now the defense is formed up with considerable gaps between defended areas and strongpoints. Besides, employment of nuclear weapons, or even of powerful conventional weapons alone, makes it possible to inflict heavy losses on the enemy and create breaches in his battle formation in the shortest periods of time. At the same time, the great mobility of troops makes it possible to swiftly exploit the effects of nuclear and fire strikes and to quickly switch efforts and intensify them on the axis where the most success is being achieved. Thus, the capability for wide maneuver appears from the very beginning of combat actions, and not just when fighting in the depth of the defense, as was previously the case.

Maneuver in combat is carried out with respect to fire and resources. A qualitatively new component is the shifting of nuclear strikes by retargeting delivery systems (shift of trajectory) or by moving them into given areas to strike the most important enemy targets simultaneously or consecutively. The role of maneuver by air has also increased as a result of the development of army aviation, as has that of trajectory shifts as a result of the increased range of artillery fire.

During combat training, units and formations must learn to swiftly execute any type of maneuver, to deploy within short periods of time from march formation to prebattle and battle formation, to strike rapidly with their fire weapons, and to attack the enemy quickly and, after routing him, to close up rapidly in columns and advance, using their maneuver capabilities to the maximum. This is an important condition for routing the enemy, even if he has considerable superiority in personnel and equipment.

The intensity of combat actions depends on the inner drive and capabilities of the opposing sides to conduct aggressive combat actions with decisive objectives.

In these conditions, high combat training standards, moral-political indoctrination, psychological stability, and the maximum exertion of physical powers and moral fibre are required from troops in order to achieve victory in combat.

The **fast evolution** of modern combat is determined by the power and high rate of operation of the weapons employed and the capability of troops to hit the enemy with decisive strikes in short periods of time, to attack quickly from the line of march and complete the enemy's rout following nuclear and fire strikes, and to exploit successes in depth with high momentum.

In the conditions arising in quickly evolving combat actions, the problem of the struggle to gain time arises more acutely than ever before. Officers must be able to quickly assess the situation, make a decision, and assign missions for subunits, which demands a high level of tactical training and sound skills in troop control.

Rapid and drastic changes in situation constitute a new characteristic feature of modern combined arms combat. The rate at which a situation changes is determined by the time within which substantial changes occur in the position, status, and nature of the actions of the belligerent forces, and depends on the capability of weaponry to neutralize or destroy given enemy targets in the minimum time and on the speed of troop movements.

Drastic changes in situations result from qualitative changes in the composition of friendly and enemy groupings of forces, the correlation of forces, the radiation and chemical situation, the speed with which reserves are moved up, the execution of paradrops, powerful surprise strikes by combat helicopters, and the resulting drastic changes in the methods of operating and switching from one type of combat to another.

In the past, when front lines were continuous and contacts between subunits, units, and formations close, combat actions developed evenly from one line to another, especially in breakthroughs of enemy defenses. During World War I, the rate at which the situation on the battlefield changed was determined for the most part by the speed at which the infantry moved and its capabilities to exploit the results of fire effect on the enemy, while at the end of World War II it was determined by the movement speed and striking power of armored forces and motorized infantry.

In modern combat, the main factor determining the rate at which the situation changes is nuclear weaponry. The employment of such weapons by both sides in combination with conventional weapons, the great mobility of troops, and their great firepower and striking power may lead to radical changes in the situation not merely within a few hours, but within a few minutes.

This gives rise to the need to train troops to carry out their combat missions in conditions where the situation changes extremely rapidly and drastically and to train commanders and staffs to react appropriately to these changes within the shortest periods of time, displaying resolve, initiative, creativity, and independence.

The diversity of methods by which combined arms combat may be conducted is also a new feature. As we know, by methods of conducting combat is meant the procedure for employing resources in carrying out assigned combat missions. As historical experience shows, the methods for conducting combat are continuously changing and improving as material resources develop. They also depend on the missions assigned to the troops, the conditions under which these missions are carried out, the combat capabilities of units and formations, the composition of the enemy force and the nature of its actions, and terrain features.

In past wars, a relative degree of persistence was observed in the methods by which units and formations conducted combat. They could spend hours, and even days, breaking through enemy defenses or crossing a water obstacle.

The employment of various weapons in modern combat, the highly dynamic and quickly evolving nature of combat actions, rapid and drastic changes in situations, and the rapid interchanging of types of combat necessitate the use of various methods for conducting it. In such conditions, subunits and units must be prepared to conduct, in the course of a day, both aggressive offensive actions—breaking through defenses, crossing water obstacles, defeating the enemy in a meeting engagement, and pursuing him—and defensive actions, and sometimes to execute maneuvers with the aim of disengaging and withdrawing as well.

Every type of combat and its varieties are characterized by their own methods for conducting combat actions, and their own tactical procedures, which will also change depending on the specific circumstances. Therefore, in order to achieve victory over an enemy today it is necessary to master the art of employing the various tactical procedures and to persist in finding, developing, and mastering new and more effective ones.

This feature of modern combined arms combat makes great demands on the level of training of commanders and staff officers. Now it is more necessary than ever to think creatively and fast and to act boldly, resolutely, and with initiative.

It has become possible to develop combat actions on the ground and in the air, on a broad front and in great depth, and to conduct them at high momentum because of the drastic increase in the combat capabilities of troops and the increased ranges and effectiveness of weapon systems.

The increase in the combat capabilities of modern subunits, units, and formations, the change in the nature of defense and the methods of attack,

and the need to disperse forces have led to an increase in the spatial boundaries within which and the momentum with which modern combat is conducted.

During the Great Patriotic War a rifle division would advance on a front of 1–2 kilometers and defend a zone with a frontage of 8–10 kilometers and a depth of 6–8 kilometers, but a modern division, according to the experience of NATO exercises, may advance in a zone of 20–30 kilometers and defend a zone with a frontage of 20–35 kilometers and over 20 kilometers in depth. The momentum of advance of one of our divisions in operations during 1944–45 did not exceed 12–18 kilometers per day. The infantry divisions of the capitalist countries advanced almost twice as slowly during the last war. Today a NATO division can advance at a rate of 20–40 kilometers per day and more.²⁹

In the last war the enemy could be neutralized by division fire weapons to a depth of 10–15 kilometers, achieving the most reliable effect only to the depth of the first position (2–3 kilometers). Today enemy targets can be destroyed to a depth many times greater by tactical missiles and artillery. Combat helicopters, tactical airborne assault forces, and forward detachments are capable of operating in the entire tactical depth of the enemy defenses and beyond its boundaries. Combat actions in all types of combat can simultaneously encompass practically the entire depth of the dispositions of formations, including second echelons and reserves, and not just the line of contact between the opposing sides and the immediate depth, as was once the case.

With the introduction of new and more sophisticated weaponry, the tendency for the spatial scope of combat to increase will develop even further.

The increase in the spatial boundaries within which and the momentum with which combined arms combat is conducted places greater demands on commanders and staffs in terms of their ability to organize combat, particularly fire strikes, cooperation, and troop control.

Analysis of the characteristic features of modern combined arms combat shows that high levels of training in tactics and military technology and of moral-political and psychological indoctrination in troop units and high levels of combat training, discipline, and physical conditioning in individual soldiers are necessary in order to conduct it.

Modern combined arms combat demands the following from all officer personnel: profound knowledge of military theory, a broad outlook in general science, creativity and initiative, skill in operational-tactical foresight, and the ability to predict the possible course of combat actions and to develop and master new and more effective methods for conducting combat actions.

5. The Basic Principles of Conducting Modern Combined Arms Combat

The principles of conducting combined arms combat are the main guiding regulations and the most important recommendations on the organization and conduct of combat actions by subunits, units, and formations; they are developed on the basis of the scientific synthesis of combat experience and troop exercises and are set forth in regulations and manuals.

Skill in organizing and conducting combat depends on many factors: the commander's military knowledge, morale and fighting spirit, experience, organizing abilities, intellect, willpower, and military talent, and his creative application of the principles of the art of war in the complex conditions of a situation.

As the German military theoretician K. Clausewitz aptly put it, the principles of the art of war are "a real fulcrum and lodestar for one responsible for the action."³⁰ In other words, the correct application of the principles for conducting combat, with due regard for the specific situation, assists commanders and staff officers in their practical activities, is conducive to the display of rational initiative, and to the greatest extent ensures the achievement of success in combat.

The basic principles for conducting modern combined arms combat include the following: a constantly high level of combat readiness in formations, units, and subunits; a high level of aggressiveness, resolve, and continuity in conducting combat; surprise in actions; coordinated and joint employment of the combat arms and combat service support troops in combat and the maintenance of continuous cooperation; decisive concentration of main troop efforts on the main axis at the necessary time; maneuver of nuclear strikes, resources, and fire; due regard for and use of moral-political and psychological factors in the interests of accomplishing the assigned mission; comprehensive support; maintenance and timely restoration of the fighting efficiency of troops; and firm and continuous troop control and determination to achieve the planned objectives, and to implement decisions made and missions assigned.

A constantly high level of combat readiness in formations, units, and subunits. This principle of the art of war indicates that the successful accomplishment of combat missions depends directly on a constantly high level of combat readiness in formations, units, and subunits both in peacetime and during military actions, regardless of their position in the combat (march) formation and the nature of the missions to be performed. It is only on this condition that one can count on timely deployment and engagement of formations, units, and subunits, repelling the enemy's at-

tack and hitting him with powerful strikes, and the successful accomplishment of assigned combat missions.

Marshal of the Soviet Union D. F. Ustinov, USSR Minister of Defense, notes that a high state of combat readiness "is determined primarily by the quality of personnel training in the field, at sea, and in the air, the degree to which they have mastered weaponry and combat equipment, the level of moral-political conditioning, discipline, and organization of the troops and naval forces and skill in troop control."³¹

A constantly high level of combat readiness in formations, units, and subunits is achieved by the following: correct understanding by commanders, staffs, and political organs of their missions; high moral-political state of the troops, with personnel, weapons, combat equipment, and other technical stores at authorized levels; clear-cut organization and vigilant performance of alert duty; the maintenance of weapons and combat equipment in working order and ready for immediate use; a high level of combat mastery among commanders, staffs, and troops; physical fitness, high morale, fighting, and psychological qualities, and discipline of personnel; firm and continuous troop control; constant reconnaissance and implementation of all other types of support; and the availability of reserves of material resources and the timely replenishment of them.

All these components of combat readiness are considered as a whole and are achieved by persistent daily work and the intensive training of all personnel in conditions as close as possible to those of a combat situation. The more intensively the combat training of subunits and units is conducted and the higher the quality and the more purposefully party-political work directed at improving the moral-political and psychological qualities of troops is conducted, the greater the combat readiness of the troops.

Great aggressiveness, resolve, and continuity in the conduct of combat. In order to achieve victory in combat, formations, units, and subunits must operate boldly, bravely, and with initiative and the utmost persistence and stubbornness day and night in any weather. They must restore their fighting efficiency quickly, forestall the enemy's actions, frustrate his plans, and seize the initiative and firmly retain it.

The experience of past wars shows that, all other things being equal, success in combat is achieved by the side that operates more aggressively and resolutely, struggles persistently for the initiative, and imposes its will on the enemy. It is possible to have well-trained and equipped troops in sufficient numbers and to plan combat brilliantly, but still fail to achieve success, in the absence of the requisite persistence and energy and the inflexible will to achieve the objectives set. V. I. Lenin emphasized that

“the upper hand in war belongs to the side that fights the most energetically of all and makes use of every occasion to strike the enemy.”³²

A high level of aggressiveness and resolve is expressed in the objectives of combat and the methods by which they are achieved, in the exertion of constant pressure on the enemy in any situation, in the timely exploitation of favorable conditions in the situation and friendly combat capabilities, i.e., the power of friendly weaponry, subunit mobility, superiority in terms of the morale and fighting qualities of personnel, etc., and in depriving the enemy of the opportunity to choose the methods, direction, nature, time, and place of the actions and paralyzing his will and initiative.

This principle demands that commanders at all levels constantly strive for the complete rout of the enemy. The decision to defeat the enemy must be sound and must be carried through without hesitation. It is the commander's duty to inspire this resolve in his subordinates and to constantly prepare them for the successful accomplishment of combat missions. He must always be ready to assume responsibility for the decision made and to make use of all forces, assets, and capabilities, as well as the enemy's mistakes and blunders, in order to achieve success and the complete rout of even a numerically superior enemy force.

The principle of aggressiveness and resolve in actions predetermines the offensive as the main type of combat for our forces, since only an offensive that is conducted resolutely, at high momentum, and in great depth ensures the complete rout of the enemy. V. I. Lenin repeatedly pointed out that victory could only be achieved by means of resolute offensive actions. He wrote: “Resolve and drive are three-quarters of success.”³³

Aggressiveness and resolve in an offensive manifest themselves primarily in striking the enemy with nuclear weapons, if they are used, or with heavy fire, and in the swift advance of forces in combination with wide maneuver of resources on land and in the air.

The manifestation of aggressiveness and resolve in a meeting engagement lies in forestalling enemy actions such as fire strikes, execution of an expedient maneuver—particularly on the flanks and in the rear of the enemy—deployment of troops, and the making of strikes by them. Great aggressiveness in a meeting engagement presupposes resolve and quick reactions to a continuously changing situation. Insufficient intelligence about the enemy cannot serve as grounds for refusing to operate boldly. Beginning with the initial stages of the engagement between advance guards and forward detachments and the nuclear and fire strikes made against the advancing enemy grouping, and right up to the point where the enemy goes over to the defensive or withdraws, it is necessary to attempt to display the maximum aggressiveness in order to seize the initiative and rout the advancing enemy by means of forward-moving head-on actions.

In defense, this principle is expressed in hitting the main enemy targets with nuclear and fire strikes while he is advancing and deploying, wide maneuver of resources, and making decisive counterattacks in order to eliminate the enemy once he has broken through, to restore the situation, and, given favorable conditions, to renew the offensive.

In every type of combat, subunit actions must be conducted with the utmost intensity in the employment of forces until the enemy is completely routed, continuously, and, as a rule, by hitting him with increasingly powerful strikes throughout the depth of his formation.

Continuity in the conduct of combat makes it difficult for the enemy to restore the fighting efficiency of forces that have sustained losses, to maneuver, and to organize resistance on new lines; it contributes to his defeat in detail within short periods of time. Continuity is achieved by the following: conducting combat day and night and in any weather; immediate destruction of offensive nuclear and chemical weapons and other important enemy targets; availability of reserves, skillful maneuver of nuclear strikes, fire, and resources and timely intensification of efforts on selected axes; timely relief of troops in the first and second echelons (reserve); restoration of the fighting efficiency of forces that have sustained enemy nuclear and chemical strikes; switching from one type of combat to another without delay; timely replenishment of expended reserves of missiles, ammunition, fuel, and other materiel, and conducting technical maintenance and repair of weapons, combat and other equipment and returning them to service; maintenance of high morale and fighting spirit in the troops; and skillful planning of combat by staffs and operational-tactical foresight on the part of commanders.

Surprise in combat actions and the employment of methods for carrying out combat missions unanticipated by the enemy create favorable conditions for routing the enemy within a short period of time and even with fewer resources.

Surprise has long been the most important principle of the art of war. The enormous importance of surprise in armed conflict was repeatedly emphasized by V. I. Lenin. He required that the enemy should be hit by strikes "where and when he least of all anticipates an attack."³⁴ V. I. Lenin repeatedly emphasized: "We must try to catch the enemy by surprise, to capture the moment when his forces are dispersed."³⁵

The employment in modern combat of nuclear weapons, highly effective conventional weapons, and highly mobile forces has drastically increased the role and significance of surprise strikes.

Surprise makes it possible to take the enemy unawares, to cause panic in his ranks, to paralyze his will to resist, to drastically reduce his fighting efficiency, to contain his actions, to disrupt his troop control, and to deny him the opportunity to take effective countermeasures quickly. As a result, this makes it possible to successfully rout even superior enemy forces with the least possible losses to friendly forces.

Surprise is achieved by the following: application by commanders and staffs of methods for organizing and conducting combat that are new or unanticipated by the enemy; covert concentration and unanticipated large-scale use of new types of weapons and combat equipment unknown to the enemy and novel employment of combat equipment already in service; maintenance of secrecy concerning the concept of the coming engagement and the preparations for it; misleading the enemy as to one's intentions; bringing troops to a state of combat readiness covertly and cutting to the minimum the time required to prepare for combat; hitting the enemy where he does not expect it and forestalling his actions; rapid accomplishment of missions assigned; skillful use of camouflage and implementation of measures to counteract enemy reconnaissance; strict adherence to requirements for secure troop control, communications security, and security procedures; skillful maneuver of fire and resources; extensive employment of aviation, forward detachments, and airborne and amphibious assault forces; and maximum exploitation of the capabilities of weapons and combat equipment and the morale and fighting qualities of personnel.

The conduct of combat at night is conducive to achieving surprise. However, as the experience of modern local wars has shown, combat actions at night demand a high level of specialized training in subunits and units, thorough preparation for combat, careful organization of cooperation, skillful use of reconnaissance, surveillance, and troop control assets, and the timely destruction of enemy illumination equipment and night vision devices.

Surprise is achieved by intensive and creative activity on the part of commanders and staffs and skillful actions on the part of troops. Achieving surprise involves misleading the enemy, exploiting his unpreparedness, displaying the maximum in terms of battlecraft, stratagems, and resourcefulness, and surpassing the enemy in the art of war.

Achievement of surprise and the use of methods of action and procedures unanticipated by the enemy depend on a high level of tactical training in command personnel; on their constant knowledge of the enemy, his tactics, and his strong and weak points; and on their ability to quickly assess and exploit a situation and enemy mistakes and blunders, and to display creativity in finding ways to ensure surprise in the diverse conditions of a situation.

Surprise must form the basis for all troop combat activities. Surprise achieved at the beginning of an engagement may become exhausted after a while. Its effect is limited to the time that the enemy needs to eliminate the unequal conditions caused by unanticipated actions on the part of the

opposing side. This is why it is necessary during an engagement to strive both to make the maximum use of surprise already achieved and to achieve a new surprise in the actions of all troop elements.

While striving to achieve surprise, it is at the same time necessary to take all possible measures to prevent this on the part of the enemy. This is achieved by conducting reconnaissance aggressively and continuously, by foreseeing the enemy's intentions and possible actions, by great vigilance on the part of all personnel, and by constant combat readiness of forces to quickly counteract the enemy and to frustrate and repel his surprise actions.

Coordinated joint employment of the combat arms and combat service support troops in combat, and the maintenance of continuous cooperation. Success in modern combined arms combat can only be achieved by the joint efforts of all participating resources on the basis of their close and continuous cooperation and the fullest utilization by each of their combat capabilities.

On the basis of this principle, combined arms commanders must have the skill to coordinate the actions of units and subunits of the combat arms and combat service support troops, both with one another and with nuclear strikes and strikes by aviation and other fire weapons, in terms of missions, axes, lines, time, and the methods by which the assigned missions are carried out.

Cooperation is organized and implemented in the interests of those motorized rifle and tank units and subunits operating on the most important axes and carrying out the main missions.

Cooperation procedure is determined by the commander as he makes his decision; he gives instructions in this regard when assigning missions. Subsequently, the cooperation procedure is specified with more detailed consideration of problems—at the depth of the immediate objective in the case of an offensive, and along the enemy's probable lines of action and the counterattack axes of friendly subunits in the case of defense. Besides the commander, the following participate in organizing cooperation: staff officers, the chiefs of the combat arms, combat service support troops, and support services, the commanders of attached and support elements, and representatives from adjacent elements and aviation.

Cooperation is a most important condition for success in modern combined arms combat. Where various types of highly maneuverable and quick-operating weapon systems are employed, their coordinated use is the most important condition for achieving victory in combat.

Subunits, units, and formations of all combat arms must be prepared for the joint performance of missions. The main efforts in officer training must be directed at developing in officers practical skills in organizing cooperation and combat as a whole—in the field and, when the situation forbids, on terrain mockups or a map. Skillful organization and constant maintenance of cooperation constitute a commander and staff's most important duty while preparing for and conducting combat. It is exactly here—in the ability to organize cooperation precisely and maintain it constantly—that the commander's art of war, organizing abilities, tactical maturity, and ability to exercise troop control in combat are focused.

Cooperation must be continuous throughout the engagement. Even a short break in cooperation gives rise to disorganization in troop actions, reduces the force of a strike against the enemy, and leads to unjustified losses.

Continuity of cooperation ensures effective and decisive defeat of the enemy, intensification of efforts at the requisite place and time, skillful combination of nuclear strikes, fire from conventional weapons, and strikes and maneuvers by the troops, and, in the final analysis, successful accomplishment of the assigned combat missions by combined efforts.

The initiative of subordinate commanders is becoming especially important for maintaining continuous cooperation. In all cases where there is a break in cooperation, they must themselves strive to establish communications with adjacent elements and the senior commander and coordinate their actions without waiting for special instructions from the senior commander (chief).

The skillful coordination of the actions of all combat assets, combat arms, and combat service support troops engaging in combat demands thorough knowledge of their combat capabilities and the methods for their employment under various circumstances, as well as quick and accurate calculations. Cooperation will be effective only if the commander of each subunit engaging in combat has a sound knowledge and correct understanding of the objective of the engagement, his individual and the overall combat missions, and the methods for carrying them out; knows with whom, when, how, and for what purpose he is cooperating; gives the senior commander (chief) timely information about the situation; and displays creative initiative aimed at maintaining unbroken communications and continuous cooperation.

The decisive concentration of the main troop efforts on the main axis at the necessary time is essential in order to achieve victory in combat. Decisively concentrating one's main efforts to perform the principal missions on the most important axis or in the most important area at the necessary time, rather than dispersing resources evenly along the entire front, implies achieving the requisite superiority over the enemy in resources, creating unfavorable conditions for him, and, in the final analysis, winning a victory over him.

F. Engels referred to the concentration of efforts as a great principle of tactics.³⁶ V. I. Lenin repeatedly pointed out the necessity of utilizing it: “Having an overwhelming superiority of forces at the decisive moment and at the decisive point—this ‘law’ of military success is also the law of political success. . . .”³⁷

Application of this principle played a decisive role in the outcome of most engagements and encounters in the past. During the Great Patriotic War, concentration of efforts was utilized on the strategic, operational, and tactical scales. This testifies to a high level of skill in our generals and officers, to their profound insight into the enemy’s concepts, and to their creativity and skill in determining the enemy’s groupings whose rout would lead to a loss of stability in his defense or the breaking up of his offensive.

This principle is put into practice by skillful allocation of resources in terms of missions, axes, areas, and targets for strikes; by employing most resources, the most battleworthy units and subunits, and the most powerful and effective weaponry on the main axis or in the main area; by large-scale employment of nuclear weapons and other weaponry; and by boldly maneuvering resources and fire during the engagement.

In an offensive engagement where nuclear weapons are employed, decisive superiority over the enemy in resources will be achieved on selected axes by means of nuclear strikes, strikes by front and army aviation, and swift actions by the main body—primarily from the line of march and in a sufficiently broad zone—with the simultaneous landing of tactical airborne assault forces. If nuclear weapons are not employed, the main efforts are concentrated by building up a considerable quantity of resources in a limited sector, by hitting the enemy with artillery, tank, and ATGM fire and front and army aviation strikes, by intensifying efforts on the main axis by committing second echelons and reserves and landing tactical airborne assault forces.

The principal methods for concentrating efforts in defense are as follows: hitting the enemy with nuclear, fire, and air strikes as he advances or deploys; preparation and occupation by units and subunits of areas on whose retention the stability of the defense depends; making counterattacks during the engagement by second echelons on previously prepared (new) axes or occupation by these second echelons of defensive positions in the depth; and the maneuvering of reserves and of resources withdrawn from quiet sectors of the front.

When following this principle, one should bear in mind that in modern combat there is the constant threat of enemy employment of nuclear weapons. This gives rise to the need to disperse troops and adopt measures to reduce losses when the enemy makes nuclear strikes. This is why the

need to disperse resources should be taken into consideration when massing them.

The degree of dispersion depends on the mission to be performed, the distance separating friendly forces from the enemy, the protective features of the terrain, and the capabilities of troop control assets. It must provide for timely concentration of efforts and rapid dispersal of resources along the front line and in depth after the combat mission has been performed.

Maneuver of resources, nuclear strikes, and fire contributes to success in modern combat. Units and subunits must carry out bold, resolute, and timely maneuvers of resources. Skillful application of this principle makes it possible to seize and retain the initiative, to disrupt the enemy's concept, to conduct combat successfully in a situation that has changed, to achieve the objectives of an engagement in a shorter time and with fewer losses, and to defeat superior enemy forces in detail.

Maneuver of resources is conducted with the aim of creating a favorable grouping of forces and ensuring their most expedient employment in performing assigned missions or missions that have arisen; and to hit the enemy flanks and rear with decisive surprise strikes and withdraw friendly forces from enemy strikes. Maneuver of resources must be based on the timely and fullest possible exploitation of the effects of nuclear and fire strikes on the enemy.

The types of maneuver are close envelopment, deep envelopment, a combination of the two, and withdrawal. A close envelopment is a maneuver that is executed to strike the enemy flank. It is carried out in close tactical cooperation and mutual fire support with subunits and units attacking frontally. A deep envelopment is a deeper maneuver executed by troops to strike the enemy rear. It is carried out in tactical cooperation with subunits and units operating from the front and with tactical airborne assault forces. Withdrawal is a maneuver that may be used to remove friendly forces in the face of an enemy strike, to gain time, and to occupy a more favorable line (position). It is carried out only with the permission of the senior commander (chief).

The maneuver of nuclear strikes and fire consists in concentrating strikes and fire on the most important enemy groupings, installations, and targets, in distributing the strikes and fire to hit (destroy) several groupings, installations, or targets simultaneously or consecutively, and in switching strikes and fire onto new targets.

A maneuver must be simple in concept and must be executed swiftly and covertly and come as a surprise to the enemy. Swiftiness of maneuver is achieved by organizing it in short periods of time, by high rates of

advance on the part of units and subunits, by negotiating various obstacles and enemy centers of resistance from the line of march, by the employment of helicopters and transport aircraft to airlift subunits, combat equipment, and materiel, and by timely and comprehensive support.

The availability of reserves is vitally important for the timely execution of a maneuver and for achieving continuity in combat actions. Reserves make it possible to intensify efforts on a selected axis, to replace units and subunits that have sustained great losses, to rapidly restore the fighting efficiency of forces, to transfer efforts to new axes, and to perform missions that arise unexpectedly. Expended reserves must be reestablished as quickly as possible.

The decisiveness, rapid evolution, and intensity of modern combined arms combat, the great mobility of units and subunits, and the employment of quick-operating electronic troop control equipment make demands on troops, not only with regard to bold maneuver, but also with regard to quick reaction to any change in the situation, flexibility in the employment of firepower, and the accomplishment of combat missions in the minimum time and with the maximum effectiveness, high momentum, and minimum losses. V. I. Lenin required that strikes should be carried out swiftly and decisively. It is necessary to “pull up sluggishness by the roots.”³⁸

In past wars skillful maneuver, mobility, and high momentum in combat actions led to the rout even of superior enemy forces.

Today, thanks to the fact that our personnel are equipped with highly effective materiel, and have a good level of combat training and high morale and fighting qualities, our forces have a mobility that enables them to maneuver resolutely and boldly, to react immediately to any—even the most drastic—changes in the situation, to employ firepower flexibly, to rapidly detect and destroy important enemy targets and installations, and to act at the requisite time and place more rapidly than the enemy and unanticipated by him, either with or without the employment of nuclear weapons.

Putting our forces' mobility characteristics to use depends on the theoretical development and practical mastery of the methods for conducting combat actions that provide for the effective employment of all resources for the purpose of routing the enemy and achieving the planned objectives in the shortest possible time, and also on the skill and creativity of commanders and staffs.

The following may be classified among the most important methods for achieving great maneuverability: effective neutralization of the enemy throughout the depth of his battle formation by means of nuclear weaponry and conventional fire weapons, and the timely and effective exploitation of their effects; extensive employment of aviation, tactical airborne

assault forces, and forward detachments; swift advance in prebattle formation and in columns without dismounting; the conduct of maneuvering combat actions along axes; swift negotiation of zones of radioactive contamination, barriers, demolished areas, fires, and floods; crossing water obstacles from the line of march, etc.

Due regard for the use of moral-political and psychological factors in the interests of performing assigned missions exerts a profound effect on all aspects of troop combat activities, commanders' decisions, and the nature, course, and outcome of combat actions carried out by subunits, units, and formations. The human being always was and still is the main force in combat.

V. I. Lenin pointed out that "in any war, victory in the final analysis depends on the morale of those masses who shed their blood on the battlefield."³⁹ High morale in personnel increases the combat capabilities of forces many times over, and provides a certain qualitative superiority over the enemy. As experience shows, a high level of consciousness and moral-political solidarity and boundless dedication to the Communist Party and Soviet government raise the fighting efficiency of troops, give rise to gallantry, courage, and endurance and lead to victory in the name of the socialist Motherland.

In modern combat, personnel have to withstand great psychological and physical stresses. For this reason, moral-political indoctrination conducted during training periods and exercises must be directed toward developing a firm will, stable mentality, self-control, restraint, persistence, and aggressiveness in soldiers.

The maintenance and operation of weaponry and combat equipment now requires skillful and coordinated collective actions and interoperability. This is why moral-political and psychological indoctrination of troops is directed toward creating military collectives in crews, detachments, subunits, and units that achieve cohesiveness on the basis of friendship, comradeship, mutual assistance, and a high level of military discipline and efficiency.

In order to gain victory in combat, commanders and political workers must have a thorough knowledge of and due regard for the moral-political state of their troops, conduct aggressive political work to reinforce this state, systematically study the moral-political qualities of the enemy, discover his strong and weak points, aggressively counteract his ideological diversions and propaganda, and purposefully exert an ideological and psychological influence on enemy troops.

Comprehensive support consists in organizing and implementing measures for maintaining a high state of combat readiness in troops, preserv-

ing their fighting efficiency, and creating favorable conditions for the successful and timely accomplishment of assigned missions.

Success in combat in many respects depends on comprehensive support. It is conducted continuously, both while preparing for and during combat. Support is organized on the basis of the commander's decision and implemented by all combat arms, and by combat service support troops and logistics units and subunits in the case of more complex measures requiring specialized training of personnel and the employment of specialized equipment.

The organization of comprehensive support is one of the principal duties of commanders, staffs, and the chiefs of combat arms, combat service support troops, and support services. The measures they implement must correspond to the concept of the engagement and provide for concentrating the main efforts of the supporting forces and equipment on the decisive axis (in the decisive area); they must also allow for flexible maneuver of these resources, depending on the situation that develops.

Comprehensive support of subunits and units includes combat, technical, and logistic support.

Combat support consists in organizing and implementing measures to prevent surprise attacks by the enemy, reducing the effectiveness of his strikes, and creating favorable conditions for friendly forces to enter combat in a timely and organized fashion and to conduct it successfully.

The types of combat support are reconnaissance, NBC defense, electronic warfare, camouflage, engineer, chemical, topogeodesic, and hydrometeorological (meteorological) support, and security. The main organizers of combat support are the formation (unit) commander, chief of staff, and the chiefs of the appropriate arms and services.

Reconnaissance is especially important in modern combat. It is the most important type of combat support, since without reliable intelligence on the enemy, the terrain, and the radiological and chemical situation it is impossible to employ friendly resources correctly, to perceive the enemy's intention, and to forestall his actions. Because of the large volume of intelligence missions, reconnaissance is conducted constantly and aggressively via the integrated employment of friendly resources to determine the coordinates and location of enemy targets with the greatest possible accuracy and provide them to the troops in a timely manner, and to provide the commander with the timely intelligence data needed for decisionmaking and troop control in combat.

Electronic warfare is considered by foreign military experts to be an important type of combat support. Its role is constantly increasing, since electronic equipment exerts a decisive influence on the stability of troop and weapons control.

Electronic warfare is considered to be a system of measures taken with the aim of disrupting the enemy's troop control, reducing the effectiveness of his reconnaissance, weapons, and combat equipment, and ensuring the stable operation of friendly troop and weapons control equipment. It includes electronic intelligence via radio interception and direction-finding, electronic suppression by jamming, and electronic protection of friendly electronic equipment against enemy jamming and radiation-homing weapons, and against cross-interference in friendly electronic equipment.

Electronic warfare measures must be implemented concurrently with the destruction of the most important enemy electronic targets. Such targets may be enemy command posts, intelligence and electronic warfare assets, and forward air controllers and radars.

The NATO armies are contemplating setting up radio jamming groups in subunits equipped with organic radios in order to conduct electronic suppression of radio communications, and using smoke, searchlights with infrared filters, and other equipment to suppress enemy optoelectronic equipment and ATGMs.

In order to provide for the electronic protection of his own electronic equipment, the enemy envisages organizing communications between control posts via several interchangeable radio nets that operate in different frequency bands, establishing secure radio nets, making use of short-duration signals for subunit troop control, and training radio operators and subunit commanders for operation when there is powerful enemy jamming.

For purposes of electronic security, it is necessary to exploit the protective properties of terrain, to adhere strictly to the rules of secure troop control, to make use of directional antennas for the operation of radios, and to operate at reduced outputs.

Camouflage is an important type of combat support. Its significance has grown drastically in modern combat. This is associated primarily with the increased role of enemy technical reconnaissance assets in obtaining intelligence data and the introduction of precision homing and automated weapons and weapon systems.

It is becoming increasingly difficult to conceal the position of friendly forces and mislead the enemy as to the objective of an engagement. However, these missions may be successfully carried out if the weak points of enemy reconnaissance assets and weapon systems are known, skillful use is made of camouflaging assets, and the requirements of camouflage discipline are strictly adhered to. For example, the Assault Breaker

reconnaissance-strike complex detects moving targets on open terrain but not targets moving along planted areas, high-tension power lines, in forests, and over broken terrain. This must also be taken into account in the disposition of subunits and units on the ground and while they are advancing.

Technical support consists in organizing and implementing measures for the maintenance (storage) of combat and other equipment, ammunition of all types, and military technical stores, for keeping them in a constant state of readiness for combat employment, and also for recovering and repairing them when damaged and for returning them to service.

Logistic support is organized and implemented for the purposes of maintaining troops in a battleworthy state, of providing them with the appropriate types of materiel, and of establishing conditions for carrying out assigned missions.

Logistic support includes supply, medical support, veterinary support, trade and consumer support, billeting, and financial support. The deputy commander for logistics of a formation (unit) is the principal organizer of logistic support.

The maintenance and timely restoration of troop fighting efficiency. The fighting efficiency of subunits, units, and formations must be maintained and quickly restored to a level that ensures successful accomplishment of combat missions.

Great attention has always been given to the problem of maintaining a constantly high level of troop fighting efficiency. At the same time, on analyzing the experience of past wars, it is possible to speak of a relatively slow increase in losses sustained by units and formations as an engagement developed and a relatively predictable distribution of losses throughout the elements of a troop battle formation. Losses were sustained primarily by first-echelon units, mainly infantry and tanks, but the organizational integrity of the units and formations was not usually compromised in the process.

The possibility of extensive enemy employment of NBC weapons, precision homing and automated systems, army aviation, multiple rocket launcher systems, and laser-guided munitions establishes the prerequisites for simultaneously inflicting heavy losses on troops throughout the depth of their battle formation and for abrupt increases in losses within extremely limited periods of time.

A high level of losses may lead to compromise of the organizational integrity of formations and units and of troop control and support systems

and to a reduction in troop fighting efficiency; it may also have an appreciable effect on the successful performance of combat missions. This is why maintenance and quick restoration of troop fighting efficiency has become one of the main principles of the art of war.

The fighting efficiency of formations, units, and subunits, is dependent on the numerical strength of personnel and their morale, fighting spirit, and psychological and physical state; the level of combat equipment and weaponry and their technical condition, the level of training, teamwork in action, and combat experience in subunits, units, and formations, the supply situation, and the level of training of officers and staffs.

The maintenance of troop fighting efficiency implies preserving it during an engagement at a level that ensures the successful accomplishment of assigned missions. To do this, it is necessary to perform combat missions skillfully, with the minimum losses in personnel, weapons, and combat equipment; to provide troops with reliable protection against enemy NBC weapons; and to quickly restore the fighting efficiency of subunits, units, and formations, and recover and repair combat hardware that has temporarily gone out of action as the result of enemy strikes.

Nuclear, chemical, and bacteriological (biological) weapons and precision homing and automated conventional weapon systems are the most powerful troop weaponry. The timely destruction of these weapons is the principal and most reliable method of reducing the effectiveness with which the enemy can employ them.

Thorough preparation and implementation of measures for protecting troops from enemy NBC and precision weapons, particularly his reconnaissance-strike complexes, is vitally important in maintaining fighting efficiency. The main measures are as follows: timely detection of enemy preparations to employ nuclear, chemical, and bacteriological (biological) weapons and precision conventional weapon systems; dispersal of troops and periodic changes of their disposition areas; engineer preparation of areas (positions) occupied by troops and preparation of routes for maneuver; exploitation of the protection and camouflaging features of equipment and terrain; warning troops of the immediate threat and onset of enemy employment of NBC weapons; notifying troops of radioactive, chemical, and bacteriological (biological) contamination; medical and veterinary measures; ensuring the safety and protection of personnel when operating in contaminated zones, demolished areas, and areas affected by fires and floods; and detecting enemy employment of NBC weapons and carrying out damage control.

Restoring troop fighting efficiency is an important task for commanders and staffs. This takes in a large system of measures, the main ones

being: restoring compromised troop control; updating the combat missions of subunits that have retained their fighting efficiency; withdrawing subunits that have sustained nuclear and fire strikes to areas where their fighting efficiency can be restored; and replacing personnel in the subunits to be reconstituted, replenishing them with weaponry, equipment, and materiel, and strengthening the political-moral state and psychological endurance of personnel.

The restoration of the fighting efficiency of subunits and units is usually conducted within the previous organizational structure, but sometimes by establishing combined newly activated units as well. It must be conducted within periods of time that make it possible to forestall the enemy in the transition to aggressive actions.

Firm and continuous troop control and determination to achieve the planned objectives and to implement decisions made and missions assigned. The experience of past wars shows that success in an engagement has always depended on the quality of troop control. Skillful troop control contributes to routing the enemy with minimum losses and to achieving a victory within short periods of time. Conversely, a low level of troop control or its loss for a certain time may result in defeat, even if sufficient resources are available and the situation is favorable.

Troop control must be firm and continuous. This is achieved mainly by being constantly aware of the situation and foreseeing the most significant changes in it; by making timely decisions, preparing thoroughly for their implementation, and implementing them persistently; by ensuring the skillful organization, precise functioning, and survivability of control posts; by the availability of stable communications with the troops; by the precise functioning of automated troop control systems; and by skillful combination of centralized troop control with initiative allowed to subordinates.

The decision constitutes the basis for troop control. It must clearly define the objective of the engagement and the methods by which it is to be achieved. The objective of the engagement is derived from the essence of the combat mission assigned by the senior commander (chief), while the methods for achieving the objectives are derived from an estimate of the conditions in which this mission is to be performed. For this reason, the decision usually includes an analysis of the mission assigned and an estimate of the situation.

The objective of an engagement must be in keeping with a force's combat capabilities and the conditions of the actual combat situation, and it must be proportionate to the resources to be employed, with regard to their correlation with the enemy's resources.

The objective of an engagement is the end result that must be achieved in a specific combat situation. In an offensive, the objective of an engagement is to rout the opposing enemy force and to seize certain areas (lines, objectives) on the ground that provide for the further development of the offensive. In defense, the objective of an engagement is to break up or repel an enemy offensive, to hold occupied areas (lines, objectives), and to establish conditions for subsequently going over to the offensive.

The requirement that the decision be scientifically sound is most fully met by keeping the objective of an engagement in conformity with available capabilities. This presupposes a comprehensive and thorough estimate of the situation that has developed, with thorough consideration of troop combat capabilities and the quantitative and qualitative correlation of forces of the opposing sides, adoption of a well-founded decision and the assigning of demanding and aggressive, but practically realizable missions to subordinates, and precise organization of comprehensive support and troop control.

Two extremes are possible in a situation estimate: overestimating friendly forces and underestimating the enemy or, conversely, underestimating one's own capabilities and overestimating the enemy. The first extreme manifests itself in troops being assigned impossible missions, which may result in the objective of the engagement not being fully achieved, or even in defeat. The second extreme usually results in the loss of a realistic opportunity to rout the enemy.

For planning to be realistic and scientific, it is not enough just to consider the quantitative correlation of forces between the opposing sides and to assess their fire and maneuver capabilities in merely quantitative terms. It is just as important to make a thorough assessment of the qualitative state of resources: the level of combat training of troops, the state of training of commanders and staffs of all levels, whether the units and subunits have combat experience, and how physically and morally fit personnel are to carry out combat missions. It is troop quality that makes it possible to wage war by skill rather than by weight of numbers.

The qualitative characteristics of troops constitute the main indicator of the level of their combat capabilities. Only on the basis of a thorough analysis of troop quality can one plan an engagement correctly, define combat missions soundly, and select the most expedient methods to conduct the engagement. But in order to exercise troop control in a scientific fashion, one must have a sound knowledge of military theory and a high level of training in military technology, and he must perfectly master the art of leading troops in the complex conditions of modern war. The words of V. I. Lenin sound particularly relevant today: “. . . In order to exercise control, one must be competent, one must have a full and precise knowl-

edge of all conditions of production, and one must know the technology of this production at its modern level. . . . ”⁴⁰

Thus, the improvement of weaponry has substantially changed the essence and nature of modern combined arms combat and predetermined the development and application of new principles for organizing it, and also of new methods for conducting combat actions. A mastery of these new principles and methods, and of the art of applying them in practice, is the most important condition for achieving success in combat.

Notes

1. V. I. Lenin, *Polnoye sobraniye sochineniy* [Complete Collected Works], IX, 156. [Hereafter cited as Lenin.]
2. M. V. Frunze, *Izbrannyye proizvedeniya* [Selected Works], Moscow, 1977, p. 71.
3. Numerical data and factual material on enemy nuclear and other NBC weapons are cited from *Zashchita ot oruzhiya massovogo porazheniya. Spravochnik* [Protection from NBC Weapons: A Reference Book], Moscow, 1984.
4. See *Razoruzheniye. Spravochnik* [Disarmament: A Reference Book], Moscow, 1979, p. 60.
5. See *Vooruzheniye i tekhnika. Spravochnik (Inostrannyye armii)* [Weaponry and Equipment: A Reference Book (Foreign Armies)], Moscow, 1984, p. 269. [Hereafter cited in English.]
6. See *Sovetskaya Voyennaya Entsiklopediya* [Soviet Military Encyclopedia], 1976, II, 108. [Hereafter cited in English.]
7. See *Weaponry and Equipment*, p. 159.
8. *Ibid.*, p. 279.
9. *Ibid.*, p. 65.
10. *Ibid.*, p. 70.
11. See N. K. Glazunov and P. Ye. Maslennikov, *Sukhoputnyye voyska kapitalisticheskikh gosudarstv* [The Ground Forces of the Capitalist States], Moscow, 1980, p. 345.
12. See *Weaponry and Equipment*, pp. 66, 71.
13. See Glazunov and Maslennikov, *op. cit.*, p. 297.
14. See *Weaponry and Equipment*, pp. 50, 53.
15. See N. K. Glazunov and N. S. Nikitin, *Operatsiya i boy* [Operation and Engagement], Moscow, 1983, p. 71.
16. See *Weaponry and Equipment*, 1982, p. 35.
17. See *Soviet Military Encyclopedia*, 1979, VII, 657.
18. See *Tanki i tankovyye voyska* [Tanks and Tank Forces], Moscow, 1980, p. 13. [Hereafter cited in English.]
19. See *ibid.*, p. 17.
20. See *Soviet Military Encyclopedia*, VII, 657.
21. See *Tanks and Tank Forces*, p. 249.
22. See *ibid.*, p. 15.
23. See *Weaponry and Equipment*, p. 175.
24. See *ibid.*, pp. 167–69.
25. See *Weaponry and Equipment*, p. 124.
26. See *ibid.*, pp. 129–30.
27. See *ibid.*, p. 14.
28. See A. I. Paliy, *Radioelektronnaya bor'ba* [Electronic Warfare], Moscow, 1981, p. 4.
29. See N. K. Glazunov and P. Ye. Maslennikov, *op. cit.*, pp. 176, 261, 265.
30. K. Clausewitz, *O voyne* [On War], 4th ed., Moscow, 1937, I, 146.

31. D. F. Ustinov, *Sluzhim Rodine, delu kommunizma* [We Serve the Motherland and the Cause of Communism], Moscow, 1982, p. 83.
32. Lenin, IX, 186.
33. Lenin, XI, 340.
34. Lenin, VI, 176.
35. Lenin, XXXIV, 383.
36. See Marx, K., and F. Engels, *Sochineniya* [Works], 2nd ed., XIV, 198.
37. Lenin, XL, 6.
38. Lenin, L, 306.
39. Lenin, XLI, 121.
40. Lenin, XL, 215.

Chapter 2. The Offensive Engagement

1. The Essence and Features of an Offensive Engagement

Throughout the centuries of military history, the tactics of offensive actions have been continuously changing, mainly because of improvements in the forces and means of armed combat.

At an early stage in the development of military affairs, when the destruction of the enemy was achieved solely by the direct physical effect of soldiers using “cold steel,” an offensive would be carried out in compact and closed formations and would not develop in great depth. At that time, an offensive was essentially composed of only one element—a strike by troops.

Subsequently, when combat actions became more complex, other elements also emerged in the offensive engagement. Thus, with the invention of gunpowder and firearms, fire became an important component of combat. At the same time, maneuver of forces was becoming increasingly important. Maneuver was applied particularly well in combat by such Russian military leaders as Peter the Great, P. A. Rumyantsev, A. V. Suvorov, M. I. Kutuzov, and others.

As weaponry developed, the relationship between fire, strike, and maneuver became deeper and more comprehensive, and the way they interacted in an offensive engagement also changed. In the period when the attacking force’s fire effect on the enemy was relatively weak, its role was limited to supporting their actions in preparation for the decisive moment of the attack, i.e., a bayonet or saber assault. As the power of firearms increased, and particularly after the appearance of rifled weapons, the significance of firepower in combat grew steadily. Since the second half of the nineteenth century, losses to the enemy in combat have been caused mainly by fire. During the Napoleonic Wars 40 percent of all casualties were inflicted by rifle and artillery fire and 60 percent by “cold steel,” while the number of casualties inflicted by fire weapons in the Franco–Prussian War of 1870–71 reached 90 percent.¹

The role played by firepower in an offensive engagement gained further importance with the appearance of quick-firing and long-range artillery and machine guns. For example, during World War I, the firepower of infantry divisions became 2.5–3 times greater because of their having a full complement of automatic weapons and artillery.² As a result, hand-to-hand combat (the infantry bayonet attack or the cavalry saber assault) gradually gave way to close combat employing firearms.

A grouped battle formation was built up around powerful offensive fire weapons, i.e., close support guns and, later, tanks as well, which led to increased troop maneuverability and permitted the most rapid penetration by forces into the depth of the enemy defense.

The offensive engagement assumed a **combined arms character**. Success was achieved through the joint efforts of all combat arms and assets participating in combat. For this reason, the role of cooperation increased. At the same time, under the influence of new weaponry, the aggressiveness and intensity of combat actions increased and the spatial scope of operations (engagements) widened.

The establishment of positional front lines during World War I presented a new challenge to attacking troops: the need to penetrate strong and deeply echeloned enemy defenses. This was achieved by breakthrough, i.e., by creating a breach in the enemy defenses, first in a narrow sector and then developing it in depth and extending it toward the flanks.

The breakthrough as a method of offensive actions was first used in the Russo–Japanese War of 1904–5. However, because of lack of experience, neither of the opposing armies was able to achieve any substantial successes in breaking through enemy defenses. This problem was not fully solved even during World War I. Finally, toward the end of the war, it became possible for forces to penetrate the tactical depth of an enemy defense with massed infantry, tank, air, and artillery strikes. However, the problem of exploitation and turning a tactical breakthrough into an operational one remained unsolved, since the combat equipment's radius of action did not exceed the boundaries of a tactical zone of defense.

During the Civil War, the Red Army applied basically the same offensive methods as those established by the Russian Army in World War I. However, because of the maneuvering character of the Civil War, the most resolute combat methods were used in all types of combat, including wide maneuver and bold initiative. An extended line of riflemen was the most widely used configuration for battle formations, which were as a rule quite shallow. By skillfully massing resources on selected axes and using large cavalry formations for exploitation, the Red Army command strove

to achieve deep enveloping strikes, quick breaching of enemy defenses, and rapid exploitation in great depth.

Using the experience of World War I and the Civil War and giving due regard to qualitative changes in the state of technical equipment in armies (i.e., the rapid development of tank forces, aviation, artillery, air defense assets, and airborne troops), Soviet military thought in the 1930s devised an essentially new theory of offensive actions—the theory of the offensive engagement in depth. Its essence consisted in simultaneously neutralizing the enemy defense by fire throughout the depth of his formation, breaking through the tactical zone on selected axes by using powerful offensive groupings of rifle troops reinforced with tanks and artillery and supported by aviation, and then carrying out swift exploitation by moving up mobile tank, motorized infantry, and cavalry formations in cooperation with airborne assault forces dropped behind enemy lines.

The experience of the Great Patriotic War testified to the practicality of the theory of offensive engagement and operation in depth. It was brilliantly put into practice by the Soviet command and proved to be very effective in routing the enemy. New methods of preparing and conducting an offensive were also developed on the basis of practical experience, particularly with regard to organizing fire strikes on the enemy, massing resources on decisive axes, carrying out tactical and operational breakthroughs, and exploitation.

In the Belorussian, Iasi-Kishinev, Vistula-Oder, Berlin, Manchurian, and other offensive operations, Soviet troops demonstrated unsurpassed skills in carrying out highly maneuverable offensive actions and quickly evolving meeting engagements and battles. They aimed at quick encirclement and rout of large enemy groupings, rapid crossing of wide water obstacles, and relentless pursuit of the enemy at high momentum and in great depth.

Objective reasons for further development of offensive tactics emerged after the war. They resulted from the radical modernization of combined arms equipment, the increased proportion of tanks and other armored vehicles within forces, the improved effectiveness of artillery, aviation, helicopters, and organic troop air defense weapons, the acquisition by enemy forces of precision homing weapons, improved engineer equipment and combat, technical, and logistic support equipment, and the extensive introduction of electronics and automation in the field of troop control.

Nuclear weapons are now especially important in the offensive engagement. Their employment increases the decisiveness of an offensive, making it possible to achieve quick and reliable destruction of the enemy. The main method of conducting offensive actions using nuclear weapons is to carry out simultaneous nuclear and conventional strikes throughout the

depth of the enemy defense and then to complete his rout by means of motorized rifle and tank subunits and aviation.

In order to succeed in a modern offensive engagement, the following factors are acquiring paramount importance: skillful organization and continuous conduct of reconnaissance, effective nuclear (fire) strikes against the enemy, decisive exploitation by subunits of the effects of the nuclear and fire strikes to advance swiftly into the depth of the enemy's dispositions, constant and precise cooperation, effective protection against NBC weapons, quick intensification of efforts and exploitation in depth, the ability to conduct combat with limited resources, and timely restoration of subunit fighting efficiency after enemy nuclear strikes and the organization of subsequent actions by elements thus affected.

In an offensive engagement using conventional weapons alone, the enemy is routed by sequentially defeating the defending subunits of his first and second echelons and reserves, subjecting him to artillery strikes, and resolutely moving up motorized rifle and tank subunits into the depth of his defense to seize tactically advantageous areas and lines.

The employment of new weaponry increases the **decisiveness** of an offensive engagement. This feature was also inherent in the offensive engagements of past wars. It is brought about by the continuous increase in troop combat capabilities and by their ability to rout the enemy, sometimes without having overall superiority over him in resources, to carry out swift strikes at considerable depth, to maneuver quickly, to conduct day and night combat in summer and winter, to make bold raids behind enemy lines while separated from the main body, and to relentlessly pursue the enemy.

The decisiveness of offensive actions is even more pronounced today. Motorized rifle and tank subunits with highly effective combat equipment and weapons are capable of quickly breaching a deeply echeloned enemy defense, in spite of its large concentrations of antitank weapons and minefields; of combating enemy offensive nuclear weapons, armored vehicles, self-propelled artillery, various types of fire weapons, fast aircraft and helicopters, reconnaissance-strike complexes, airborne and amphibious assault forces, and airmobile subunits; of negotiating radioactive contamination zones, demolished areas, and areas affected by fires and floods; of crossing large water obstacles; and of conducting aggressive combat actions in any season, at any time of day or night, and on any terrain, be it mountains, desert, forest, or the arctic regions. Aggressive and resolute actions make it possible for the attacking forces to frustrate the enemy's plans, impose their will on him, seize and keep the initiative, and act with the utmost determination.

The ever-increasing involvement of airspace in active combat is an indicator of the great decisiveness of a contemporary offensive engagement. Even during World War II, a most important role in carrying out combat missions was played by aviation and airborne assault forces, as a result of which an offensive would often consist of a kind of envelopment of the enemy from the air.

Today, this tendency has been further developed. An offensive has a pronounced **air-land character**. This means that in order to achieve success in combat, it is of paramount importance to ensure firm troop control of various types of forces, thorough organization of cooperation between troops and aviation, tactical airborne assault forces, and helicopter subunits and to establish a flexible air defense system and reliable anti-aircraft cover for subunits.

In a contemporary offensive engagement, **maneuver** plays an ever-increasing role. It is used to create the most advantageous grouping of forces, to ensure swift exploitation of the effects of nuclear and fire strikes on the enemy, to advance swiftly into the depth of his defense, to make surprise strikes against weak spots in his battle formation, especially on the flanks and in the rear, and also to quickly withdraw friendly subunits in the face of enemy strikes and transfer efforts onto a new axis.

Motorized rifle subunits may carry out long-distance maneuvers by air. This is done to land airborne assault forces, to create pockets of aggressive combat behind enemy lines, and to quickly negotiate large natural obstacles, wide radioactive contamination zones, barriers, demolished areas, and areas subjected to fires and floods. The main advantage of maneuver by air lies in the speed and surprise with which it can be carried out, and in its independence of the condition of land routes.

In order to achieve a quick and decisive success in an offensive, it is important to skillfully **apply new, tactical procedures not anticipated by the enemy**. This was clearly demonstrated by the experience of the Great Patriotic War. Actual combat was in many respects conducive to the improvement of offensive tactics. Accordingly, new tactical procedures such as a nonstop infantry and tank attack following a rolling barrage, swift surprise tank strikes on enemy strongpoints, and daring raids when the offensive was developing in the depth of enemy defense, were widely used during breakthroughs. Frontal strikes were often combined with close and deep envelopments of a defending enemy force. The capture of primary enemy defensive installations by attacking forces was sometimes achieved in cooperation with airborne assault forces, particularly during the combat actions in the Far East.

Nevertheless, offensives during World War II often assumed a me-

thodical character. During the breakthrough, the attacking troops had to gradually wear down the enemy defense, while systematically exploiting in depth and widening the breach toward the flanks. The immediate rout of a defending grouping was accomplished by gradually grinding down the enemy resources. This made it possible for the enemy to regroup, sometimes unimpeded, and, by moving up troops to the breakthrough area from sectors of the front that had not been attacked and from behind the lines, to strengthen the defense and mount counterattacks.

An offensive engagement today is more **dynamic** than in the last war. Fully motorized and having a full complement of tanks, forces can attack with smaller densities of resources than before and yet in considerably greater depth and with greater momentum. Formations and units go over to the offensive primarily by attacking the open flanks and rear of the enemy's main groupings in order to rout them quickly with strikes from several directions. Such troop actions make it possible to exploit the effects of all fire assets to the fullest.

When it is impossible to envelop or turn the enemy, the offensive begins with a **breakthrough** into the enemy defense. Here, forces dispense with direct frontal attacks by making extensive use of gaps in the enemy's battle formation to penetrate into the depth of his defense. A breakthrough may be carried out on a wider front than in the last war. Exploiting the effects of nuclear and fire strikes, motorized rifle and tank subunits in cooperation with tactical airborne assault forces operating in the rear envelop the enemy defense by aggressive combat actions, break up the enemy grouping to as great a depth as possible, and defeat it in detail.

In past wars, breaching a prepared enemy defense was the most complex and difficult stage of an offensive, the one that would decide the success of the entire operation. The fact that troops are now equipped with exceptionally powerful weapons does not make a breakthrough easier in a modern offensive engagement, but, on the contrary, makes it more difficult. This is because a defending enemy also has an increased capability to take measures against an offensive by setting up a stable and deeply echeloned defense, by intensifying resistance, by employing nuclear and fire strikes, by transferring troops, weapons, and equipment by air to the threatened axis, and by creating large-scale demolition and obstacles, including remotely laid minefields, in order to contain the maneuver of the attacking troops.

NATO exercises indicate the extent to which the armored vehicles and mobile antitank weapons at the disposal of defense have increased. The battle formations of defending forces are being increasingly dispersed along the front line and in depth. During World War II an infantry division would usually occupy a defensive zone 8-10 kilometers wide and 5-8 kilometers deep, but today the dimensions of a defensive zone have increased to 30-40 kilometers in frontage and 20-25 kilometers in depth.³

According to the US Army's air-land battle concept, the objectives of defensive actions will be achieved by carrying out an effective deep fire strike, not only on the first echelon of the attacking troops, but also the second echelon and the reserves, by making wide maneuvers on the ground and in the air using forces, equipment, and engineer obstacles, by laying ambushes, and by conducting determined counterattacks.⁴ When organizing a breakthrough into such a defense, it is important to disrupt or impede the enemy's maneuver as much as possible, to take advantage of vulnerable points in his battle formation, to decisively concentrate efforts on a selected axis, and to ensure surprise in attacking, forestalling the defending forces in capturing key objectives. It is particularly important to organize thorough reconnaissance of the enemy in order to discover his defensive system in time, to achieve quick and effective destruction of his offensive nuclear weapons and precision weapon systems, and to disrupt enemy troop control.

The experience of local wars, particularly the 1982 armed conflict in Lebanon, shows that the modern offensive engagement is characterized by the great **complexity of the electronic situation**. Much attention is given in NATO armies to the organization of electronic warfare. For example, the US Army is taking steps to increase its electronic warfare capability on the tactical level in order to achieve electronic superiority, to put the enemy's troop control systems out of action or disrupt them, to lower the effectiveness of enemy electronic troop and weapons control systems, to take integrated countermeasures against enemy surveillance equipment, and to protect friendly systems and troop control assets. Although electronic countermeasure assets are not counted as offensive weapons, their influence on the course of any battle is very important. The opportunities of the attacking forces will increase if, besides achieving fire superiority and air supremacy, they are able to disorganize the enemy's troop and weapons control system. Conversely, attacking troops that are superior in both quality and quantity of resources will be practically unable to achieve victory without ensuring firm troop control and effectively protecting their systems and weaponry against the effects of enemy electronic countermeasures.

Consequently, when organizing combat, attacking troops must constantly monitor the electronic situation, take measures for the protection of their own electronic systems, and at the same time strive to disrupt the enemy's troop and weapons control system.

The overall tendency in the development of the modern offensive engagement is toward a further increase in its decisiveness, maneuverability, and spatial scope. It is characterized by the application of various tactical procedures and intense electronic warfare, which result in more complex troop control, and increased demands for the organization of

combat and cooperation and for improvement of political indoctrination.

It is extremely important today to ensure that commanders, staff officers, and political workers display extensive initiative and creativity, skill in maneuver, and the ability to select the most effective methods of routing the enemy.

2. Methods of Going Over to the Offensive

An offensive may be carried out from the line of march or from a position of close contact with the enemy.

When making his decision, the commander assesses the nature of the enemy's defense, his system of fortifications, fire plan, and obstacle system, the status of his own forces and the actions of adjacent elements, terrain conditions, the radiological and chemical situation, weather and seasonal conditions, the time of day, as well as the other factors making up the situation and, taking all this into consideration, formulates his concept: the axis where the main efforts are to be concentrated; which enemy force should be routed, how to go about routing it, and in what sequence it should be routed; the sequence for fire strikes against the enemy; and the configuration of the battle formation.

The experience of past wars shows that in determining the method of going over to the offensive, an important role is played by the extent to which the enemy's defense has been neutralized by fire. Before the appearance of automatic weapons, when troops' firepower was relatively weak, troops went over to the offensive after advancing to contact with the enemy.

For example, during the Russo-Japanese War of 1904-5, the opposing sides advanced to contact in an artillery fire zone 5-6 kilometers deep in dispersed formations, and in a rifle fire zone 1-1.5 kilometers deep in extended lines. Going over to the offensive would take place after building up forces on the line of attack.⁵

With the appearance of more powerful weapons with longer ranges, i.e., quick-firing artillery and machine guns, troops would go over to the offensive after occupying a prepared departure area located in the immediate vicinity of the forward edge of the battle area [hereafter FEBA—U.S. Ed.] of the enemy. This method was widely used in World War I, and particularly in the Great Patriotic War.

The essence of this method was that forces assigned to the offensive moved up from the rear in advance (usually on three or four consecutive nights), occupied the departure area replacing the defending units, and then, after powerful artillery and air preparation, went over to the offensive. Preparation for the offensive was carried out in the departure area, i.e., in the immediate vicinity of the enemy. When organizing combat,

commanders and staffs carried out reconnaissance, assigned the subunits' combat missions on the spot, and organized cooperation and combat, technical, and logistic support. Simultaneously, the troops in the departure area were fitted out for the offensive.⁶

It was necessary to go over to the offensive from close contact with the enemy because rifle formations and units had limited mobility (they usually moved on foot) and were unable to attack from the line of march immediately after moving up from the rear. They had to approach the enemy FEBA as closely as possible and needed a certain period of time to prepare for the offensive in order to ensure swiftness in the strike. Moreover, they were unable to make a powerful strike without previously establishing a high density of resources in the breakthrough sectors (200 or more guns and 30 to 40 tanks per kilometer of front) and accumulating the necessary reserves of ammunition, fuel, and other resources.

The concentration of large numbers of personnel and combat equipment in a departure area located close to the enemy was achieved by the ability of commanders, staffs, and troops to conceal the preparations for the offensive. The success of the actions was ensured only when this condition was met.

During World War I, especially in its initial stage, the British and the French frequently neglected the element of surprise when preparing for an offensive and executed moves and assembled assault groupings in breakthrough sectors openly and in the enemy's view. Artillery preparation preceding the attack was lengthy, often lasting many hours and sometimes even several days. Hence, the defending enemy force was able to detect preparations for an offensive quite easily, determine the axes of the attacks, and take preventive measures. Obviously, such an offensive would usually fail, despite huge casualties and tremendous expenditure of materiel.

Success was achieved in those engagements and operations where commanders and staffs displayed creativity in selecting the method of going over to the offensive and ensured surprise in the attack. During a Southwestern Front operation carried out in 1916 under the command of General A. A. Brusilov, the Russian command misled the enemy by using many novel tactical procedures in occupying departure areas and in selection of methods for going over to the offensive and in choosing effective methods of fire neutralization of the enemy's defense. Thus, artillery preparation for the attack was relatively short in duration. Artillery support was carried out using a new method, the rolling barrage. Moreover, artillery fire was to be switched to the depth "so gradually and imperceptibly as to ensure that neither friendly infantry nor the enemy should perceive it at once."⁷ Skillful selection of the method for going over to the offensive, determination, and surprise in attacking the enemy greatly contributed to the success of the Russian troops' actions.

The Soviet command demonstrated great skill in preparing for and conducting offensive engagements during the Great Patriotic War. In spite of the fact that enemy reconnaissance capabilities had grown significantly, the Soviet command, thanks to its skillful organization of combat, was able to covertly concentrate offensive groupings in breakthrough sectors and suddenly go over to the offensive. To this end, various methods of camouflaging troop concentration areas were used and regrouping was often done at night. In order to conceal the axes of the main attack, departure areas for the offensive were usually set up on an

extended front. This was done under the guise of strengthening the defense. To mislead the enemy, troop concentrations were simulated in secondary sectors and other feint actions were carried out. Troops often went over to the offensive at night. During artillery preparation for the attack, fire would be suddenly switched into the depth of the enemy's defense.⁸

Today, methods of going over to the offensive have been developed further. Because of the radically increased firepower, accuracy, range, and rate of fire of weapons and the greater mobility of units and subunits, there is no longer a need to concentrate troops close to the enemy FEBA before the offensive. Such troop concentrations can even be risky, since there is the danger of their being subjected to enemy nuclear and conventional strikes. Since forces are highly maneuverable, they may now move up quickly from the rear and attack from the line of march. This new method of going over to the offensive is used today by many armies.

Attacks from the line of march have also been undertaken in the past. For example, breakthrough directly following approach was envisaged as early as the Red Army Temporary Field Regulations of 1936. During the Great Patriotic War, Soviet troops carried out offensives directly after moving up from the rear fairly often and successfully. However, such attacks were carried out using mainly tank and mechanized formations. As a rule, they were conducted during rapid exploitation, most often when crossing hastily organized intermediate defense lines with little engineer preparation.

In the Vistula–Oder Operation of 1945, the 11th Tank Corps was committed from the second echelon of its army on the first day of the operation with the mission of breaking through the enemy's tactical zone of defense. This attack was carried out from the line of march, which enabled it to win time.⁹

Today, troops may go over to the offensive from the line of march not only while the engagement is developing in the tactical or operational depth of the enemy's defense, but also at the very beginning of the operation, even when breaking through a prepared and well-fortified defense, since the attacking forces are able to destroy or reliably neutralize the defense with nuclear and fire strikes and, exploiting their effects, rapidly attack the enemy while exploiting in depth.

In order to prepare for such an offensive, troops usually occupy and prepare departure areas in the depth of their defense at a distance from the line of contact sufficient to ensure that the troops will be out of range of most enemy tactical nuclear weapons and artillery and that the enemy's ground reconnaissance equipment cannot be used to its fullest potential.

When conditions are favorable (usually during development of combat actions in the depth of the enemy's defense), subunits may attack from the line of march, by deploying in battle formation from columns of route, i.e., directly from the line of march. Such a method of attack makes

it impossible for the enemy to maneuver and ensures that surprise will be achieved in the strike. In such cases, the commander usually organizes combat, i.e., makes his decision, assigns subunits combat missions, and organizes cooperation on the move or during short halts. Subunits go over to the attack as they approach the enemy FEBA.

Preparation for an offensive from the line of march is aided by the fact that it is performed out of direct contact with the enemy. However, since the attack is carried out immediately after a march, personnel will be subjected to greater physical stresses, and expenditures of fuel and other resources will be higher. It is possible that the move will have to be carried out across areas of mass destruction, zones of radioactive contamination, and areas affected by fires and floods. As a result of enemy nuclear and fire strikes, some elements in the battle formations of units may be put out of action even before the attack begins.

An offensive from the line of march requires that commanders and troops possess great mobility in action, carry out nuclear damage control quickly, and, when necessary, be able to bypass contaminated zones, demolished areas, and areas affected by fires and floods. Subunits must be able to carry out a march at the highest possible speed, promptly deploy into battle (prebattle) formation, and carry out a swift attack. In order to provide fire cover for the advancing subunits against enemy strikes, it is important to destroy the enemy's long-range fire weapons and neutralize (blind) his reconnaissance systems in time.

To ensure that subunits move up and deploy in an organized manner and go over to the attack at the same time, they are usually informed of the movement route, the departure line (point), the lines (points) for deployment into battalion and company (platoon) columns (sometimes also report lines), the line for going over to the attack, and the troop safety line (figure 1). **[These maps are all found at the end of the book—U.S. Ed.]**

Subunit deployment lines are established so as to ensure the subunits a high momentum of advance and minimize the probability of their being subjected to enemy nuclear and fire strikes, particularly from precision weapon systems. For example, the line for deployment into battalion columns is selected out of range of the main enemy artillery grouping. Preparatory fire for the attack usually begins when the subunits reach this line. The main criterion for selecting the line for deployment into company columns is the range of enemy ATGM launchers, tanks, and guns assigned for direct fire. Subunits should deploy into prebattle formation before entering the kill zone of these weapons.

The troop safety line is selected so as to protect the advancing subunits against friendly nuclear strikes on strongpoints in the first line of the enemy's defense.

Experience in tactical exercises shows how important it is to correctly select the line for going over to the attack. It is necessary here to take into

consideration the nature of the enemy's defense, the extent of fire strikes carried out against it, terrain conditions, and whether the attack is to be conducted with troops mounted on infantry combat vehicles (armored personnel carriers) or on foot.

If the attack is carried out on foot, the line for going over to the attack is selected as close as possible to the enemy FEBA. This makes it possible to reduce to a minimum the time between the fire strike against the enemy and the beginning of the attack. The dismount line is usually set in places screened from enemy fire, especially from that of his short-range antitank weapons.

The line for going over to the attack with troops mounted on infantry combat vehicles (armored personnel carriers) is set so as to ensure that the subunits can move up to it covertly and at a distance that permits effective fire from the main types of weapons and makes it possible for the subunits to attack the enemy nonstop, quickly, and at the predetermined time (H-hour).

In organizing an offensive from the line of march, it is necessary to precisely coordinate the efforts of all resources performing combat missions. It is particularly necessary to determine the order in which the subunits will move up to the line for going over to the attack; the procedure for allowing tanks to pass through the battle formations of friendly subunits and for making lanes through the obstacles; and the procedure and methods for attacking the enemy FEBA with motorized rifle and tank subunits, for their conducting fire and negotiating obstacles and obstructions, and for ensuring their cooperation with artillery and aviation in defeating the enemy in his strongpoints on the FEBA, in combat in the depth of the defense, especially that aimed at destroying his nuclear, chemical, precision, and antitank weapons, and in repelling his counterattacks.

In preparing an offensive from the line of march, the commander must take into account the fact that the greatest success is achieved when missions are assigned to subunits in the field or on a three-dimensional terrain mock-up. Cooperation is organized by the battalion (company) commander giving instructions and the commanders of subordinate and attached subunits reporting on their subunits' sequence of actions while performing the assigned missions and by outlining the main tactical phases. It is particularly important to work out the subunits' actions while advancing, during the attack, when capturing enemy strongpoints in the depth of the defense, when committing the second echelon, etc.

When time is extremely limited, subunit commanders usually organize cooperation by issuing instructions.

When an attack following advance from the depth is judged inexpedient for whatever reason, troops go over to the offensive from a position of direct contact with the enemy (figure 2).

In such a case, subunits have the opportunity to thoroughly study the terrain both in the friendly dispositions and in the enemy dispositions and defense system. However, since the troops are located within range of all enemy fire weapons while preparations are being made for the engagement, there is greater danger of their being subjected to enemy nuclear and fire strikes. Moreover, it is easier for the defenders to discover the grouping of the attacking forces. This makes it even more necessary to keep subunits' actions covert and achieve surprise in the attack. This is why it is particularly important to skillfully select the departure area for the offensive and carry out thorough engineer preparation. The regrouping and replacement of forces should, whenever possible, be done at night or in other times of limited visibility.

The battle formation to be adopted by subunits for an offensive carried out in this manner is established in advance. Motorized rifle companies of the first echelon assume a departure area in the first trench and adjoining communication trenches. Before the attack begins, they must be constantly ready to repel a possible enemy attack.

Tank subunits move up from the depth, reach the departure area, and occupy their assembly areas. During the Great Patriotic War, these areas were usually set at a distance of about 8 kilometers or more from the enemy FEBA.¹⁰ Tanks advance to the line for going over to the attack during the preparatory fire period. The tanks located in company strongpoints go over to the attack after the necessary regrouping.

When going over to the offensive in direct contact with the enemy, subunit commanders carry out all preparatory measures for combat right in the field. A motorized rifle battalion (company) is assigned a departure area for the offensive, instructed as to the sequence for occupying it, and told by whom, where, and when lanes are to be opened for the tanks, how they will be marked, the schedule for crossing them, and the fire plan during the advance.

Motorized rifle subunits advance to their departure areas for the offensive at night using concealed routes and communication trenches. Infantry combat vehicles (armored personnel carriers) take advantage of broken terrain and natural cover to assume fire positions that are usually situated behind their subunits and get ready to give them fire support and advance behind them during the offensive. In this case, motorized rifle subunits usually attack on foot.

There are better opportunities to apply various methods of going over to the offensive now than there were during the last war. This is conducive to achieving surprise in an attack and successful accomplishment of the combat mission.

3. Combat Missions

One of the most important factors in the organization of an engagement lies in assigning combat missions to units and subunits and configuring the battle formation so as to ensure that these missions will be carried out. The combat mission governs the actions of units and subunits and constitutes the basis on which commanders and staffs organize cooperation, troop control, and comprehensive support. The timely and precise accomplishment of the combat mission is the main measure of success in an engagement.

The combat mission of troops in an offensive consists essentially in routing the enemy grouping and capturing a designated line (area) within a fixed time limit.

Without question, the enemy constitutes the main objective of the attacking forces' actions. Conditions for achieving the objective of an engagement are met only when his personnel have been eliminated (taken prisoner) and his weapons destroyed (captured). However, the enemy must also be considered in terms of space. His strongpoints, fire resources, fortifications, and obstacles are located on the ground in a specific area. Therefore, when routing the enemy, the attacking subunits capture territory as they advance. In other words, routing the enemy and capturing territory go hand in hand.

As an element in the combat situation, terrain plays a neutral role with respect to the opposing sides. The extent to which its tactical features affect the subunits' accomplishment of a combat mission is proportional to the troops' ability (or lack thereof) to take advantage of them.

In an offensive, it is necessary to capture key objectives on the ground under enemy control, such as road junctions, built-up areas, commanding heights, mountain passes, water obstacles crossings, etc., in order to establish favorable conditions for routing the enemy grouping. The loss of these objectives denies a defending enemy force many important advantages, hinders the maneuver of his resources, and disrupts his fire plan, cooperation, and troop control. At the same time, the attacking forces are better able to impose their will on the enemy and exploit successes.

One indicator of combat skill in subunits is skillful use of terrain for maneuvering in order to quickly advance to the enemy's flanks and rear, strike him decisively, break up his battle formations, and defeat him in detail.

In addition to the most important elements of the combat situation such as the enemy and the terrain, accomplishment of a combat mission also depends on the amount of time available. Today, the time factor is of prime importance in an offensive. A subunit may capture its designated

line (area), advance to a great depth, or carry out a successful maneuver, but the combat mission may not be successfully performed if these actions are carried out too late.

When organizing an offensive, the commander must calculate time and plan the engagement precisely, and strive for the timely destruction of enemy nuclear and chemical weapons, elements of his precision weapon systems and antitank weapons, and the disruption of the enemy's troop control system.

The time permitted for accomplishing a combat mission in an offensive must be such as to ensure the rout of the enemy in the minimum time, a high momentum of advance, and continuity in exploitation. The defending enemy force must be forestalled in maneuvering, opening fire, counter-attacking, etc. A. V. Suvorov taught that "forestalling means winning."

Correct timing and coordination of efforts in terms of missions, lines, times, and methods of action are the most important conditions for success in an offensive. Experience acquired in combat and on tactical exercises shows that the better the engagement is planned and the keener the commander's foresight with respect to the development of events during the engagement, the less changes will have to be introduced into the decision and cooperation procedure during the offensive. However, in order to ensure realistic timing, one must have reliable intelligence concerning the enemy's status and actions, discover his concept in a timely fashion, and constantly know the status of friendly forces, their combat capabilities, and the standard time allotted for accomplishment of tactical, technical, and fire missions.

The nature of the combat missions assigned to forces in an offensive reflects the level attained in the development of armament and combat equipment, training standards of personnel, and their morale and fighting qualities. The nature of combat missions changes as weaponry is improved, the firepower, striking power, and maneuverability of units and subunits increases, and combat skills of personnel improve. Here one should also note the trend toward increasing the depth of combat missions. For example, during the Great Patriotic War, the depth of a division's combat missions, measured in kilometers from the enemy FEBA, were as follows:

	Immediate Objective	Subsequent Objective	Objective of the Day
1941	1.5-2.5	3-4	-
1942	2-3	4-6	-
1943	2-4	5-7	-
1944	3-4	5-7	10-13
1945	3-5	6-8	15-18

On the basis of these data one may conclude that in the initial period of the war (1941–42), when the combat capabilities of Soviet formations and units were limited because of various objective factors and the troops did not have sufficient combat experience, the depth of their combat missions was relatively small. During the Soviet Army's 1944–45 offensive operations, the firepower and striking power of rifle divisions, as well as attached and supporting forces (artillery, tanks, aviation), increased substantially, and forces gained much combat experience. All this resulted in an increase in the depth of combat missions assigned to rifle and tank formations.

Changes in the nature of enemy defenses also greatly influence the nature of combat missions assigned to formations and units. During the Great Patriotic War, the attacking and defending forces were engaged in a continuous struggle. In response to the increased firepower and striking power of the Soviet forces, the enemy strengthened his defense by echeloning it in depth and by adding increasing numbers of fire weapons and engineer obstacles. In 1943 the Nazi forces abandoned the shallow and locally centralized defensive system that they had been using on the Soviet–German front at the beginning of the war and went on to establish a continuous multizone entrenched defensive system. This, in turn, made it necessary for the offense to establish powerful battle groups in order to break through. Attacking forces were deployed in deep battle formations to ensure uninterrupted buildup of efforts in the breakthrough sector.

Several factors were taken into consideration when troop combat missions in an offensive were being established: the necessity to establish overwhelming superiority over the enemy in resources on the axis of the main attack; provision for effective fire strikes on the enemy throughout the depth envisaged in the combat mission; ensuring a swift and nonstop attack and continuous intensification of efforts when exploiting in depth and toward the flanks; and defeating the enemy grouping in detail before the arrival of his reserves.

The immediate and subsequent objectives of a division, as well as its objective of the day, took into consideration the need to rout that element of the enemy's battle formation whose loss would create favorable conditions for undermining the stability of his defense and be conducive to the success of subsequent actions of the attacking forces. Moreover, the immediate and subsequent objectives were planned to be carried out in the same battle formation whenever possible. This would eliminate the need for an operational pause during the engagement in order to reconfigure the battle formation when the second echelon (reserve) was committed and when the cooperation procedure and the organization of fire strikes and combat, technical, and logistic support were being updated.

The main objective of the first operational echelon in an offensive operation during the last war was to break through the enemy's tactical zone of defense. As a rule, operational expediency demanded that this mission be accomplished in the first 24 hours of the operation. In other words, it was necessary to ensure that the attacking forces break as quickly as possible through the strongest and densest enemy defenses in order to deprive him of the opportunity to take measures directed at eliminating the breakthrough, to ensure continuity in the development of the operation, to create conditions for quickly turning a tactical success into an operational success, and to commit mobile army and front groups through the gap. Here, successful accomplishment of the combat mission depended to a crucial extent on how fast the enemy's anti-infantry, antitank, and artillery fire system in the main defensive zone was disrupted, particularly in the first defensive position. Usually this was the immediate objective of regiments belonging to a division's first echelon.

The general principles according to which troop combat missions in an offensive were determined during the Great Patriotic War are as pertinent now as they were then. However, consideration should also be given to the major changes that occurred after the war in the combat capabilities of advancing forces and the tactics of defensive actions. Modern defenses tend to be increasingly echeloned.

According to the experience of NATO exercises, a NATO tactical zone of defense is 40-50 kilometers or more deep. This is three or four times the tactical depth of defenses during World War II. Therefore, in order to break through such a defense in the first 24 hours of an operation, troops will be required to advance with greater momentum than in the past. Being highly mobile, formations are able to meet these requirements in an offensive, as was clearly demonstrated in the "Zapad-81" exercise.

The employment of nuclear weapons, and conventional weapons more powerful than those of the past, exerts a particularly strong influence on the nature of combat missions in an offensive. Nuclear and fire strikes on the enemy defenses may create breaches that the attacking forces can use to rapidly advance to the depth.

However, the defending side has extensive capabilities for countering a breakthrough. The experience of NATO exercises shows that in order to break up an offensive, fire strikes are delivered on the entire depth of the enemy's battle formations, fire barriers are set up on the endangered axes, and combined strikes are carried out from several directions against attacking troops that have penetrated the depth of the defense. In these conditions, extreme efforts will be required from the troops in order to achieve high momentum and continuity in the advance.

Effective measures must be taken against the enemy's offensive nuclear weapons, reconnaissance-strike complexes, tanks, infantry combat

vehicles, self-propelled artillery, antiaircraft weapons, fixed-wing aircraft, helicopters, and airborne assault forces. Since these and other targets crucial to the integrity of the defense are mainly located deep behind enemy lines, the attacking forces should try wherever possible to pressure the entire battle formation of a defending enemy by means of simultaneous aggressive actions. For this purpose, the offensive must be organized in such a way as to destroy the enemy rather than to dislodge him; i.e., frontal strikes must be combined with maneuvers aimed at the enemy flank and rear, while a quick breakthrough to the depth by mobile forces must be combined with the landing of tactical airborne assault forces.

The specific content of combat missions assigned to subunits in an offensive depends on the given situation. By and large, the increased combat capabilities of subunits, units, and formations make it possible to increase the momentum of overall advance in an offensive.

Consequently, combat missions are now determined in a manner different from the past. During the last war only an immediate objective was assigned to a battalion operating in the first echelon, but now, in an offensive against a deliberate enemy defense, a battalion is assigned its immediate and subsequent objectives, as well as the subsequent direction of attack [*npravleniye dal'neyshego nastupleniya*—U.S. Ed.].

The **immediate objective** of a first-echelon battalion may be to defeat the enemy in a first-echelon battalion defense area and to capture the first position. Its **subsequent objective** consists in developing the offensive, routing the enemy brigade (regimental) reserves in cooperation with its adjacent battalions, and capturing the line they occupied. A battalion's **subsequent direction of attack** is determined in such a way as to guarantee accomplishment of its regiment's mission (figure 3).

The immediate objective of a first-echelon company usually consists in cooperating with adjacent subunits to destroy the enemy in a first-echelon company strongpoint and capture it. A company's subsequent direction of attack is determined so as to ensure the enemy's rout in the depth of a first-echelon battalion defense area. The immediate objective of a tank company attached to a motorized rifle battalion usually consists in cooperating with motorized rifle companies to rout the enemy in a first-echelon company strongpoint and capture it. The subsequent direction of attack is determined so as to ensure accomplishment of the motorized rifle battalion's immediate objective.

As a rule, a second-echelon company is instructed as to the direction and schedule of movements during the engagement, possible second echelon lines of commitment, the immediate objective, and the subsequent direction of attack.

Organic and attached fire resources (artillery and mortars) are normally instructed as to which targets should be destroyed or neutralized during the preparatory fire phase and, when the attack begins, whom to support and by what method, missions in connection with supporting the commitment of the second echelon and repelling enemy counterattacks, fire positions, route and schedule of advance, the time by which to be ready to open fire, and the schedule of moves during the engagement.

Mortar and antitank platoons are instructed as to targets to be destroyed during the preparatory fire phase, fire positions and the schedule for assuming them, the time by which to be ready to open fire, and missions to support subunit actions during the engagement. An antiaircraft subunit is instructed as to which subunits should be covered against air strikes while advancing, deploying, attacking the enemy FEBA, and during engagement in depth, the schedule of moves during the engagement, and times and levels of readiness.

Attached combat engineer subunits are instructed as to places and times for clearing lanes and constructing routes through obstacles in front of the enemy FEBA and other missions that they may have to perform during the engagement.

The width of the zone (front) of advance is an important component of the combat mission. The experience of the Great Patriotic War has shown that a formation's (unit's) zone of advance must, above all, make it possible to establish in it the requisite superiority over the enemy in resources.

In operations during the first period of the war, for example in the Battle of Moscow, the zone of advance for rifle divisions operating in breakthrough sectors was often too wide, reaching 10 kilometers. This violated the principle of massing resources and led to dispersal of force efforts. Therefore, in subsequent operations, for example, in the Battle of Stalingrad, the division's zone of advance was narrowed down to 4-5 kilometers. In the operations of 1944-45 it was 2-3 kilometers wide, and sometimes as narrow as 1-1.5 kilometers. This made it possible to create overwhelming superiority over the enemy in resources in the breakthrough sector.

However, if an overly narrow zone of advance was assigned to a formation (unit), this often severely limited troop maneuver. During the Great Patriotic War, when advancing on a continuous front, troops engaged in a breakthrough were forced to carry out frontal attacks against enemy strongpoints. This hindered their actions. For this reason, when fighting in the depth of the enemy defenses, forces tried to broaden their zone of advance at the first opportunity in order to obtain more space to make close and deep envelopments of the enemy flanks and to hit him with surprise strikes from various directions.

In modern engagements, where the threat of the enemy employing nuclear weapons is constant, the width of the zone of advance should ensure, on one hand, decisive superiority in resources and, on the other, the requisite dispersal of troops to minimize casualties in case the enemy makes nuclear strikes. This means that the zone of advance should be neither too narrow nor too wide. Dangerous overcrowding of resources is inevitable in a narrow zone, while an overly wide zone may lead to dispersal of efforts and a weaker strike.

The battalion serves as the unit of calculation for determining the width of a zone of advance on the tactical level. The width of a zone of advance depends on the situation, particularly on whether the senior commander (chief) decides to employ nuclear weapons on the battalion's axis of actions, whether the attack is carried out mounted on infantry combat vehicles (armored personnel carriers) or on foot, and on other factors.

The experience of wars and postwar exercises shows that one of the most important conditions for successful accomplishment of a combat mission in an offensive is the **decisive concentration of efforts on the main axis at the decisive moment**. Today, the significant dispersal of troop actions in time and space and the fragmented nature of engagements create the danger of dispersing combat efforts.

Commanders and staffs must organize combat skillfully and, above all, correctly assign the axis of the main attack for the offensive. To do that, it is necessary to thoroughly consider all the factors of a given situation that may affect performance of the combat mission. The axis of the main attack must ensure surprise and create favorable conditions for concentrating and deploying subunits, the execution of maneuver, rapid advance to areas whose capture will disrupt the stability of the enemy's defenses, and timely accomplishment of the combat mission.

During the Great Patriotic War, Soviet forces usually made the main attack against a weak point in the enemy's battle formation. Such vulnerable spots in the defense were open flanks and gaps between strongpoints and sectors defended by troops less steady in action or where the defenses had little engineer preparation and were insufficiently developed in depth. Skillful exploitation of such vulnerable spots in the defense made it possible to speed up the breakthrough.

The actions of the 65th Army's formations in the Belorussian offensive may serve as an example of skillful selection of the axis of the main attack. It was decided to direct the main attack across a swampy section of the terrain, since the enemy considered it impassable for the attacking forces and had allotted meager forces to cover it. Using the element of surprise, the Soviet forces were able to negotiate the swamp quickly and approach the enemy flank, thus contributing to the overall success of the offensive. Even in the first six hours of combat actions, the formations succeeded in advancing 5-6 kilometers into the enemy dispositions and capturing several of his major strongpoints.¹¹

The Soviet command tried to achieve decisive superiority over the

enemy in resources on the axis of the main attack, often even in cases when the relative overall strengths of resources were equal or unfavorable for friendly forces. This happened, for example, during the Battles of Moscow and Stalingrad and in some other operations. The density and correlation of forces on the axis of the main attack during the Great Patriotic War were as follows:

	First period	Second period	Third period
Density of forces:			
Artillery (guns and mortars per km of front)	20-60	120-200	200-250
Tanks (per km of front)	8-15	15-20	20-30
Infantry (rifle battalions per km of front)	1.5-2	3-4	5-7
Correlation of forces:			
Artillery	1.5-2 : 1	4-6 : 1	6-10 : 1
Tanks	0.6-1.5 : 1	2-3 : 1	4-5 : 1
Infantry	1.5-2 : 1	3-4 : 1	3-5 : 1

Today, when the threat of the enemy employing nuclear weapons is constant, it would hardly be possible to assemble the same density of resources in breakthrough sectors as during the Great Patriotic War, although the need to secure decisive superiority in resources on the main axis, especially in the course of a conventional engagement, undoubtedly remains. Therefore, emphasis should be put on creating not so much quantitative as qualitative superiority over the enemy in resources by taking full advantage of the troops' increased striking power, firepower, maneuverability, the greater accuracy of strikes against enemy targets (installations), the use of more powerful ammunition, and skillful joint employment of ground and air actions. On the whole, the present growth in the combat capabilities of combined arms formations, units, and subunits creates objective conditions for increasing the scope and depth of their missions and achieving a high momentum of advance.

How these possibilities will be put into practice depends on the organizing abilities of commanders, staff officers, and political workers, on their ability to select the most effective methods of routing the enemy, to concentrate efforts on the decisive axis, to organize continuous cooperation, to apply flexible maneuver in combat, and to skillfully configure battle formations.

4. The Battle Formation

A force's battle formation is closely related to its combat missions. It should correspond to the objective of the engagement and the prevailing conditions. A battle formation is arranged so as to make it possible to rout the enemy successfully, concentrate efforts on the chosen axes, combine fire, movement, and maneuver during an attack, and provide means for timely buildup of efforts and reliable troop control.

The forms and methods used to set up battle formations comprised of formations, units, and subunits in offensive engagements have undergone a complex evolution in the course of many wars. Changes in battlefield equipment acted as the major factor in their development. Thus, as weapons improved and firepower increased, the linear formation, which had dominated the battlefield for many years, made way for the extended order at the end of the eighteenth and beginning of the nineteenth century. Then, when tanks appeared on the battlefields in World War I, and especially in World War II, the infantry formation was replaced by the infantry and tank formation. Subsequently, the development of the battle formation was associated with the improvement of other combat resources such as aircraft, antitank and air defense weapons, and combat, technical, and logistic support. The large-scale adoption of more effective combat equipment by combined arms formations and units led to an increase in their offensive capabilities and, consequently, to the creation of new elements in the battle formation and qualitative changes in the composition of these elements.

Changes in the nature of enemy defenses greatly influenced the forms and methods used for configuring battle formations in offensives. Until World War I, the defense was shallow and largely fragmented, and the battle formation of infantry formations and units was, as a rule, arranged in a single echelon, to which a general reserve was allocated. However, when the defense became solid and positional and increased in depth, it became evident that a single effort by the attacking troops would not be sufficient to quickly overcome strong enemy defenses made up of several positions and zones with good engineer preparation, and to ensure that attacks were exploited relentlessly to great depth and that breakthroughs were enlarged toward the flanks. As a result, during World War I, when both sides went over to positional warfare, a new element, the second echelon, appeared in the battle formation of infantry divisions (regiments). It was intended for use in building up the efforts of first-echelon units and for exploitation.

During World War II, the two-echelon battle formation of combined arms formations became the prevalent method of forming up for breaking through prepared enemy defenses. Admittedly, in some Soviet operations in 1944–45, divisions were organized into three-echelon battle formations, which gave them greater opportunities for building up their efforts during engagements. However, it became obvious during actual combat that, with such an arrangement, troops were often forced to operate in over-compacted formations, especially when fresh forces were committed to action from the rear. This hindered their maneuver, cooperation, and troop control.

In Soviet operations in the second and third period of the war, single-echelon formations were also used for rifle divisions, especially when the enemy defenses were shallow.

In the Belorussian Operation, 28 of 44 first-echelon divisions, i.e., more than half, had a single-echelon battle formation. Admittedly, in those cases, rifle regiments were usually arranged in two- or even three-echelon formations, which provided for sequential buildup of efforts from the rear.¹²

In addition to its one or two (sometimes three) echelons, the battle formation of a rifle division during the Great Patriotic War included artillery groups, tank groups for close support of infantry, an air defense grouping, reserves assigned to various functions, a mobile obstacle detachment, and often a forward detachment as well.¹³

The need to create artillery groups within formations had already arisen during World War I, when forces began to receive full complements of artillery. But this way of employing artillery in combat became particularly widespread in the Soviet Army during the last war. From 1943 first-echelon divisions and regiments breaking through the enemy's defenses had sufficiently powerful division and regimental artillery groups at their disposal to ensure flexibility in the use of artillery in combat and its close cooperation with infantry and tanks, and to increase the units' autonomy of fire and striking power.

During the Great Patriotic War, combat employment of tanks improved as their numbers increased in the battle formations of combined arms formations. Since rifle divisions did not have any organic tanks, they were reinforced with tanks from the assets under the senior commander's (chief's) direct control when operating on the main axis while breaching enemy defenses. The attached tanks were used for close support of infantry (CSI). At first, CSI tanks were subordinate to the division commander, but from 1944, because of the ever-increasing numbers of tanks in service, they began to be allocated to regiments as well.

In the final stage of the war, the number of tanks allocated to formations and units (subunits) increased substantially.

Over 30 percent of the divisions operating on the axis of their army's main attack in the Vistula-Oder Operation were equipped with 80-90 tanks each. In view of this, tanks were allocated not just to regiments but also to battalions. This increased the striking power of the subunits and ensured flexible and continuous cooperation between infantry and tanks. In attacks, tanks acted as the main striking forces. The tanks usually advanced 200-400 meters in front of the infantry, enabling rifle subunits to exploit their success and advance. In turn, the infantry provided fire cover for the maneuver of the tanks.

In addition to reinforcing first-echelon units with CSI tanks, divisions often created tank reserves. Their mission was to reinforce the second-

echelon regiments when they were committed and to carry out other suddenly occurring missions.

Air defense groupings became integral parts of battle formations when aviation appeared on the battlefield. The grouping's mission was to provide the main body of an advancing formation with reliable cover against enemy air attacks.

During the war, defending enemy battle formations were also provided with great numbers of tanks. To counter enemy tanks, antitank artillery reserves and mobile obstacle detachments began to be set up in first-echelon rifle formations and units. Antitank artillery subunits constituted the basis of the antitank artillery reserve. Mobile obstacle detachments included engineer subunits equipped with mine-laying equipment. These elements of the battle formation acted in close cooperation, carrying out common missions: repelling, in cooperation with the infantry, counterattacks by enemy tank subunits and destroying tanks that had broken through to the flanks and rear of advancing units.

The need to employ forward detachments had already arisen during the Soviet forces' first offensive operations. But, in fact, they became an integral part of the battle formations of attacking divisions only in the final stage of the war. Usually the most maneuverable units and subunits, capable of quickly breaking away from the main body of troops and carrying out independent missions in the enemy's rear, were assigned to forward detachments. The tactics that they used in action were based on flexible maneuver, surprise attacks against the enemy, and daring raids behind his lines.

Today, because of the entry of new weaponry, such as nuclear weapons, missile systems, infantry combat vehicles, and antitank guided missiles, into service in the ground forces and because of the substantially increased number of tanks and the greater effectiveness, accuracy, range, and rate of fire of conventional weapons, the demands placed on troop battle formations have increased.

The battle formation must make it possible to fight successfully with or without nuclear weapons; strike the enemy resolutely throughout the depth of the combat missions and repel air strikes; exploit the results of nuclear or fire strikes quickly and completely; minimize the vulnerability of subunits to enemy nuclear strikes and strikes with precision-guided weapons; and provide stable and continuous cooperation and command and control under the most complex conditions.

According to the experience of tactical exercises, on breakthroughs of enemy defenses, a unit's (subunit's) battle formation should be arranged in

one or two echelons. The **first echelon** is usually the most powerful and is employed to rout the opposing enemy grouping, carry out its assigned mission and develop the attack. The **second echelon** has the function of building up efforts and exploiting the success achieved by the first echelon, relieving first-echelon troops that have suffered casualties, repelling enemy counterattacks, and conducting an offensive on a new axis. When the battle formation is configured in a single echelon, a **combined arms reserve** is created to perform unexpected missions that crop up during the offensive.

Motorized rifle subunits are used in the first and second echelons and in the combined arms reserve. They may operate as advance guards, forward or outflanking detachments, or tactical airborne or amphibious assault forces. Motorized rifle subunits perform their mission of destroying the enemy in close cooperation with tanks, artillery, and subunits of other combat arms. Skillfully combining fire and movement, they swiftly attack the enemy, destroy his personnel, tanks, infantry combat vehicles, artillery, antitank and other fire resources, nuclear and chemical weapons, fixed-wing aircraft, helicopters and other air targets, capture his positions, and quickly exploit the advance.

Tank subunits play an important role in defeating a defending enemy. With their great striking power and maneuverability, they are able to reach the enemy's rear suddenly through breaches in his defense, destroy remaining pockets of resistance, smash his approaching reserves, neutralize offensive nuclear weapons, capture important objectives and thereby ensure the swift destruction of defensive groupings. In an offensive, tank subunits are used either to reinforce motorized rifle subunits or to act independently, especially in sectors where the enemy defenses have been subjected to nuclear strikes. In such cases, they normally operate on the axis of the main attack.

One of the current trends is to improve the battle formations of motorized rifle and tank units and subunits engaged in offensives by further increasing their tactical independence and autonomy of fire. This is because attacking forces will now often operate on independent axes, sometimes far from the main body.

As in the last war, the need arises to create **artillery groups** in first-echelon formations and units when they are breaking through enemy defenses. They must be powerful enough to provide continuous fire support for the attacking troops throughout the engagement; destroy the enemy's identified fire resources, especially offensive nuclear weapons, artillery, tanks, infantry combat vehicles and air defense weapons; strike personnel in strongpoints; and demolish, blind, and lay smoke screens on his fortifications.

Greater demands are now placed on air defenses. They must be employed throughout the engagement and provide reliable cover for attacking units and subunits as they perform their missions. **An air defense grouping** must be capable of destroying enemy aviation appearing from any direction and at all altitudes, particularly low and very low altitudes. For this purpose, troop air defense subunits deploy and operate right in the battle formations of the motorized rifle and tank subunits that they are covering.

Tactical airborne assault forces now play an important part in the offensive. Their use makes it possible to quickly exploit the effects of nuclear and fire strikes, increase the force and depth of simultaneous attacks against the enemy, and break up his maneuvers aimed at restoring breached defenses. A tactical airborne assault force may be used to capture and destroy the most important enemy targets, including offensive nuclear weapons, control posts and communications centers in the enemy's tactical and immediate operational depth; capture and hold areas (lines) and such ground objectives as road junctions, bridges, mountain passes, gaps, and water obstacle crossings, and help the attacking troops to cross natural obstacles quickly and maintain a high momentum of advance; and destroy bases, stores, pipelines and other installations in the enemy's rear.

The depth and time at which airborne assault forces are landed and the methods used may vary. According to experience gained on exercises, tactical airborne assault forces operating as part of a reinforced battalion land deep behind enemy lines.

The increased decisiveness and dynamism of modern offensive engagements present the greatest possibilities for employing **forward detachments**. In addition to capturing individual ground objectives (road junctions, built-up areas, mountain passes, etc.), forward detachments may carry out such complex missions as destroying enemy offensive nuclear weapons, air defense weapons, control posts, and some enemy logistics installations and countering airborne (amphibious) assault forces and airmobile subunits. When combat missions are assigned, the forward detachments are usually instructed as to their composition and axis of actions, which lines are to be captured and when, and the procedure by which their actions will be supported by artillery fire and air strikes.

Antitank reserves are an important part of modern battle formations in an offensive. Their mission is to fight counterattacking enemy tanks and with the mobile obstacle detachments provide cover for threatened axes and open flanks and for the second echelon (general reserve) as it is deployed and committed.

In order to speed up the maneuver toward threatened axes, some

reserves, such as the general and engineer reserves, may operate in helicopters.

Motorized rifle and tank subunit battle formations have undergone major changes. During the Great Patriotic War, the battle formation of a rifle (tank) battalion was usually arranged in a single echelon with a reserve allocated. This was because the battalion had a relatively small number of organic and attached subunits of other combat arms at its disposal, with the result that it did not have great fire and striking power.

The modern motorized rifle or tank battalion, equipped with effective weapons and combat equipment, has great fire and striking power and is highly maneuverable, well protected by armor, and resistant to NBC weapons. Moreover, considerable reinforcements may be attached to a battalion, including an artillery battalion or battery, antitank weapons, an anti-aircraft battery (platoon), and engineer and chemical warfare subunits. A motorized rifle battalion may be reinforced with tank subunits, while a tank battalion may be reinforced with motorized rifle subunits. All this significantly increases a battalion's combat capabilities in an offensive.

Consequently, the number of elements in the motorized rifle (tank) battalion's battle formation increases and its possible configurations become more diverse than before. **Currently a battalion battle formation consists of first-echelon companies with their reinforcements, a second-echelon or reserve company, air defense and fire resources directly subordinated to the battalion commander, and battalion logistics (figure 4).**

However, the issue lies not just in increasing the number of elements in a battalion's battle formation, but also in making qualitative changes in the composition and combat capabilities of these elements. In the last war the battle formation of a rifle battalion was based on infantry that attacked the enemy on foot and was supported by tanks and artillery, but today the motorized rifle subunit's battle formation includes infantry combat vehicles, armored personnel carriers and tanks capable of quickly breaching enemy defenses and advancing at high momentum.

Organic **ATGM launcher and rocket launcher subunits** and attached artillery play an important role in supporting a battalion's actions. These resources are used to neutralize or destroy targets, particularly armored targets, that hinder the forward movement of attacking subunits.

Antiaircraft subunits, which are found in a battalion's battle, prebattle, and march formations, are capable of destroying fixed-wing aircraft, helicopters, remotely piloted vehicles (cruise missiles), and enemy airborne assault forces at low and medium altitudes.

Engineer subunits attached to a battalion conduct engineer reconnaissance of the enemy and the terrain, inflict casualties on the enemy with mines and other weapons, neutralize enemy nuclear mines, clear passages through obstacles and areas of destruction, construct crossings over obstructions, maintain crossings and traffic routes, use machines to dig fox-holes, fire trenches, and communication trenches, and carry out engineer operations relating to camouflage and the preparation and maintenance of water supply points.

Chemical warfare subunits perform important missions in an offensive. They carry out radiological, chemical, and general bacteriological (biological) reconnaissance, dosimetric and chemical monitoring, and decontaminate subunits.

The main mission of **flamethrower subunits** in an offensive is to inflict casualties and damage on enemy personnel, weapons, and combat and other equipment and to set fires. They are normally attached to motorized rifle subunits and operate as a part of their battle formations.

A battalion **communications subunit** maintains reliable communications with subordinate (attached) subunits and adjacent forces.

A modern battalion is quite autonomous in terms of equipment and logistics. It has all the men and equipment required to conduct repairs and technical maintenance of weapons, to maintain the necessary reserves of material resources and supply them to the subunits, to refuel vehicles, to provide personnel with hot meals, to search for, assemble, and evacuate the wounded and sick and provide them with medical assistance.

Thus, the battle formation of a motorized rifle (tank) battalion, which is the principal tactical combined arms subunit, supports the successful accomplishment of complex missions in offensives conducted either in nuclear or strictly conventional environments. It is important to know how to use the subunits' fighting and maneuvering capabilities and how to arrange their battle formation skillfully.

Depending on the situation, a battalion or company may operate in prebattle or march formation. The prebattle formation is used to move subunits in columns that are separated laterally and in depth (figure 5). It must ensure that the subunits are minimally vulnerable to NBC weapons, artillery fire, and air strikes and that they can deploy rapidly into battle formation, achieve a high momentum of advance, and swiftly negotiate obstacles, radioactive contamination zones, demolished areas, fires, and floods.

When developing an attack in the tactical and operational depth of the enemy defenses and when pursuing the enemy, subunits may assume march formation, i.e., they may move in columns. This will ensure a high rate of movement, quick deployment into prebattle and battle formations, minimum vulnerability to NBC weapons and air strikes, and the maintenance of firm troop control.

As training experience shows, subunits should operate in battle formation primarily when attacking strongpoints and stubbornly defended positions. After capturing them and breaking up organized enemy opposition, the subunits quickly re-form into prebattle formation and advance rapidly into the depth of the defense. On approaching new defensive lines or positions, they attempt to penetrate in depth from the line of march, in prebattle formation, by using breaches and gaps in the enemy formation, and then strike his main forces from the flanks and rear. They deploy into battle formation for an attack only when they cannot operate in prebattle formation. In the event that enemy opposition is broken and he is forced to begin withdrawing, the first-echelon subunits swiftly form into marching columns and move into the depth of the defense as rapidly as possible.

A commander's art lies in being able to make competent use of battle, prebattle, and march formations in the heat of an engagement, skillfully re-form the troops in a timely fashion, and always be aware of the status of an engagement while stepping up the pace of the attack.

The appearance of precision weapons in the NATO armies, the elaboration of methods for conducting deep fire strikes, and the development of tactics for air-land actions give rise to the need to further improve the battle formations of units and subunits. In order to mislead the enemy, they should be set up differently every time. It is particularly important to take effective protective measures and increase the tactical and fire autonomy of subunits (companies and platoons), their ability to operate for long periods of time while separated from the main body of forces, and their ability to accomplish diverse missions during an offensive.

5. The Fire Strike

Historical experience reveals that fire exerts an ever-increasing influence on the development of offensive tactics. As early as the 1920s, M. V. Frunze wrote: "Fire constitutes the decisive factor and main force in modern combat. Superiority over the enemy may be achieved only by fire."¹⁴

The Great Patriotic War confirmed the validity of this statement. Combat experience introduced many innovations into methods for the combat employment of artillery and aviation. In engagements and opera-

tions, the Soviet command elaborated and applied effective methods of achieving fire superiority over the enemy and providing fire support to the troops, particularly in the form of artillery and air offensives.¹⁵

Since World War II, methods of making fire strikes against the enemy have developed further as a result of the introduction of nuclear weapons and the increased power, accuracy, and range of conventional weapons. As the foreign press states, the latest artillery, tank, antitank, and aviation armament surpasses the previous generation several times in range, dozens of times in power, and hundreds of times in accuracy.

The introduction of new weapons exerts considerable influence on the essence and nature of fire strikes against the enemy in offensives. The essence of these changes is that fire effect is achieved by exerting coordinated and comprehensive pressure on the enemy with various types of weapons, including tanks, small arms, and air defense weapons, as well as artillery fire and aviation and combat helicopter strikes.

During World War II, great numbers of various weapons were involved in fire fights, but the main fire missions were assigned to artillery and aviation. Today, essentially all services of the armed forces and combat arms and some combat service support troops participate in fire strikes. As a result, the effect of fire on the enemy has become more intense and comprehensive and is applied for the entire duration of the offensive practically without interruption and in the most varied forms, usually by combining concentrated and massed fire.

As new weapons appeared, the depth to which simultaneous fire effect could be achieved increased drastically and the roles played by various types of weapons in carrying out fire missions were redistributed. While artillery was the main antitank weapon during the Great Patriotic War, now this role is also filled by ATGMs and tanks themselves.

In the 1973 war in the Middle East, more than half of the tank kills were carried out by ATGMs, about 22 percent by tank fire, and about 28 percent by air strikes, antitank mines, and other weapons.

There has been a particular increase in the role played in fire strikes by combat helicopters, whose actions are characterized by their great mobility and surprise. In the 1973 and 1982 Middle East wars, helicopters usually made fire strikes from ambush, maneuvering quickly and covertly on the battlefield.

The part played by mines in inflicting casualties on troops has also increased. Foreign armies have adopted a new method of laying mine fields: remote mining using multiple rocket launcher systems and aviation.

This restricts maneuver of troops considerably, wears them out, reduces their momentum of advance, and disrupts the normal operation of control posts and logistics elements.

The main objective of a fire strike in an offensive engagement is to inflict as much damage on the enemy as is necessary to prevent him from putting up organized resistance, thereby creating the necessary conditions for successfully carrying out combat missions.

Planning fire strikes, i.e., determining the number of phases in them, their nature, composition, and duration, and methods of firing, depends on the situation that develops and the nature of the enemy defenses. But in all cases, the greatest possible numbers of organic, attached, and supporting fire weapons and aircraft, and sometimes even weapons controlled directly by senior commanders (chiefs), are assembled to participate in fire strikes.

When offensives are undertaken while in direct contact with the enemy, fire strikes achieve their greatest effect when made in three stages: preparatory fire for the attack, supporting fire for the attack, and supporting fire for troops attacking in depth. If troops go over to the offensive from the line of march, fire strikes are carried out while the troops are moving up, using missiles, aircraft, and artillery.

Since essentially all unit and subunit fire weapons take part in fire strikes, they are planned by the combined arms commander. Taking into consideration the objective and concept of the engagement, the combined arms commander determines the degree to which the enemy is to be subjected to fire, the number and nature of targets to be neutralized (destroyed) before going over to the attack and during the engagement, the resources needed to accomplish fire missions, the sequence followed in coordinating their efforts, and the required density of fire on the main axes. Depending on how the situation develops, the commander decides on the method for carrying out a given fire mission, i.e., determines the procedure and sequence for making fire strikes, so as to attain a sufficient degree (effectiveness) of fire effect on the enemy.

On the basis of the combined arms commander's decision and instructions, commanders of artillery, air, and other fire subunits organize the combat employment of their assets, work out aspects of the fire strike in detail, specify which targets (installations) to hit with which resources and in what sequence, determine ammunition requirements, methods of carrying out fire missions, sequence of movement and deployment of fire resources, and work out matters in the field (or on a map) pertaining to cooperation, subunit support, and fire control to the last detail.

The experience of wars and tactical exercises reveals that in order to achieve success in an offensive it is essential to attain and maintain fire superiority over the enemy. To achieve this, one must forestall the enemy in opening fire, seize the initiative in firing as quickly as possible and firmly maintain it, ensure the effective employment of one's fire resources, and prevent the enemy from making full use of his weapons. The struggle for fire superiority in an engagement is closely linked with achieving air supremacy. Unless the subunits are provided with reliable cover against enemy air strikes, it is impossible to ensure that they will be able to perform their combat missions successfully and seize and maintain the initiative in firing.

In modern combat, methods used to achieve fire superiority over the enemy differ substantially from those of the Great Patriotic War. Then, in fact, this mission was assigned exclusively to artillery. Fire superiority was achieved mainly by disrupting the enemy's fire plan, above all by neutralizing (destroying) his artillery resources. Today, successful counterbattery bombardment does not ensure that fire superiority will be achieved. First, enemy offensive nuclear weapons, such as tactical missiles, long-range artillery guns (especially those firing nuclear shells), and reconnaissance-strike complexes, must be detected and destroyed. It is also important to disrupt the enemy's antitank, anti-infantry, and anti-aircraft fire plans and his troop and weapons control systems. In other words, the mission consists in undermining the stability of fire in the enemy defenses as quickly as possible, thereby maintaining a high momentum of advance and protecting friendly troops against enemy nuclear and fire strikes.

The increased power, accuracy, range, and rate of fire of modern fire weapons, and the improvement in the stability and aggressiveness of the defense that occurred at the same time have considerable influence on the methods used to carry out fire missions in offensives. During the Great Patriotic War, subunits destroyed the enemy for the most part in close combat, that is by concentrating their fire mainly on targets and installations that were obstructing the attacker's advance. This enabled the subunits to exploit the effects of fire immediately, since the enemy could not manage to restore his disrupted fire plan in time, and this predetermined the success of the attack.

However, close-range fire fights, in which the defending enemy's resources were destroyed (neutralized) sequentially as the troops advanced, also had their disadvantages. The enemy's weapons and reserves located in the depth of his defenses were largely out of range of the attacking forces' fire. As a result, the enemy often maneuvered with impunity laterally and from the depth toward the threatened axes and counterattacked. In order to prevent this, the Soviet command took every possible measure to in-

crease the part played by long-range fire in offensives, i.e., to increase the depth to which the enemy defenses could be neutralized by fire simultaneously.

In 1941–42 massed artillery fire was used in operations by Soviet forces to neutralize the enemy defenses to depths of 2.5–5 kilometers, while in operations in 1943, this reached 3–4 kilometers, in 1944 and 1945 the depth to which the enemy defenses were neutralized increased to 6–8 kilometers, and in the final operations of the war it often reached 15 kilometers.¹⁶

In modern combat, simultaneous effect in depth against the defenses has become an objective necessity, since the major portion of the enemy's long-range fire resources are now concentrated in the depth of his dispositions. Moreover, the range of fire weapons has increased considerably. As a result, long-range fire fights have become typical of modern offensives. This was demonstrated by the 1973 war in the Middle East.

Combat actions by the opposing sides created a situation where counterbattery exchanges took place within mutual artillery range, i.e., about 8–10 kilometers from the line of contact; where ATGM launchers engaged tanks at ranges of 3–4 kilometers; combat helicopters equipped with ATGMs engaged tanks at ranges of 2–3 kilometers; and, finally, tanks engaged targets within their flat trajectory range.

As demonstrated in the war, fire strikes in depth make it possible for forces to make preventive fire strikes against enemy targets and installations as they are detected and create favorable conditions for neutralizing the defenses to a considerable depth, for destroying not only the first echelons, but the second echelons and reserves as well, and for containing their maneuver and disrupting troop and weapons control systems and logistics operations. All this undermines the stability of the enemy's defense.

For this reason it is important that personnel master the skills needed to conduct long-range fire fights and know how, in an exchange of fire with the enemy, to hit targets (installations) with the first round, from the initial contact, and in the first attack at maximum ranges.

However, the increased importance of long-range fire fights naturally does not mean that close combat is no longer important. Most of the fire resources belonging to a defending enemy, particularly his antitank weapons, have rather short ranges of fire.

For example, the hollow charge antitank rifle grenades with which NATO armies are equipped can be fired at a range of about 100 meters, the range of antitank rocket launchers is 100–150 meters, the range of recoilless guns is 1000–1500 meters, and the range of tank and antitank guns is about 2000 meters.

Therefore, many antitank weapons are located in direct proximity to the FEBA at depths of about 1.5 kilometers. Consequently, unless they are effectively destroyed, either by direct or indirect fire, there can be no assurance that attacks by tank and motorized rifle subunits will succeed.

The nature of fire strikes is greatly affected by the methods used by subunits in going over to the offensive. In the last war, if offensives were carried out by troops moved up from the depth, **fire cover** had to be provided for them as soon as they began moving up. Artillery cover provided to the troops as they were moving up in fact constituted a separate phase of the artillery offensive. Enemy weapons whose fire could reach the advancing troops while they were still on the distant approaches to the enemy defenses were first to be hit. At the same time, artillery and aviation neutralized enemy control posts, radar and reconnaissance systems. This made it possible to “blind” the defending enemy and disrupt his troop control and combat support systems. As the troops approached the line of contact, fire strikes in the depth of the enemy’s defenses were gradually shifted toward the front line, thus supporting the subunits’ attack.

In an offensive carried out while in direct contact with the enemy, the advancing troops sought primarily to effectively neutralize enemy strongpoints in the immediate depth of his defenses, since otherwise it would be impossible to carry out a breakthrough successfully. Massed artillery and air strikes against targets in the depth of the enemy defenses were normally carried out during the engagement.

Obviously, both of the aforementioned methods of exerting pressure by firing on enemy defenses will be employed today. The best results here may be achieved by combining consecutive and simultaneous fire strikes.

As combat experience has revealed, one of the most important phases in a fire strike is the **fire preparation for an attack**, which includes artillery and air preparation. Its aim is to ensure the strongest possible initial strike against the enemy. Although its duration and the methods used in organizing it may vary, the greatest effect is achieved by firing as deep into the enemy defenses as possible. The principal weight of fire here must be concentrated on neutralizing the enemy’s first defensive positions.

In Soviet operations during the Great Patriotic War, usually about half the ammunition allotted to artillery preparation was spent on neutralizing strongpoints on the first line of enemy defenses, while 25–30 percent was used to neutralize the second position and 15–20 percent to neutralize the third position. As a result of this distribution of efforts, enemy casualties reached approximately 60–70 percent in the first position, about 10 percent in the second, and about 5 percent in the third. This ensured a successful attack by the troops.¹⁷

It should be noted that during the war, artillery preparation for an attack tended to be somewhat shorter in duration, so as to increase the intensity of fire effect on the enemy. For this purpose, the time allocated to fire strikes was increased. Fire strikes made up 40–60 percent of the artillery preparation for attacks in operations during the third period of the war.

Today the duration of artillery preparation for an attack depends on the nature of the enemy defenses and on the quantity and quality of weapons used. Artillery preparation may consist of several fire strikes against predetermined targets (installations), in combination with direct fire by guns, tanks, and antitank weapons, which destroy observed fire weapons, armored targets, and fortifications in the enemy FEBA and in the immediate depth during the whole period of artillery preparation. Artillery fire must achieve its greatest density at the beginning of the attack. Air preparation for an attack may precede or coincide with artillery preparation. As motorized rifle and tank subunits move up to the attack line, on signals given by commanders, fire is shifted into the depth without pausing or reducing the density and in such a way as to be unnoticed by the enemy.

Fire support, which includes artillery and air support, begins as the subunits go over to the attack. In providing fire support, the advancing forces strive to prevent the enemy from conducting aimed fire against the attacking subunits using short- and long-range weapons. For this purpose, during the last war, dense curtains of fire were laid ahead of the attacking subunits in the form of single or double rolling barrages, while in attacks against hastily erected enemy defenses, sequential concentrated fire was employed. This type of fire was intended to reach depths of 2-5 kilometers. When strongly reinforced enemy defenses were being breached and when the advancing forces had sufficient quantities of artillery weapons, a more powerful and deeper effect of fire on the enemy defenses was achieved.

When the Leningrad blockade was broken in January 1944, fire was employed simultaneously against three lines—a triple rolling barrage. In the Crimean Operation of 1944, a quadruple rolling barrage was actually laid in the sector where the 51st Rifle Corps broke through. Wartime experience revealed that the denser and deeper the effect of fire on the defenses, the more successful the attack.

The method used to provide fire support depends on the nature of enemy defenses and the extent of the damage inflicted on them during preparatory fire for the attack. In sectors where the defensive system has been completely disrupted by nuclear weapons or powerful fire strikes and the enemy subunits are demoralized, fire support is provided using concentrated fire and fire on point targets; in other sectors, single or double rolling barrages may be used. In this case, the first line of the rolling barrage is, in most instances, designated for the enemy FEBA. Fire is shifted from this and subsequent lines on signal from regimental commanders as the attacking subunits approach the troop safety line.

While artillery support is being provided for an attack, particular consideration is given to neutralizing and destroying enemy nuclear and artillery resources and repelling enemy counterattacks. Air support for an

attack is provided in the form of powerful air strikes against enemy control posts, radar, advancing reserves, newly discovered targets and offensive nuclear weapons.

During the last war, Soviet commanders demonstrated great skill by organizing effective **close fire (artillery and air) support for subunit offensives in depth**. It was normally carried out throughout the depth to which missions had been assigned and consisted of continuous powerful artillery fire and air strikes against the enemy force's first echelon, reserves, and other targets.

A commander's skillful use of battle-tested principles for making fire strikes is vitally important in achieving success in an offensive. The most important of these are concentrating fire efforts on the main axes, quick fire maneuver, providing precise and continuous mutual fire support between attacking subunits and fire assets, making surprise fire strikes, exerting continuous fire effect on the enemy, and exercising flexible fire control.

Today these principles have undergone many essential changes. Thus, in the past, concentration of fire was achieved mainly by increasing the numbers of weapons in breakthrough sectors.

During the Great Patriotic War, the density of artillery on the axis of the main attack increased from 70-80 to 250-300 or more guns per kilometer of front, i.e., by 3-4 times.¹⁸ The concentration of great masses of artillery and other fire resources on the main axes was necessary to ensure effective neutralization of enemy defenses.

Since the effectiveness of modern fire weapons has increased considerably, concentration of fire is achieved mainly by employing weapons with greater fire capabilities and more powerful ammunition. Foreign military experts consider the use of fuel-air explosive munitions very promising. Their effectiveness, according to the foreign press, is 10 times greater than that of high-explosive fragmentation shells.

The mobility of aviation is exploited to concentrate fire on the main axes. For example, when providing air support for an attack, the NATO armies propose to increase the number of aircraft in groups used to make air strikes from 4-12 to 30-50 aircraft, i.e., by a factor of four.¹⁹

An important principle to be observed during fire strikes is the quick maneuver of fire. This is particularly critical during the decisive stages of an engagement: when repelling enemy counterattacks, committing the second echelon, and redirecting efforts onto a new axis; i.e., when quick concentration of subunit fire makes it possible to destroy primary enemy targets (installations). In local wars, maneuvers by combat helicopters have been widely used for these purposes. They have made surprise air-to-surface strikes against the enemy. Air-to-ground maneuvers are quick,

taking literally minutes, which is particularly important for countering enemy offensive nuclear weapons, reconnaissance-strike complexes, tanks, and tactical airborne assault forces.

In the future, the tactics used by artillery and aviation in maneuver by fire and strikes will change because of the influence of new weapons introduced. The use of various types of shells, aerial bombs, and missiles that ensure the effective destruction of well-defended point targets enables the artillery to switch over to using fire platoons and even individual guns to accomplish missions, while continuing to use the traditional methods of firing by battalions and batteries. It also enables aviation to strike in groups and with individual aircraft, while continuing to make large-scale and concentrated strikes.

In modern offensive engagements, mutual fire support between the subunits on the offensive and fire resources increases in importance because of the drastic increase in the resources making fire strikes, the increased scope of offensive engagements, and their dynamism and maneuverability. In order to defeat the enemy, it is necessary to precisely coordinate the fire of the attacking subunits and attached and supporting resources in terms of target, place, and time.

Experience gained in combat and on tactical exercises reveals that the effect of fire on an enemy depends in many respects on the degree of surprise achieved in fire strikes. It is achieved by forestalling the enemy in deploying his fire resources and in opening fire, by using varied and novel methods in the organization of fire strikes, concentrating fire quickly at decisive moments on the main axis, maneuvering by fire unexpectedly, and employing new weapon systems and ammunition.

Since the enemy will also strive to achieve surprise in opening fire, it is important to reconnoiter thoroughly; to constantly maintain fire resources at high levels of combat readiness; to take timely protective measures against NBC weapons and fire resources, especially precision automated weapon systems; to be able to carry out nuclear and fire strike damage control quickly; and to be able to quickly restore the fighting efficiency of friendly fire resources.

The effectiveness of fire support for subunits on the offensive also depends largely on continuous fire effect on the enemy during an engagement. The importance of this principle has been confirmed in many wars. Thus one of the reasons for the low momentum of advance of Soviet troops in the offensive operations of the first period of the Great Patriotic War was that fire and troop movements were not always closely coordinated. Fire strikes against the enemy were sporadic and isolated, and, as a result, the subunits were often left without fire support during the offensive. This situation was soon rectified. Artillery and air offensive actions became an effective means of maintaining continuous fire support for the

troops. Their skillful organization and conduct enabled the troops to advance literally “to the thundering music of artillery and aviation.”

As the dynamism of offensive engagements and the depth of troop advance increases, so does the importance of providing the subunits with continuous fire support. Exercise “Zapad-81” demonstrated that to maintain continuous fire support, commanders must make detailed fire plans, determine ammunition expenditures in terms of missions, plan timely movements of fire resources during engagements, and organize flexible fire control.

6. Defeating the Enemy in the Tactical Zone of Defense and Developing the Offensive in Depth

An offensive against a defending enemy normally begins with a breakthrough. In a number of offensive operations in the Great Patriotic War, breakthroughs were brilliantly prepared and carried out by Soviet troops. The actions of the Soviet command in breaking through enemy defenses were marked by all-round assessment of the situation, application of bold and original solutions, skillful concentration of resources on main axes, well-organized cooperation, comprehensive support, and flexible troop control.

Today, as in the past, success in a breakthrough will depend on thoroughness of preparation and aggressiveness and determination of troop actions. Methods of breaking through may vary according to the situation. In some cases, nuclear strikes on primary targets in the enemy defenses may precede the troops’ transition to the attack; in others, the defenses will be breached by artillery fire and air strikes, followed by a determined advance by motorized rifle and tank subunits into the depth and widening of the breach toward the flanks.

Achieving a quick breakthrough depends largely on the good organization and resoluteness of an attack. It consists in the swift and continuous movement of tank and motorized rifle subunits deployed in battle formation, combined with dense fire from tanks and infantry combat vehicles (armored personnel carriers) and, as the attackers close with the enemy, fire from other types of weapons to destroy (defeat) the enemy. The main factors ensuring success in an attack are vigor, audacity of the attackers’ actions, surprise of the strike, speed of maneuver, and continuous fire and movement.

The methods used in an attack depend to a crucial extent on the intensity of the fire effect achieved on the defense and the striking power and mobility of the subunits. During World War I, strikes were carried out

essentially by infantry with relatively weak fire support, while during World War II, because of the considerable concentration of tanks and artillery in infantry battle formations, the resoluteness of attacks increased and the part played by fire strikes grew.

In the 1944–45 operations, attacking forces often reached depths of 3–4 kilometers in continuous advances behind rolling barrages, while the momentum of attack reached 1–1.5 km/h. However, in many cases the infantry was unable to withstand enemy retaliatory fire and the attack was aborted. The main reason for this was insufficiently effective neutralization of the defenses by fire, as a result of which the enemy was able to quickly restore his fire plan, which had been disrupted in the course of artillery and air preparation for the attack, and to put up organized resistance to the attackers.

In modern engagements, tank and motorized rifle subunits cooperate closely during attacks. Tanks play the leading role. Neutralizing and destroying enemy weapons in cooperation with the artillery, the tanks create the conditions needed for a swift advance by attacking troops. Tank subunits attack in an extended line.

Attacks by motorized rifle subunits may be carried out in various ways, depending on the situation. On those axes where the enemy defenses, especially his antitank resources, have been effectively neutralized by nuclear or conventional weapons, motorized rifle subunit attacks are carried out **with personnel remaining mounted on infantry combat vehicles (armored personnel carriers)**. When breaking through deliberate enemy defenses, thoroughly prepared beforehand and well developed in an engineering sense, or through fortified areas, without employing nuclear weapons, **attacks by motorized rifle subunits are carried out on foot, behind the tanks**. This method is also used when subunits are advancing through adverse terrain or when visibility is limited.

When attacking on foot, motorized rifle subunits deploy in an extended line and advance behind the tanks at a distance that ensures their safety from friendly artillery shells and enables them to support the tanks with small-arms fire. Infantry combat vehicles (armored personnel carriers) hit targets that block the advance of the attacking subunits. They move in bounds, from line to line and from cover to cover, and, as soon as the situation allows, motorized rifle subunit personnel remount and move forward swiftly.

During the attack, the main efforts of artillery and aviation supporting the motorized rifle and tank subunit actions are concentrated on destroying the enemy's strongpoints, especially in his first line of defense, and exposed fire weapons and on neutralizing advancing enemy reserves.

Guns and tanks allocated for direct fire and ATGM launchers destroy observed weapons and defensive works in the FEBA and the immediate depth of the defenses. Combat helicopters operate from ambush and make strikes, primarily against enemy tanks and other armored targets. Under the cover of artillery fire, combat engineer subunits clear passages through the enemy's engineer obstacles in front of his FEBA.

In order to mislead the enemy, feint shifts of artillery fire into the depth of the defense may be made during fire preparation for attacks. Soviet troops made skillful use of this tactic during the Great Patriotic War.

The schedule of artillery preparation for the attack by the 3rd Guards Rifle Division's units on Perekop Isthmus in April 1944 provided for two feint shifts of fire, during which the infantry pretended to begin attacking. This contributed substantially to the achievement of surprise in the fire strikes. The Nazis took the feint shifts of fire for the beginning of an attack by our troops, left cover, and, as a result, suffered heavy casualties.²⁰

When one switches from preparatory fire to fire support, it is important not to allow any lapse in time between the moment when artillery fire is switched into the depth of the defense and that when the motorized rifle subunits and tanks begin their attack, in order to prevent the enemy from preparing to repel the attack. In cases where this could not be done in the last war the attacks failed.

When formations of the 11th Guards Army were breaking through the Nazi defenses in August 1943 (Battle of Kursk), the infantry began attacking on several sectors of the front as late as 10-12 minutes after artillery preparation had ceased. As a result, artillery support for the attack had to be delayed. A pause occurred in the troops' actions, which was exploited by the enemy to restore his fire plan in the FEBA and inflict heavy casualties on the attacking subunits.

Combat against enemy antitank weapons is continuous during an attack. In essence, the antitank defensive system now constitutes the basis of the defense. The density of antitank weapons has increased drastically. In the Great Patriotic War, antitank weapon density on the main axes came to about 20-25 weapons per kilometer of front, while now, according to the experience of NATO exercises, this has doubled or tripled. Moreover, the combat capabilities of antitank weapons, i.e., their firing range and accuracy, and the power of their projectiles (missiles), have increased substantially.

According to the foreign press, the firing range of some antitank systems is 4-5 kilometers or more, compared with their range of 950 meters at the end of World War II. In the battalion defense area of the West German Army, there are 15 antitank weapons capable of firing at ranges of about 3 kilometers, 30-35 weapons firing at ranges of about 2 kilometers, and 45-50 weapons firing at ranges of about 500 meters. Moreover, their fire may be reinforced and intensified by unit and formation antitank weapons.

To disrupt modern enemy antitank defense systems, it is necessary to destroy or neutralize a considerable portion of the antitank weapons (70–80 percent of their total, according to the experience of local wars) while still conducting fire preparation for the attack. Also, the attacking subunits must immediately exploit the effects of the fire strike. The swifter and more unexpected the attack, the fewer casualties the attacking troops will suffer and the quicker they will be able to cross the zone of dense, overlapping enemy antitank fire. Experience gained on tactical exercises shows that when the momentum of attack is 1.5 times greater, casualties suffered by the attacking subunits because of enemy fire decrease by a factor of two or three.

Tank and motorized rifle subunits, attached and supporting artillery, tanks and armored personnel carriers, and antitank weapons are very effective against enemy antitank weapons. The antitank weapons normally advance behind first-echelon company battle formations, ready to destroy enemy tanks and other armored targets that hinder the subunits' attack.

The advancing subunits are assigned the important mission of **combating enemy combat helicopters**. In order to succeed in this undertaking, it is necessary to detect these helicopters in good time; warn the subunits about the possibility of helicopter attacks; organize measures to destroy them in the air, thereby preventing them from attacking; and break up the actions of enemy heliborne assault forces. Missile, air, and fire strikes may be made against helicopters situated on airfields, while helicopters in the air are destroyed with machine gun, cannon, and antiaircraft weapon fire and by the combat helicopters of the attacking forces.

Engagements in the depth of enemy defenses are characterized by their complexity and the speed and abruptness with which the situation changes. During this phase, the attacking subunits may carry out combat missions that vary in essence and nature, such as routing advancing enemy reserves; repelling counterattacks; destroying offensive nuclear weapons; negotiating radioactive contamination zones, engineer obstacles, barriers, and demolished areas; and fighting enemy airborne assault forces, airmobile subunits, isolated groupings, etc.

To succeed in these and other missions, attacking subunits must maneuver fire and resources. Every breach and vulnerable spot in the enemy's battle formation must be exploited to break through to the flank and rear of enemy strongpoints, advance swiftly into the depth, and make a surprise strike. Enemy groupings should not be dislodged from one position to another but should be split up, encircled, and defeated in detail. "To dislodge the enemy means failure, but to cut off, encircle, and disperse the enemy means success," A.V. Suvorov taught.

In the course of an offensive, the commander keeps constant track of how the situation is developing; organizes reconnaissance; makes timely mission assignments to the subunits; updates cooperation plans, organizes combat, technical, and logistic support; and sees to it that assigned missions are carried out unswervingly, whatever the difficulties.

Reconnaissance must determine the degree of damage inflicted by fire strikes against the enemy's strongpoints, what measures he is taking to restore his disrupted fire plan and obstacle system, which firing positions hinder the subunits' advance, the nature of the obstacles and destruction and how they may be bypassed, and the composition of the enemy reserves and their axis of advance.

The success of actions by advancing forces depends largely on maintaining precise and continuous cooperation throughout the engagement. To this end, the battalion (company) commander periodically updates the missions assigned to motorized rifle and tank subunits and coordinates their actions with artillery fire, air strikes, and the actions of the rocket launcher, antitank and machine gun subunits, and adjacent forces that are aimed at destroying enemy strongpoints and fire resources, especially offensive nuclear and chemical weapons and precision weapons; assigns additional missions to the artillery and other fire resources in order to provide continuous fire support for the attacking subunits as they repel enemy counterattacks and negotiate obstacles and obstructions; updates the procedure for changing the positions of the second echelon (reserve), artillery and other organic and attached resources during the engagement; and, when necessary, he updates the missions of the antiaircraft subunit covering the battalion against enemy air strikes during the engagement.

During offensives, subunits have to negotiate various types of engineer obstacles. Today, when the enemy is able to use remote minelaying to rapidly set up obstacles both in front and to the rear of advancing forces, it is essential to increase the mobility of subunit actions where mined locales abound. Various means are used to negotiate obstacles. Whenever possible, minefields are bypassed. But when this is impossible, lanes are created in them by obstacle clearing groups comprised of combat engineer subunits and mine clearing tanks.

As the advancing forces penetrate the defenses, the enemy will increase his resistance and do whatever possible to localize the breakthrough. Thus, in the course of an engagement, both sides will be involved in an intense competition to build up their efforts. Under these conditions, it is important to forestall the enemy in making fire strikes and disrupt his concept. He should not be permitted to restore his disrupted fire plan and obstacle system and systematically regroup his resources along the front and from the depth. To this end, the subunits must move faster than the

enemy can maneuver. The commanders of the attacking subunits must retain the initiative in action and hold the reins of troop control securely.

The timely **commitment of the second echelon (reserve)**, which is used to intensify efforts, to exploit, and to maintain the necessary superiority in resources on the main axis, plays an important part in exploiting gains made. In Soviet offensive operations during the Great Patriotic War, battalion and regimental reserves (second echelons) often had to be committed even as the enemy's first defensive position was being breached; division and corps second echelons were committed as the second and third positions were being breached. As a result, the mobile group of an army (front) had to be brought into action prematurely, which had a negative effect on the development of an operation.

Today, because of the dynamism of offensive combat, second-echelon (reserve) units and subunits may be committed deeper inside the enemy defenses. For example, a battalion's second echelon may be committed after the battalion has accomplished its immediate objective, i.e., after it has taken the enemy's first defensive position.

It is very important to correctly determine the time for committing the second echelon (reserve). The buildup of efforts must occur when the first echelon is still advancing but with the real danger that its momentum of advance will be reduced.

The commander must follow the situation attentively and sense the pulse of the engagement in order to determine, correctly and in good time, the moment when additional forces have to be committed from the depth to ensure a decisive superiority in resources over the enemy on the main axis and swiftly exploit in depth or toward a flank.

The way that a second echelon of a motorized rifle battalion was committed in the "Zapad-81" exercise may serve as an example. A situation had developed where the "Southern" forces, having lost their first defensive position, had hastily begun to move up their reserves to counterattack and reinforce their defenses in depth. This was discovered in time by "Northern" force reconnaissance. After evaluating the situation, the commander of the "Northern" battalion decided to commit his second echelon. The subsequent course of the engagement revealed the good timing of the action. The attacking subunits succeeded in disrupting the defenders' concept and in maintaining their momentum of advance. The "Southern" forces did not have time to deploy for a counterattack and were unable to put up stout resistance. The "Northern" forces successfully breached the defense.

Gaps between the enemy's strongpoints and breaches created in his battle formations by nuclear and fire strikes are exploited to commit the second echelon (reserve). This enables the subunits to advance swiftly into the depth of the defense, make surprise strikes, quickly destroy enemy offensive nuclear weapons, fire resources, and control posts, and capture important objectives in the enemy rear.

When the second echelon (reserve) is being committed, its commander is usually given information concerning the enemy; the position of the first-echelon subunits; the line of commitment and the time to reach it; the immediate objective and subsequent direction of attack; resources for reinforcement and the places and times of their arrival; and the procedure for providing fire support to the commitment and for cooperating with first-echelon subunits.

The second-echelon (reserve) subunits may carry out their mission of routing the enemy in cooperation with tactical airborne assault forces and subunits of the forward detachment. When this is the case, their actions are coordinated in terms of target, place, and time.

The enemy may seek to prevent the attacking subunits from advancing into the depth of his defenses by counterattacking on the main axis. In the last war, the attacking forces did not have the required striking force and firepower, and so when threatened by counterattacks from defending enemy forces, especially those made with large forces, they normally stopped on the line they had reached, consolidated on it, and, exploiting favorable terrain features and a well-organized fire and obstacle system, repelled the counterattacks. This method was effective but inevitably reduced the momentum of advance.

Today, attacking subunits are equipped with more powerful and longer-range fire weapons and therefore, **when repelling counterattacks**, they seek to cause as much damage as possible to the enemy reserves as they are discovered in concentration areas and while they are moving forward. For this purpose, nuclear and fire strikes are made against the enemy with resources under the direct control of the senior commander (chief), while the attacking subunits, when conditions are right, make encounter attacks from the line of march against the reserves moving up from the rear. This makes it possible to repel enemy counterattacks without substantially reducing the momentum of advance.

If the counterattacking enemy is nonetheless able to obtain decisive superiority in resources on the axis of attack, some of the attacking troops will have to consolidate on the line reached in order to repel the counterattack.

The antitank reserve and mobile obstacle detachment move up to the threatened axis and, in cooperation with the first-echelon subunits, attempt to inflict damage on the enemy with fire and obstacles, hold up his advance, and create favorable conditions for developing the offensive. Tanks and infantry combat vehicles (armored personnel carriers) operating in the first echelon assume fire positions behind the nearest cover, while personnel from the motorized rifle subunits advancing in infantry combat

vehicles (armored personnel carriers) dismount and assume positions from which they can cooperate with tanks in destroying the counterattacking enemy forces.

Subunits use the concentrated fire of all fire resources to make fire strikes against the enemy at maximum range. As the enemy approaches, fire is gradually increased to its maximum intensity. At the same time, the main body of the attacking troops continues to develop the offensive in the depth of the defense. When necessary, it attacks the flanks and rear of the counterattacking enemy and, in cooperation with adjacent forces, destroys the enemy with a decisive attack and goes over to pursuit.

In the course of an offensive, the battalion commander must always ensure that the subunits are supplied with ammunition, fuel, food, and other stores; organize technical maintenance, recovery, and repair of armament and combat equipment; and provide for casualty collection, medical treatment, and evacuation.

7. Pursuit

Pursuit is an integral part of an offensive. F. Engels wrote: “The *fruits* of victory are usually reaped during pursuit. The more energetic the pursuit, the more decisive the victory.”²¹ War experience shows that as the spatial scope, decisiveness, and maneuverability of an offensive grow, the role, scale, and importance of pursuit increases. In the positional battles of World War I, pursuit of the enemy was relatively rare, but in most offensive operations during the Great Patriotic War, especially during its dynamic second and third phases, pursuit comprised from 60 to 80 percent of the overall duration of operations.

The conditions for going over to pursuit, the organization of pursuit, and the methods used in conducting it changed in line with the development of means of transport, support, and troop control. In wars during the preimperialist period, pursuit was conducted on a narrow front and not to great depths. The rate of pursuit was determined by the speed at which the infantry or cavalry moved. As armies became better equipped, especially as a result of their mechanization and motorization, pursuit actions became more decisive. In several Soviet offensive operations of the Great Patriotic War, the rate of pursuit was 10–40 kilometers per 24 hours for rifle formations and 25–80 kilometers for tank formations.²²

Methods of pursuit also improved. In addition to frontal pursuit, pursuit on axes parallel to the direction of enemy withdrawal and combined pursuit, that is, when some of the forces conducted frontal pursuit and the remainder engaged in pursuit on axes parallel to the direction of enemy withdrawal, were used during the war. The various methods of pursuit were used more effectively, making it possible to intercept the

enemy's line of withdrawal, move swiftly against the flanks and rear of enemy groupings, divide and encircle them, and defeat them in detail. Tank and mechanized formations and units played the main role in pursuit in the last war. With more mobility and striking power than the rifle troops, they could bypass the infantry, carry out raids deep behind enemy lines, forestall retreating enemy units in seizing important objectives (road junctions, crossings, passes, ravines, built-up areas), and thereby cause disarray and panic among the enemy forces.

The effectiveness of pursuit depended largely on artillery and aviation, which struck the withdrawing enemy's columns, obstructed his occupation of advantageous defensive lines, and disrupted his movement on roads, creating pileups of enemy troops in ravines, on mountain passes, at water obstacle crossings, etc.

Forward detachments played an important role in pursuit. Boldly and resolutely penetrating the depth of the enemy dispositions, they destroyed his rear guard by surprise attacks and intercepted the lines of his columns' withdrawal, seizing key objectives on movement routes and holding them until the main body approached.

The forward detachment of the 9th Guards Tank Corps, consisting of the 47th Guards Tank Brigade, began pursuing the enemy in the Vistula-Oder Operation at 1800 hours on 15 January 1945, crossed the Pilica River, swiftly overtook the infantry and, bypassing the strong centers of enemy resistance, reached the town of Sochaczew at 2300 hours on 16 January. In 29 hours of combat actions, it passed through approximately 100 kilometers of the enemy's rear dispositions, cut off his communications, and provided for successful actions by the corps' main forces.²³ Forward detachments of tank forces normally operated 10-30 kilometers from the main body, forward detachments of rifle forces 5-12 kilometers from the main body.

The procedure followed in preparing for and methods used in conducting pursuit in the Great Patriotic War have largely retained their significance even today. However, when they are followed today, consideration must be given to the qualitative changes that weapons have undergone. The availability of nuclear weapons and improved conventional weapons, increased troop mobility, and the possibility of landing large-scale airborne assault forces behind enemy lines makes it possible to attain more decisive objectives during pursuit and to enlarge its scope. It is now possible to defeat the retreating enemy quickly and accelerate the rate and maintain the continuity of pursuit to great depths. On the other hand, the enemy has increased capabilities for resisting the pursuing forces. He may set up large-scale barriers and areas of demolition and radioactive contamination on their routes of advance, make strikes with helicopters, carry out remote minelaying, etc. Hence, pursuit must be thoroughly organized and subunit actions must be provided with comprehensive support.

Advancing forces may go over to pursuit at various periods in an engagement: at the beginning of the offensive or, usually, during the exploitation stage. Normally, pursuit is undertaken when the enemy has been forced to withdraw from favorable defensive positions or after an unsuccessful meeting engagement. During the last war, pursuit sometimes began when the enemy was deliberately withdrawing to improve his operational position. Most often, troops went over to pursuit after breaking through the enemy defenses, when he was forced to pull his troops back to the depth.

As combat experience has revealed, **pursuit is a complex and dynamic form of offensive engagement, characterized by great determination of actions, quick and drastic changes in the situation, an intense struggle to win time, and complexity in troop control.** Pursuit aims to destroy the withdrawing enemy, preventing him from organizing to go over to the defense in favorable positions in depth or from linking up with approaching reserves.

Today, it is particularly important to detect the enemy's withdrawal in good time because, being highly mobile, he may quickly break away from the attacking subunits. To prevent this, reconnaissance is stepped up when an enemy withdrawal is anticipated. The mission of reconnaissance is to reveal the enemy's concept of actions, the beginning and direction of his withdrawal, his routes and speed of movement, the composition of the column, and the nature of the actions of the covering subunits; to discover where the enemy is preparing intermediate defensive positions and what forces may be occupying them; and to determine the presence of obstacles and obstructions on routes of pursuit and the direction of movement of the enemy reserves.

Discovering the enemy's withdrawal, the subunits begin pursuit independently, as a rule, without waiting for orders from the senior commander (chief). Here, the battalion commander organizes additional reconnaissance and updates the pursuit missions for the subunits. He reports to the regimental commander and informs adjacent forces that he has switched to pursuit.

It is important to prevent the enemy from breaking away and to disrupt his orderly withdrawal. For this purpose, motorized rifle and tank subunits bypass the withdrawing enemy forces along **parallel routes**, exploiting the great cross-country capability of tanks and infantry combat vehicles (armored personnel carriers), emerge on the enemy lines of march, and, in cooperation with adjacent forces, defeat him with a decisive attack in his flank and rear. When it is impossible to pursue the enemy on axes parallel to his withdrawal, subunits undertake a **frontal** pursuit, defeat the covering subunits, break through to the main body, and, in cooperation

with adjacent forces, as well as tactical airborne assault forces and forward detachments (advance guards) where indicated, attack the enemy from the line of march.

Strongpoints and ambushes encountered on the line of march are, as a rule, bypassed and destroyed with attacks from the flanks and rear. The main thing is to ensure speed and momentum in pursuit and to gain time. A. V. Suvorov taught: "The enemy must be pursued day and night, for a forest that is not totally uprooted will grow back."

With a view to providing reliable fire support for subunit pursuit actions, the major portion of the artillery is moved with the advance guard or at the head of the column of the main body, ready to fire when the withdrawing enemy's covering force and main body are engaged, to destroy and neutralize his fire resources, and to prevent him from assuming defenses in intermediate positions.

Fixed-wing aircraft and combat helicopters conduct continuous reconnaissance, strike the withdrawing enemy columns, interdict the approach of enemy reserves from the depth, and support the landing and actions of tactical airborne assault forces and the actions of the advance guards and forward detachments. The main efforts of the air defense resources are concentrated on covering subunits operating in the main body, especially while crossing ravines, water obstacles, built-up areas and mountain passes, and as they are deploying for combat with the withdrawing enemy.

The main missions of engineer subunits are carrying out engineer reconnaissance of obstacles and demolished areas, opening gaps in them, and supporting the subunits in pursuit as they deploy and maneuver toward the enemy's flank and rear. When necessary, engineer subunits lay minefields, carry out demolition on the routes of enemy withdrawal, and prepare and maintain crossings over water obstacles.

Experience in combat and in tactical exercises reveals that, in order to achieve great momentum and continuity in pursuit, it is important to skillfully alternate the actions of the first and second echelons and reserves, intensify efforts in good time when routing enemy reserves moving up from the depth, quickly restore the fighting efficiency of subunits that have suffered losses because of enemy nuclear and fire strikes, skillfully switch fire and maneuver resources, and operate with daring, drive, and vigor.

In pursuit, tactical airborne assault forces are tasked with capturing road junctions, crossings, passes, and other important objectives on the enemy's withdrawal routes, slowing down the advance of his reserves, breaking up their maneuvers, and creating conditions for defeating the

enemy in detail. The tactical airborne assault force assists the pursuing troops in quickly overcoming the enemy's defensive lines and negotiating natural obstructions, obstacles and demolished, burnt, and flooded areas.

In order to ensure swift and skillful actions while pursuing the enemy, it is important to maintain high levels of combat aggressiveness in personnel in the main body, reconnaissance subunits, forward detachments, and advance guards.

8. Crossing Water Obstacles

When developing an offensive in essentially any theatre of military operations, troops will be required to cross various water obstacles: rivers, lakes, canals, estuaries, reservoirs, flooded areas, etc. For example, rivers about 100 meters wide may be encountered every 35–60 kilometers; rivers 100–300 meters wide, every 100–150 kilometers; and rivers more than 300 meters wide, every 250–300 kilometers. In other words, during an offensive, a formation (unit) will have to cross an average of one medium-width and several narrow water obstacles every day.

Crossing water obstacles is a complex combat mission that requires great skill in the organization of combat actions and troop control on the part of commanders and staffs, high moral-political, psychological and combat training standards on the part of personnel, and determination and persistence in attaining the assigned objectives.

In the Great Patriotic War, the Soviet troops crossed water obstacles such as the Dnepr, Desna, Sozh, Dnestr, Neman, Bug, Vistula, Danube, Oder, and other rivers with great skill. They were as a rule crossed quickly, by surprise, and on a broad front. However, not all water obstacles could be crossed from the line of march, because of the inadequacy of the water crossing equipment available at the time, the poor mobility of rifle troops, and their limited capabilities with respect to engineer, technical, and logistic support. Therefore, long and bitter battles were fought for water obstacles, even over relatively small ones.

Today, when the depth of the combat missions of attacking formations and units and their momentum of advance has increased, they will have to cross water obstacles much more often than in the last war. And although their water obstacle crossing capabilities have increased substantially because of their being supplied with fast amphibious fighting equipment, water obstacles still constitute serious natural obstructions to the movement of attacking troops. It may be expected that, as in the past, defending enemy forces will make extensive use of water obstacles to strengthen their defenses.

On tactical exercises carried out in recent years by the NATO armies, defensive lines, fire barriers, flooded areas, and nuclear mine strips were set up, as a rule, along rivers, canals,

and lakes. Nuclear and fire strikes against the enemy as he approaches a water obstacle are calculated to create large areas of demolition, barriers, and highly radioactive zones and drastically change the conditions of the river, its course, and the nature of the terrain on the riverside. It may be concluded from the experience of these exercises that fighting for water obstacles will demand great efforts from attacking forces.

Depending on the situation, water obstacles may be crossed from the line of march, either by preparing for crossing before the subunits approach the water obstacle or by deploying the main body at the water obstacle and crossing it after quick supplementary preparations.

The essence of crossing a water obstacle **from the line of march** consists in the subunits rapidly approaching the water obstacle on a broad front, crossing it quickly after brief preparatory fire, making a resolute attack against the enemy, and developing the offensive on the opposite shore without stopping (figure 6). The advantage of this type of crossing lies in the fact that it makes it possible to gain time and make a surprise attack against the enemy and ensures speed and great momentum of advance.

In April 1944, the 226th Rifle Regiment of the 93rd Rifle Division made an assault crossing of the Dnestr River. While approaching the river, reconnaissance determined that the opposite shore was defended only by enemy security subunits. Evaluating the situation, the regimental commander decided to gain time by sending forward a reinforced rifle company, which was assigned the mission of crossing the river in boats, destroying the combat security outposts, and seizing a bridgehead, thereby enabling the main body of the regiment to cross. The mission was successfully accomplished and the regiment crossed the Dnestr in short order.

The conditions necessary for crossing from the line of march are usually created as the offensive develops. It is important to pursue the enemy closely so as to prevent him from breaking away, quickly capture existing crossing sites, and cross water obstacles literally “on the heels” of the withdrawing subunits. The forward detachments and advance guards play an important part in carrying this out. When approaching the water obstacle, the commander of a battalion allocated to the forward detachment organizes reconnaissance of the obstacle. For this purpose, a battle reconnaissance element or patrol sections (tanks) are dispatched to the designated crossing sites with the mission of determining the availability and condition of bridges and fords, the best sites for setting up assault and ferry crossings, and places for tanks to cross by fording or snorkeling.

The commander must make his decision for crossing the obstacle as early as possible so as to make timely assignments of combat missions to the subunits, organize cooperation, and, when already advancing toward the water obstacle, make the necessary preparations for crossing the obstacle. Usually the decision for crossing a water obstacle considers the following factors: methods of defeating the enemy on the approaches to the water obstacle and on the opposite bank; locations and types of main and

alternate crossing sites; distribution of water crossing equipment; routes and schedule for the subunits' approach to the water obstacle and procedure for preparing equipment for crossing the obstacle; and the sequence in which the subunits are to cross.

The nature of motorized rifle (tank) subunit missions during a crossing depends on the nature of the enemy defenses on the opposite bank, the extent of damage to them from fire strikes, the availability of water crossing equipment, the width of the water obstacle, and other factors.

It is advisable to assign missions to the subunits and organize cooperation in the field. The first-echelon subunits are given instructions concerning the sequence to follow in approaching the water obstacle, missions while crossing it and fighting on the opposite bank, the locations of the main and alternate crossing sites, the tank sealing area, the area for loading men and combat equipment onto self-propelled assault crossing equipment, as well as the line of departure and the crossing time.

The artillery is instructed as to the location of fire positions, when it should be ready to open fire, missions to provide support for the subunits during the crossing and subsequent engagement on the opposite bank, and the sequence of crossing. The air defense subunit is instructed as to the schedule for approaching the river, its missions in protecting the first-echelon subunits against enemy air strikes as they approach the river, during the crossing, and while fighting on the opposite bank, when it should be prepared to open fire, and the sequence of crossing.

The line of departure for crossing an obstacle should run, whenever possible, behind folds in the terrain and beyond the flat-trajectory range of enemy guns and tanks. When an underwater crossing by tanks is envisaged, the sealing area is situated in places screened from short-range enemy weapons.

The subunit battle formations are set up in accordance with the concept of crossing actions and the assigned combat missions. The formation must ensure that the water obstacle is crossed quickly and the buildup of combat effort is maintained without interruption during the engagement on the opposite bank. Subunits normally cross the water obstacle from the line of march in the same formation used when pursuing the enemy.

Engineer subunits play an important role in ensuring the success of the crossing. They carry out engineer reconnaissance of the subunits' lines of movement, the water obstacle, and the enemy defenses; prepare routes and provide support for the advance of the attacking subunits and the movement of the assault crossing equipment to the obstacle; clear lanes in

engineer obstacles; perform traffic control and rescue and recovery service at the crossing sites; and support the actions of the attacking subunits on the opposite bank.

The subunits approach the water obstacle at maximum speed. If a battalion is operating in the forward detachment, its mission is to reach the water obstacle as soon as possible, bypassing isolated enemy strongpoints, and to capture intact crossing sites and sectors suitable for crossing the obstacle. The battalion crosses the water obstacle with available bridges, amphibious combat vehicles, and assault crossing equipment, seizes a favorable line on the opposite bank, and holds it until the main body arrives. Smoke screens are used extensively to camouflage crossings.

When an obstacle is crossed from the line of march, fire strikes against the enemy begin while the subunits are approaching the water obstacle. The strikes are made against enemy offensive nuclear weapons, artillery, strongpoints, reserves, control posts, and radar. On approaching the water obstacle, the artillery supporting the subunits and some of the tank resources, ATGM launchers, and antitank rocket launchers assume fire positions, hit the enemy fire resources that are impeding the crossing, and provide support for the actions of subunits on the opposite bank.

Exploiting the effects of friendly nuclear and fire strikes and of the actions of the forward detachment (advance guard) and tactical airborne assault force (if one is employed), the first-echelon motorized rifle subunits cross the water obstacle in amphibious combat vehicles and assault crossing equipment under cover of a smoke or aerosol screen, fire on the enemy from all weapons while afloat, seize a bridgehead on the opposite bank and, without stopping, develop the offensive in depth.

Tank subunits operating in the main body cross the obstacle over captured bridges and fords or in assault crossing equipment at the same time as the first echelon. After the opposite bank has been taken, some of the tanks may cross under water. After crossing the water obstacle, the tank subunits head for their axes without stopping, and carry out their assigned missions.

Artillery attached to battalions and air defense subunits usually cross in amphibious vehicles and assault crossing equipment so as to ensure that the attacking subunits on the opposite bank receive continuous fire support and air defense cover.

A battalion's technical support and logistics subunits cross behind the artillery subunits in assault crossing equipment or on ferries.

The engagement on the opposite bank may become stubborn and intense. The enemy will seek to destroy the subunits that have crossed the water obstacle with fire and counterattacks and to eliminate the bridgehead at any price. Under such conditions, the attacking forces may execute concealed maneuvers to build up their efforts, quickly capture a favorable line under cover of smoke or aerosol screens, repel enemy counterattacks, and, without stopping, develop the offensive in depth.

Winning time is crucial to success in crossing a water obstacle. The availability of a great deal of water crossing and amphibious equipment for the troops ensures high momentum while crossing the obstacle and enables the subunits to make the crossing as quickly as possible. Thus, according to the experience of NATO exercises, the total time allotted to crossing a medium-width obstacle is 1–1.5 hours for battalions operating in forward detachments, 2–3 hours for first-echelon regiments, and 5–6 hours for divisions.

In those cases when a forced crossing is made by **deploying the main body at the water obstacle** (figure 7), the subunits are in direct contact with the enemy at the water line before the start of the offensive. This creates conditions for carrying out more thorough and systematic preparations for the crossing.

The battalion commander makes a thorough study of the nature of the water obstacle and the terrain on its approaches and on the opposite bank, organizes preparations for the crossing, covertly concentrates water crossing equipment in the crossing sector, and assigns the subunits missions for preparation of a departure area for the crossing and the crossing sites.

When the main body is deployed at the water obstacle, it is crucial that this be kept covert if the crossing is to succeed. Therefore, under these conditions, forced crossings are usually carried out at night. In order to prevent the enemy from learning the location of crossing sites beforehand and to avoid concentrating resources at the sites, the subunits in the first echelon of the main body should be loaded into infantry combat vehicles (armored personnel carriers) and assault crossing equipment during the fire preparation phase in concealed areas far enough from the water obstacle to protect them against most enemy long-range antitank weapons.

At the assigned time, the subunits move quickly toward the water obstacle. The beginning of the crossing (H-hour) is the moment when the first-echelon subunits cast off from the near bank. As is the case when making a forced crossing from the line of march, after landing on the opposite bank, the subunits, by exploiting the effects of artillery fire and air strikes, quickly destroy the enemy first-echelon company strongpoints and develop the offensive in depth without stopping.

When forced crossings are being prepared and carried out, it is important to keep up a high level of aggressive spirit in the soldiers and maintain their urge to effectively defeat the enemy defending the water obstacle and quickly develop the offensive on the opposite bank. This applies particularly to soldiers serving in subunits assigned to the forward detachment (advance guard) and tactical airborne assault force, which will operate detached from the main body for long periods of time and perform complex missions aimed at ensuring a successful crossing.

9. The Night Offensive

In past wars, particularly the Great Patriotic War, night combat actions played an important part. They are even more important today. This results from the decisiveness of an offensive engagement and the drive to conduct it continuously, at high momentum, and in great depth until the enemy is completely routed.

Aggressive actions at night provide subunits with many tactical advantages. The main advantage lies in the possibility of making fuller use of the element of surprise. During darkness, attacking forces are able to covertly regroup their resources, move up to the line for going over to the attack, deploy in battle (prebattle) formation, carry out a surprise attack, make a close or deep envelopment of the enemy's flanks, and, when necessary, withdraw their subunits in the face of an enemy strike.

When visibility is limited, it is more difficult for a defending enemy to detect preparations for an offensive, repel an attack, and maneuver fire and resources. By exploiting the advantages of conducting combat actions at night, the attacking forces can achieve the objective of the engagement with minimum losses, exert constant pressure on the enemy, impose their will on him, and maintain the initiative.

On the other hand, the night substantially hinders an offensive. The rising technical level of troop equipment and the availability of effective night vision devices, illuminants, radar, and other equipment diminish the adverse effect of darkness on combat actions, but do not completely eliminate the difficulties experienced by personnel at night. Even if extensive use is made of technical support equipment, observation of friendly and enemy actions, position-finding, and maintenance of cooperation and continuous troop control become more difficult at night. Operating at night requires more physical and psychological effort and promotes fatigue in personnel.

Consequently, the success of night actions depends to a great extent on whether the commander has organized the engagement skillfully and precisely, particularly with respect to illumination, NBC defense, and thorough camouflage. It also depends on effective political work.

A night offensive may begin with breaking through a deliberate enemy defense, or it may be a continuation of daytime combat actions. Moreover, in the last war nighttime actions were often conducted with the purpose of improving positions held, i.e., capturing an objective of tactical importance, such as a built-up area, commanding height, pass, etc.

When operating at night, the attacking forces normally try to avoid complex maneuvers.

The success of a night engagement depends on how thoroughly it has been organized. Subunit axes of advance are selected so as to lead by the shortest possible route to the objective to be attacked and to run through open, relatively smooth terrain with a minimum of natural obstacles and with reference points easily visible in darkness.

When missions are set for subunits, consideration is given to their level of readiness for night actions, to how long the darkness will last, to the nature of the enemy's defense, and to terrain conditions, available illumination equipment, etc. Today, subunit combat capabilities are such as to enable them to conduct an offensive at night with the same high momentum and to approximately the same depth as in daylight.

A tendency to assign deep combat missions to units and subunits operating at night was clearly apparent even during the Great Patriotic War.

In the Iasi-Kishinev Operation, while breaking through the enemy's defense at night in August 1944, the 229th Guards Rifle Regiment was assigned an immediate objective at a depth of 3 kilometers and a subsequent objective at a depth of 5 kilometers. In actuality, the subunits advanced at a rate of 800 meters per hour.²⁴ The depth of combat missions carried out by the regiment in daylight was similar to the depth of its night missions. Combat experience has demonstrated that, besides the immediate and subsequent objective, subunits may also be assigned a line that they must capture before dawn.

The configuration of subunit battle formations in a night engagement depends on the nature of the enemy's defense and how long the darkness will last. If a battalion is to break through a deliberate enemy defense, then its battle formation should be configured in two echelons. Here the first echelon must normally be able to accomplish its combat mission without the need to build up efforts, i.e., without having to commit the second echelon in darkness, since that is a very difficult task. Another important requirement in configuring a battle formation for night actions

lies in ensuring the subunits' tactical autonomy. For this purpose, not only battalions, but also companies, were reinforced with tanks, artillery, and engineer subunits in the last war.

In the Gomel' Operation, during a night offensive on 21 November 1943, the tanks attached to the 828th Rifle Regiment were resubordinated to rifle companies. This ensured closer cooperation with the infantry and resulted in the subunits successfully breaking through the enemy's defense and advancing 12 kilometers during the night, losing only one tank.²⁵ When tank units and subunits operated independently, they, in turn, were reinforced with artillery and with rifle and engineer subunits.

The specific nature of organizing a night engagement may be examined using the example of a subunit commander's actions in preparing a night offensive on a certain tactical exercise. The motorized rifle battalion's mission was to break through the "enemy's" defense by attacking him at night, to seize strongpoints in his first defensive position, and to exploit in depth.

The battalion commander completed the preparations for the offensive for the most part in daylight, so that at the onset of darkness he only had to update certain matters. When organizing the offensive, he indicated reference points visible at night to the companies and, moreover, in order to ensure that the axis of advance was maintained, he determined the compass bearing for movement and assigned a guide company. During terrain reconnaissance and when assigning combat missions to the subunits, he established the procedure for using night vision devices and attached radar during the attack and in the course of the offensive; he indicated in the field the procedure for illuminating the terrain and objectives for attack and by whom, when, and how to place the marker lights (alignment lights) indicating the axis of advance; and he established the procedure for marking the lines reached by the subunits in the course of the engagement and for marking their flanks.

When organizing cooperation, the battalion commander decided by whom, when, and how the subunits would be supplied with illumination and signaling equipment and tracer shells and bullets, and he outlined measures for protecting personnel against the thermal radiation of nuclear bursts.

As a result of such thorough preparation for the night engagement, the battalion successfully accomplished its combat mission in the exercise.

The special missions assigned to aviation and artillery for supporting night actions are illuminating the ground and targets in the enemy defenses, destroying (neutralizing) enemy illumination, blinding his observation posts and fire resources, and placing light (alignment) markers.

As a rule, **illumination support** is centralized, organized according to a single plan, and takes in the whole combat mission in terms of lines, objectives, and time. Its purpose is to enable the friendly subunits to operate and to hinder enemy actions. As demonstrated in exercises, illumination support planning usually includes: the procedure for illuminating targets (objectives) for the benefit of motorized rifle and tank subunits, artillery, aviation, and other combat resources; the procedure for placing light (alignment) markers; methods of using light markers to mark passages through obstacles, subunit deployment lines, and the line for going over to the offensive; the procedure for using light signals for mutual identification, target designation, and cooperation; and measures for combating enemy night vision devices and illumination equipment. Steps are taken to ensure that the employment of illumination equipment has no adverse effect on the use of night vision devices.

In order to conceal preparations for night actions and to achieve surprise in the attack, troops must maintain the prescribed system of illumination and the procedure for using night vision devices.

One of the most important aspects of preparing for night engagements is **organizing cooperation**. To ensure precise coordination of subunit efforts during an engagement, common reference points, easily visible in darkness, are established. The actions of resources participating in battles for strongpoints in the enemy's FEBA and in the depth of his defenses are coordinated in terms of target, position, and time. The following are thus established: the method of exploiting masking features of the terrain, techniques for subunit actions when repelling enemy dawn counterattacks, and the procedure for consolidating on captured lines and ensuring continuity in the advance when switching from night to day actions. The lines on which cooperation is planned are determined by orientation with features of the terrain that are easily distinguishable in darkness, such as the crests of heights, roads, the edges of forests or woods, rivers, built-up areas, etc.

To protect personnel against the thermal radiation of nuclear bursts, the protective features of combat equipment are used primarily. Optical instruments, night vision devices, and glassed cab windows are prepared so as to reduce the effect of thermal radiation intensity. Personnel operate wearing special protective goggles.

To succeed in a night engagement, it is necessary to be well aware of the tactics of enemy actions and to reveal his strengths and weaknesses. For this purpose, **reconnaissance** before an offensive establishes the following: the enemy's system of illumination and method of using night vision devices; measures he is taking to strengthen his defenses during the night; and how the disposition of his fire resources and reserves changes with the

onset of darkness. Taking into consideration that the enemy will also seek to intensify reconnaissance with the onset of darkness, it is essential to carefully observe camouflage measures and skillfully conceal signs that will give away preparations for the offensive. At the same time, active measures should be taken to counter enemy reconnaissance and surveillance radar and laser range finding systems.

Depending on the objective of the engagement, the attack may be carried out right after dusk, in the middle of the night, or before dawn. An attack that is a continuation of daytime actions prevents the enemy from completing measures to reinforce his defenses for the night. When the subunits are assigned missions that are limited in depth, the transition to the offensive may be made in the latter half of the night or before dawn. Combat experience reveals that this allows the factor of surprise to be exploited more fully. Moreover, it enables subunit commanders to organize more thoroughly for the night attack: to move up to the departure area under cover of darkness; to carry out "final" reconnaissance; to regroup resources when necessary; and to update subunit missions and procedures for cooperation, combat support, and troop control on the spot.

Night attacks by motorized rifle subunits are usually carried out on foot. Before or during preparatory fire for the attack, nuclear or fire strikes are made against the targets in the enemy's defense whose locations have already been established. In this case, the necessary measures are taken to protect friendly subunits against the thermal radiation of nuclear bursts. Artillery neutralizes the enemy's radar surveillance systems, blinds his observation posts, and destroys his fire resources engaged in illuminating the terrain and placing light markers. Air defense subunits are also enlisted to counter enemy illumination equipment.

Night actions encourage commanders to demonstrate extensive creativity and initiative in choosing various methods of attack. The least expected tactics can be employed to defeat the enemy at night.

The night attack by units of the 37th Guards Rifle Division on 12 August 1943 was preceded by a salvo from 50 guns that had been moved up for direct fire. The enemy was stunned and unable to withstand such a fire strike and was routed.²⁶

In order to achieve the greatest possible surprise, an attack may be carried out without preparatory fire and without using illumination equipment.

In the early hours of 14 January 1944, during a heavy blizzard, the 299th Rifle Regiment quickly broke through the enemy defenses without artillery preparation and seized an important bridgehead on the north shore of Il'men' Lake.²⁷ The "silent" night attack carried out by units of the 6th Guards Tank Army and 17th Guards Army on 6 January 1945 in Hungary was also successful.²⁸

It is important that subunits keep closely to the indicated axes when attacking the enemy FEBA. To this end, light (alignment) markers are put down at regular intervals during the engagement. Depending on the ruggedness of the terrain, the nature of the enemy defenses, and the illumination conditions, tanks operate either directly in the extended line of the motorized rifle subunits or at a distance of 100–150 meters. As the attack begins, some artillery and engineer subunits are resubordinated to battalions, and sometimes even to companies. Attacks are usually supported by concentrated artillery fire, fire on point targets, and air strikes. Signals to switch and cease artillery fire are given by the subunit commanders.

Combat helicopters play an important role in destroying enemy armored targets and supporting the attacking subunits, particularly those operating separately from the main body. Darkness provides surprise in striking the enemy.

Having destroyed the strongpoints in the enemy FEBA, the subunits quickly exploit the advance. Night engagements in the depth of the enemy defenses are extremely complex and require firm and continuous troop control, skillful maneuver of fire and resources. For precise orientation, the subunits mark their positions with light markers when they reach their designated lines. In the course of the engagement, commanders take the measures necessary to ensure the safety of subunits when negotiating difficult terrain. Making skillful use of night vision devices and means of illumination, personnel defeat the enemy decisively.

During an offensive, it is very important to discover enemy preparations for a counterattack in good time. Reconnaissance is tasked with locating the enemy reserves. To this end, the ground is illuminated in the area of their dispositions. To repel counterattacks, the second echelon (reserve) maneuvers toward the threatened axis. In addition, the senior commander may decide to move up the antitank reserve and the mobile obstacle detachment to this axis. Preparations are made for artillery fire on the enemy's probable line of deployment and, when necessary, this line is illuminated.

Experience gained on tactical exercises reveals that when effective use is made of night conditions and when surprise is achieved in the offensive, subunits are capable of advancing to great depths rapidly and without stopping. On axes where this cannot be achieved, the momentum of advance may be lost. In order to prevent this, timely measures must be taken for a decisive buildup of combat efforts, i.e., the second echelon (reserve) must be committed. Particularly thorough illumination is needed for the actions of the second echelon (reserve) at night. Its route of advance, line of deployment, and line for going over to the attack are

clearly designated with marker lights, and cooperation, comprehensive support, and traffic control services are organized.

Even the slightest pause in exploiting the advance should be avoided **when making the transition from night to day actions**. To this end, the following measures are taken well before dawn: reconnaissance is stepped up; the subunits' combat missions and cooperation procedure are updated; stores of ammunition, fuel, and other material resources are replenished; and steps are taken to intensify combat efforts and break up any possible enemy counterattack at dawn.

Since night actions are distinguished by their great complexity and numerous specific features, subunits should be thoroughly prepared for them beforehand. On tactical exercises, personnel acquire the skills needed for night actions and learn to find their bearings on the ground, to fire accurately at illuminated targets and muzzle flashes, to use illumination equipment in combat, and to execute aimed fire using night vision devices.

The highly aggressive spirit, determination, and fearlessness of Soviet soldiers, their unsurpassed fighting efficiency, morale, and psychological qualities, their ability to perform boldly and demonstrate initiative in combat and to defeat the enemy decisively provide the basis for success in offensive engagements both day and night, in any season and on any terrain.

10. The Offensive Under Special Conditions

The environmental conditions of various geographic areas, e.g., mountain, desert, or arctic regions, have a fundamental effect on the nature of offensives. Although the fundamentals of organizing and conducting offensive engagements remain the same, specific environmental and climatic factors give rise to many special features in troop actions.

Extremely rugged **mountainous terrain** is characterized by many almost impassable natural obstructions, a limited number of roads, and the singular nature of the weather. Mountains greatly hinder maneuver of troops and make cooperation, support, and troop control more difficult. Personnel must receive special training for successful actions in mountains. However, combat experience reveals that no mountain is insurmountable. This has been confirmed by successful offensive operations carried out by Soviet troops during the Great Patriotic War in the mountains of the North Caucasus, the Carpathian Mountains, and the mountainous regions of Romania, Czechoslovakia, Hungary, Yugoslavia, and the Far East.

Offensives on terrain that is difficult of access are usually carried out from the line of contact, while in valleys and on mountain plateaus they are carried out from the line of march. The most stubborn battles are those conducted for key objectives, such as mountain passes, gaps, commanding heights, road junctions, and built-up areas. Movement by attacking subunits along roads and valleys and on mountain slopes is combined with close and deep envelopments of the enemy in sectors that are difficult of access. During the last war, the employment of flexible maneuver, i.e., conducting simultaneous strikes from several directions against a defending enemy's strongpoints, ensured the success of division- and regimental-scale offensive actions in mountains.

When organizing offensive engagements in mountains, the commander must keep in mind that extremely rugged terrain lends itself to the establishment of a stable defense, and the presence of great numbers of natural obstacles, such as rocky sectors, sudden precipices, deep canyons, and ravines, enables the enemy to quickly organize a stubborn defense on a broad front with relatively small forces.

However, defenses in mountains also have their vulnerable spots. Their localized nature and the large gaps between strongpoints enable the attacking subunits to infiltrate to the rear of the defending enemy.

In assessing the enemy's defenses, it is important to discover his strengths and weaknesses, and his fire plan and obstacle system, especially on the approaches to mountain passes; to find gaps left unoccupied by enemy subunits that may be used for close and deep envelopments and for setting ambushes and barriers; and to determine lines from which strikes by enemy combat helicopters may be expected.

In addition to general questions, the decision for an offensive in mountains establishes the following: procedure for capturing strongpoints, passes, and other primary objectives; composition and missions of the outflanking detachment and its procedures for cooperating with the subunits making a frontal assault or the tactical airborne assault force; measures for negotiating sectors that are difficult of access, for position finding, and for maintaining the axis of advance; steps for covering the flanks and rear and stepping up the security of control posts; protective measures against landslides, avalanches, mudslides, and floods; and measures to equip the subunits with mountain-climbing gear.

Because of the increased difficulty of movement on rugged terrain, subunit combat missions may be assigned that are not as deep as under normal conditions.

The average daily distance covered in the offensive by Transcaucasus Front troops when negotiating the northern spurs of the Greater Caucasus Range in the 1943 Krasnodar Operation and by troops of the 4th Ukrainian Front during the 1944 Carpathian Operation was 2 kilometers.²⁹

When the battle formations of motorized rifle and tank subunits are being configured, great stress is placed on ensuring their tactical autonomy. Battalions and companies are reinforced with more than the usual numbers of artillery, air defense, and engineer assets. Motorized rifle subunits are given additional tanks and vice versa.³⁰

Reconnaissance in mountains is usually organized on a broader front and to greater depths. It must determine the nature of the enemy defenses on commanding heights, in passes, and at road junctions, the presence of obstacles and demolished areas in valleys, ravines, and mountain passes; and find concealed approaches to the enemy flanks and rear. Helicopters are used to reconnoiter terrain that is difficult of access, reverse slopes, and ravines.

Since actions in mountains are carried out for most part along accessible axes, they are more vulnerable to enemy air strikes. Therefore, increased demands are made of air defense. It is set up on subunit axes of actions. Air defense positions are usually located along roads and valleys.

The enemy is hit with fire strikes so as to ensure that fire resources in strongpoints set up on commanding heights, especially on slopes adjacent to roads and valleys, are neutralized as effectively as possible. When the enemy defenses are configured so as to overlap, the fire resources in all components are neutralized simultaneously. Direct fire from guns, tanks, ATGM launchers, antitank rocket launchers and air defense systems, and helicopter strikes against enemy fire resources and personnel located on reverse slopes and in gorges and ravines are assigned a major role in fire strikes.

Attacks by motorized rifle subunits over difficult terrain are carried out on foot. Tanks operate directly in the extended line of the attacking subunits, while infantry combat vehicles (armored personnel carriers) advance behind the tanks, destroying targets standing in the way of the attacking troops.

When moving through narrow valleys or ravines, subunits usually assume an inverted wedge formation. Valleys (ravines) are entered only after the subunits have captured the adjacent heights. Strikes against enemy forces putting up resistance in valleys (ravines) are carried out by fire support helicopters, artillery, and mortars. Maneuvers toward the flanks and rear of strongpoints play an important part in defeating defending enemy forces in valleys (ravines). To do this, the outflanking subunits take

advantage of natural terrain features and move up along the crests of heights to indicated lines where, together with the subunits attacking from the front, they attack from several directions.

One of the crucial missions in an offensive in the mountains is capturing a mountain pass, which usually provides the key to the entire defense of such an area. There are various methods of capturing mountain passes. The attacking subunits must try to forestall the enemy in reaching a pass.

When approaching a pass, subunit commanders organize reconnaissance so as to learn the defense system in detail and the nature of the obstacles and obstructions on the approaches to it and to find routes on which to bypass or negotiate sectors that are difficult of access.

The nature of subunit actions in taking a mountain pass may be looked at in the light of a certain tactical exercise. A motorized rifle battalion operating on a separate axis was assigned the mission of capturing a mountain pass from the line of march in cooperation with a tactical airborne assault force, thus enabling the main body to advance. After evaluating the situation, the commander decided to concentrate the battalion's efforts on seizing the commanding height adjacent to the pass. Since the terrain made it possible to move up covertly to the flank of the enemy defending the pass, it was decided to capture the pass with simultaneous frontal and flanking attacks.

The subunits, thoroughly camouflaged, moved up to their objective along a ravine. The attack on the height was begun simultaneously by the outflanking detachment, the subunits operating from the front, and the tactical airborne assault force. Artillery and mortars, cooperating with combat helicopters, effectively neutralized enemy fire resources both on the slopes of the height under attack and on the adjacent heights, from which the defenders could execute flanking fire.

While approaching their objective, the subunits encountered a mined barrier of stones. The battalion commander arranged reconnaissance of the barrier, surveillance, and security. Since it was impossible to bypass the barrier, it was decided to negotiate it with mine-clearing tanks. Particular consideration was given here to providing fire cover for the resources that were clearing away the barrier.

The battle for the pass was stubborn. Success was assured by a skillfully executed maneuver that resulted in a simultaneous attack on the "enemy" defending the pass, carried out from the front, flank, and rear.

Experience in wars and tactical exercises reveals that outflanking detachments play an important role in offensives in mountains. As a rule, outflanking detachments maneuver across sectors of terrain that are difficult of access. They usually cross the front line at night or at other times of limited visibility (fog, snowfall, rain). The subunits move as quietly as possible, observing sound damping measures. When approaching their attack objective, detachments bypass enemy security subunits without engaging them, so as not to reveal their presence too soon. If the security subunits cannot be bypassed, the detachment makes a fire strike against the enemy and a portion of the men and equipment defeats him, while the main body rushes into the depth of the enemy defenses toward the objective.

In the course of an offensive, particularly when moving into valleys or onto mountain plateaus, subunits must be prepared to repel enemy counterattacks. To this end, it is necessary to ascertain the movements and deployment of the enemy reserves in good time and consolidate on favorable lines. In the case of a counterattack down slopes from above, the battalion consolidates on the slope with a portion of its forces, while the main body moves around the height using concealed approaches, captures the summit, and strikes down against the counterattacking enemy forces.

Open flanks are protected by conducting continuous reconnaissance on threatened axes, configuring the subunits in echelon formation, and conducting sweeps of ground where the enemy may have set up ambushes.

Combat experience, including that gained during recent local wars, demonstrates that success in offensives in mountains is vitally dependent on the timely preparation of subunits and the ability of personnel to operate boldly and with initiative.

Offensives in the **desert** are usually conducted from the line of march. Here, as in the mountains, maneuvers aimed at making deep and close envelopments of the open enemy flanks and striking at his rear are often employed. The distinctly fragmented enemy defenses and the level ground that makes it possible to employ all combat arms on virtually every axis lend themselves to these maneuvers. However, it is more difficult to conceal maneuvers from the enemy on open desert terrain, and for this reason protection must be particularly effective.

Because of the considerable dispersal of important installations and forces in the enemy defenses, subunit combat missions may be assigned at greater depths behind enemy lines and attacks may be carried out on broader fronts.

The battle formation is configured with due regard for the possibility that subunits will operate away from the main body, meaning that provision must be made for autonomous actions by them.

When organizing an offensive in the desert, commanders indicate compass bearing for movement, the procedure for marking the locations of subunits, reliable methods of negotiating sand dunes, wet saline soil, and other difficult sectors; measures to protect control posts, flanks and rear and to maintain adequate sanitary and hygienic conditions in troop dispositions; procedures for preparing weapons and combat equipment for operation in dusty conditions; and priorities for water and fuel expenditures in the course of the engagement.

Fire strikes against the enemy are organized and carried out with due regard for the open and flat nature of the terrain. Direct fire is used extensively by guns and tanks. Preparatory fire for an attack is usually directed against individual centers of resistance and strongpoints. Here the destruction (neutralization) of enemy antitank resources is stressed.

It is important for advancing forces to capture oases, road junctions, and water sources. Exercise experience reveals that success is achieved here when attacks are made simultaneously from the front by attacking subunits, from the flanks by outflanking detachments, and from the rear by a tactical airborne assault force. Attacks must be sudden and swift.

In the course of an offensive in the desert, particular attention is paid to ensuring that reconnaissance discovers enemy centers of resistance forward of the front line and on the flanks in good time, determines the passability of terrain on the axes of subunit actions, and discovers the locations of enemy ambushes.

Engineer support for advancing forces' actions in the desert consists in well-timed discovery of water sources, protection of open flanks with obstacles, and construction and maintenance of water supply points.

When chemical warfare support is organized, particular attention is given to radiological and chemical reconnaissance of oases and to dosimetric and chemical monitoring of water sources.

In arctic regions and during winter, offensives are usually conducted along roads, as a rule from a position of direct contact with the enemy. A motorized rifle (tank) battalion attacks as a part of the main body of its regiment or independently on a separate axis. In many cases, motorized rifle subunits may function as outflanking detachments assigned to cooperate with subunits advancing from the front in the capture of key terrain objectives.

During the Great Patriotic War, Soviet troops carried out successful offensive actions under the difficult conditions of the Arctic. The main method used to overcome enemy defenses was frontal attack combined with off-road deep and close envelopment of strongpoints.³¹

When preparing for offensives in arctic regions, in addition to general matters, the battalion commander also indicates the sequence of subunit actions in capturing defiles, road junctions, and commanding heights. In winter actions, provisions are made for crossing deep snow, organizing warm-up points, protecting personnel against frostbite, preparing weapons and combat equipment for use in low temperatures, and camouflage.

Preparatory fire for an attack on various axes may vary in duration and begin at different times. The densest fire is directed against enemy targets located on mountain slopes adjacent to roads and in defiles.

When the snow is deep, motorized rifle subunits usually attack on skis. In this case, the tanks advance directly in the extended line with the subunits or immediately behind this line, providing covering fire for the attacking subunits. Infantry combat vehicles (armored personnel carriers) operate behind the tanks and use their armament to destroy enemy targets hindering the advance of the subunits. In areas covered with ice, it is possible to attack in these vehicles without dismounting.

When offensives are conducted during the arctic night or in snowstorms or blizzards, it is important to provide reliable orientation for the subunits. Marker (alignment) lights are placed for this purpose. The compass bearing of the axis of advance is given to the subunits.

In the course of an engagement, the subunits exploit gaps in the enemy's battle formation and open flanks to infiltrate into the depth of his defenses and, by making surprise attacks, to capture enemy strongpoints, primarily those that cover roads, defiles, passes, and built-up areas.

Troops must be given special training in order to succeed in actions in arctic regions, while personnel must develop skill in quick orientation, correctly calculating distances and target ranges, and firing in poor weather conditions, and subunits must train in operating resolutely and be able to seize the initiative from the enemy and employ unexpected tactical procedures.

The principles of conducting modern offensive engagements are being intensively refined. The nature of the modern offensive engagement and the methods used in preparing for and conducting it will be influenced by the increasingly extensive introduction of modern armaments, electronic and other resources, and automated troop control systems, in addition to

nuclear weapons. This may lead to further extension of the spatial limits of engagements, especially with regard to depth, and also to greater use of airspace, a significant increase in the intensity of offensive actions, and to their being conducted with exceptional determination, dynamism, and maneuverability.

Under such conditions, commanders and staffs will be required, as never before, to demonstrate creativity and initiative, and to employ new, more effective procedures for defeating the enemy, conducting fire strikes against him, configuring battle formations, and defining subunit combat missions and methods of organizing cooperation, troop control, and combat, technical, and logistic support. The moral-political and psychological training of troops becomes particularly important.

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Chapter 3. The Meeting Engagement

1. The Characteristic Features of a Meeting Engagement

A meeting engagement occurs when both sides try to accomplish assigned missions by attacking. Troops in a meeting engagement aim to rout the attacking enemy quickly, seize the initiative, and create favorable conditions for subsequent aggressive actions. A meeting engagement can take place on the march, in an offensive when repelling counterattacks and counterstrikes or when exploiting successes and engaging enemy troops, and in defense when making counterattacks and counterstrikes or destroying enemy airborne or amphibious assault forces.¹

The increased firepower, striking power and mobility of formations, units, and subunits resulting from the equipping of troops with nuclear weapons, missiles, tanks, self-propelled artillery systems, as well as other combat equipment and weapons, has significantly increased the offensive capabilities of the opposing sides. Today, therefore, the probability of a meeting engagement taking place and its importance in the scheme of combat actions are especially great.

The meeting engagement is now taking on new characteristics that make it significantly different not only from the meeting engagements of the Great Patriotic War, but from those of comparatively recent local wars as well.

The characteristic features of modern meeting engagements are limited time for organization; swift approach by the opposing sides and engagement from the line of march; intense struggle to gain time and to seize and hold the initiative; drastic and frequent changes in situation; the development of actions on a broad front and in great depth and the rapidity with which they evolve; and the existence of open flanks and gaps that allow freedom of maneuver.

The limited time available to organize meeting engagements is explained by the conditions under which they occur. In preparing to attack a defending enemy, the initiative in choosing the moment to go over to the attack belongs to the attacking side, which results mainly from the need

for comprehensive preparation for battle in order to guarantee success, but the basic work of organizing a meeting engagement is carried out on the appearance of a specific opponent, who is also striving to achieve his aims by attacking—during a march, while the opponents are approaching one another, or while combat actions are already in progress. Only some of the measures necessary to prepare for a meeting engagement may be carried out beforehand.

The extremely limited time available for organizing meeting engagements makes it difficult to make decisions, assign missions to the subunits, and organize cooperation; it requires great efficiency and coordination on the part of commanders and staffs, speed and efficiency of action, and immediate execution of commands and instructions on the part of the troops. Taking this into account, experienced commanders take a number of measures beforehand, while still anticipating a meeting engagement, that are conducive to organizing for battle in a short time and to achieving success. They determine the lines of probable enemy contact and the concept of action on them; they set up the appropriate grouping of resources on the march, if engagement from the line of march is envisaged; they organize combat and logistic support; and they conduct political work.

The swift approach of the opposing sides and their engagement from the line of march are the results of great troop mobility. The swiftness of approach is equal to the sum of the average speeds of the troops closing with one another. The higher these speeds, the higher the rate of approach. At average speeds of 25–30 km/h, opposing subunits located 50–60 kilometers apart can enter into a meeting engagement in about an hour.

The engagement of troops from the line of march immediately after approaching is a result of the decisiveness of their objectives and missions, the drive to forestall the enemy's actions, and the dynamism of the engagement itself. Subunits are deployed in battle formation chiefly from columns of route. In some cases, particularly when a meeting engagement occurs while an enemy's tactical zone of defense is being negotiated, troops of both sides or one may be deployed in battle formation beforehand. Here too, however, they will engage from the line of march.

When troops enter into a meeting engagement, intelligence on the enemy is usually far from complete, while the time for final reconnoitering and clarifying the situation is extremely limited. Moreover, the opposing forces, with their great mobility and maneuverability, can quickly alter their grouping of men and equipment and axes of actions. This makes reconnaissance difficult and at the same time demands that it be highly efficient and complete, and that information be highly reliable.

The intense struggle to gain time and to seize and hold the initiative results from the very essence of the meeting engagement. When attacking a defending or withdrawing enemy, the attacking side has the initiative from the very beginning of combat actions, but in a meeting engagement, when each side considers itself capable of routing the other with aggressive offensive actions, each having gained time, endeavors first of all to seize the initiative, so that it can secure freedom of action, dictate its will to the enemy, and force him to operate under unfavorable conditions.

The struggle to seize and hold the initiative is intense and continues throughout the engagement. Today, this struggle is assuming increasing scope in terms of time and space. It starts with nuclear strikes and the use of aviation, combat helicopters, long-range missiles and tube artillery, and airborne assault forces while the opposing sides are quite distant from one another.

As the opposing forces approach one another, the struggle to seize the initiative intensifies. In addition to making powerful nuclear and fire strikes, it becomes extremely important to forestall the enemy in deploying and going over to the attack, and in occupying favorable lines and areas that will provide for the successful development of subsequent combat actions. Simultaneously, it is necessary to take measures to reduce the enemy's momentum of advance and break up the organized deployment of his units and subunits. This is achieved by strikes by aviation and missile subunits and artillery fire against enemy columns, particularly near crossings, defiles, road junctions, and passes, by setting up obstacles on the enemy's movement routes, and by seizing important installations in his rear with tactical airborne assault forces.

The nuclear weapons in the arsenals of modern armies, if used, can quickly alter the correlation of forces of the opposing sides, while great troop mobility enables new units and subunits to be brought up quickly. Therefore, the side that loses the initiative will make every attempt to regain it during a meeting engagement, because the outcome of the struggle for initiative determines the result of the engagement. Once one side has lost the initiative and goes over to the defensive or begins to retreat, the meeting engagement loses its specific character, because the other side will attack the defending enemy or go over to pursuit.

Drastic and frequent changes in situation are characteristic of every type of modern combined arms combat, but become especially important in a meeting engagement. This is mainly the result of the continuous and intense struggle for the initiative. Both sides display great aggressiveness and resolve in combat. Combat actions develop dynamically. The absence of a continuous front line creates conditions favorable for making power-

ful strikes on the flanks and rear. Therefore, drastic and frequent changes take place in the status and position of the opposing forces, as well as in the nature and methods of their actions.

A meeting engagement usually takes place on terrain with no engineer preparation, where the troops on both sides are in the open. Because of this, the effectiveness and radius of destruction of nuclear weapons, artillery, and other fire weapons on targets situated in the open are increased. This creates conditions favorable for a higher momentum of advance, maneuver, and decisive penetration of the enemy's battle formation and leads to drastic and rapid changes in the situation.

The development of actions on a broad front and in great depth and the rapidity of their development are the result of each side endeavoring to achieve the advantage through maneuver so as to attack the enemy's flank or rear. In the initial stages of a meeting engagement both sides endeavor to deploy the maximum resources in the first echelon as quickly as possible in order to make a strong initial attack, carry out a deep enveloping maneuver, make a close envelopment of the enemy's open flanks, and at the same time safeguard their own flanks. Because of this, combat actions develop on a broad front. During the Great Patriotic War, the front on which units and subunits were deployed in a meeting engagement was about two or three times larger than that in an attack on a defending enemy.² Roughly the same ratio may also exist today.

In meeting engagements, the use of modern weaponry with its great destructive power, the great mobility and striking power of the troops, and the decisiveness of actions are responsible for the rapid development of meeting engagements. Rapid development is particularly characteristic of meeting engagements between subunits. If one side forestalls the other in making powerful fire strikes and going over to the attack and is able, after skillful maneuver, to make a strong attack on his flank and rear, the outcome of the meeting engagement will be decided quite quickly. The other side, if not totally defeated, will, with the losses it has suffered, be obliged to go over to the defensive or begin to withdraw.

The existence of open flanks and gaps gives both sides freedom of maneuver. The meeting engagement begins, as a rule, at the moment when the flanks of the opposing forces advancing toward one another are open, which provides conditions favorable for maneuver. This is facilitated as well by the absence of a continuous front line and the existence of considerable gaps between the subunits deployed to contain the enemy from the front and the main body making the strike.

Thus, modern meeting engagements have a number of characteristic features that must be taken into account if they are to be carried through with success.

2. The Conditions Necessary for Success in a Meeting Engagement

In order to achieve victory in a meeting engagement, it is necessary to creatively employ the general principles of modern combined arms combat and to skillfully use the great maneuverability, mobility, firepower and striking power of the forces involved. In addition, experience in combat reveals that the course and outcome of a meeting engagement are greatly influenced by factors arising from the nature of this type of combat. They must be considered in their entirety in organizing and conducting a meeting engagement.

In a meeting engagement, both sides endeavor to carry out their missions by attacking and engage from the line of march. Therefore, one of the main conditions for success is **constant and aggressive reconnaissance** of the enemy, with a view to obtaining reliable information on him. Forces that remain unaware of enemy positions, forces, and intentions are liable to attack from any direction, while their actions become random and disorganized, they lose the initiative, and, as a result, suffer defeat.

Today, under the constant threat of enemy employment of nuclear weapons and where troops are highly mobile, possess great firepower, and are dispersed both laterally and in depth, change positions rapidly and are capable of making sudden changes in their direction of movement, the role of reconnaissance is becoming ever more important.

Reconnaissance must locate the advancing enemy in good time, detect his grouping and concept, and constantly monitor all his actions. Timely location of the enemy and establishing uninterrupted surveillance over him enables a commander to assess a situation correctly and make well-founded decisions, as well as to foresee probable changes in the situation while combat actions are in progress.

The conditions for organizing a meeting engagement, the timeliness of a commander's updating or making of a decision, the assignment of missions to subunits, the coordination of their efforts, rapidity of deployment, and, in the final analysis, the successful rout of the enemy, depend on the distance at which the advancing enemy is spotted and the completeness, reliability, and accuracy of intelligence information.

A commander receives intelligence on the enemy from his own reconnaissance and from his senior commander's (chief's) forward operational intelligence elements, the security subunits and forward detachment, as well as directly from reconnaissance and combat aircraft and helicopters, from airborne assault forces, adjacent elements, and his senior commander (chief). A commander's personal observation of the enemy is also extremely important, particularly when the march security elements are engaged in combat.

Reconnaissance detachments and reconnaissance (combat reconnaissance) patrols play an important role in obtaining intelligence information.

A reconnaissance detachment may consist of a motorized rifle company, to which engineer and chemical warfare subunits are usually attached. While at a great distance from the enemy, when the probability of contact is low, a reconnaissance detachment usually advances by road at maximum speed. On approaching the line of probable contact with the enemy, it as a rule moves covertly, off the roads, from one advantageous observation point to another, carefully observing the roads and other possible lines of enemy approach.

A reconnaissance (combat reconnaissance) patrol may be as much as a reinforced platoon in strength. The distance separating it from the main body of the battalion (company) depends on the mission to be accomplished, the enemy's actions, the nature of the terrain, and communications support capability.

Intelligence information must be transmitted to the commander without delay, since it is quickly outdated in meeting engagements.

Units and subunits enter meeting engagements from the line of march. After an engagement begins, there is no time for re-forming and reallocating support weapons and reinforcements. Therefore, to succeed in a meeting engagement, **the commander must set up his grouping of resources beforehand**, based on his concept of the forthcoming engagement.

While on the march in anticipation of a meeting engagement, it is important to decide on the composition of the forward security element, the advance guard, and the forward detachment and their distance from the main body, as well as the placement of artillery and antiaircraft subunits within the column of the main body. It is advisable to bring the artillery of the advance guard and main body up to the head of the column so that it will be able to deploy and open fire quickly; and to keep the antiaircraft subunits attached to the battalion closer to the head of the column of the main body, while keeping the organic antiaircraft platoon in the point of the vanguard or the column of the main body.

One of the main conditions for success in a meeting engagement is **timeliness in making the decision and disseminating missions to subordinate subunits**, since the time factor is of prime importance in a meeting engagement. The slightest delays in making decisions and disseminating missions to the troops will lead to delays in launching fire strikes, deploying subunits, and going over to the attack, to loss of initiative, and, in the end, to defeat. At the same time, swiftness must not result in decisionmaking that is less expedient in a tactical sense.

Timeliness of decisionmaking for a meeting engagement presupposes not only that decisions will correspond to a situation, but also that they will enable troops to maneuver and form groupings that conform to the concept of the engagement and to forestall the enemy in making fire strikes, seizing advantageous lines, and deploying his main forces. If the troops do not succeed in the above, even the best decisions may prove unacceptable. Therefore, accurate timing, swiftness, and efficiency on the part of commanders and staffs, and precision and good organization in actions by troops are indispensable.

An insufficiently clear situation and fragmentary, sometimes even contradictory, information on the enemy do not relieve a commander of his responsibility for making sound and bold decisions, in good time and on the basis of the combat mission assigned and available information on the situation, and implementing them with persistence. Putting off a decision until the situation has become clearer, until new and more complete information on the enemy has been received, is tantamount to inertness and indecision and enables the enemy to reconnoiter the friendly grouping, make nuclear and fire strikes against it, and forestall it in deploying.

A battalion commander usually makes the decision to attack an advancing enemy in a meeting engagement while on the move, formulating it on the map, either when the point of the vanguard engages the enemy or when he receives the combat mission. In so doing, he decides on the following: the concept of the engagement, combat missions for the subunits, basic questions of cooperation and procedure for comprehensive support, and the organization of troop control.

Concepts for meeting engagements establish: the axis on which the main efforts will be concentrated, the type of maneuver and sequence to be used in routing the advancing enemy force, the procedure for firing on the enemy while he is advancing and deploying, the battle formation and the order of employment of organic and attached resources.

In a meeting engagement, only the immediate objective and the subsequent direction of attack are given to the battalion, while subsequent objectives are not assigned.

The substance of the immediate objective depends on the battalion's place in the battle formation (march formation). The immediate objective

of a battalion in the forward detachment consists in seizing and holding a particular line, employing all its fire resources against the leading enemy subunits, and supporting the advance of its own main body.

The immediate objective of a battalion in the advance guard is to eliminate the enemy's security subunits, to contain the aggressive actions of the enemy's main body, and support its own main body in deploying and engaging the enemy.

The immediate objective of a battalion operating in the main body may be to rout, on its axis, the main body battalion of the enemy's first echelon, destroy or capture enemy artillery, and seize a line that will be advantageous for subsequent actions.

When combat missions are assigned to the subunits, the following are usually indicated:

—for the forward security element—composition, movement route, and the line to be seized and held, and by what time, in order to support the main body as it deploys, as well as the sequence of actions with which to begin their attack;

—for organic and attached artillery subunits—missions to support the forward security element and the main body as they engage, areas for fire positions and the time by which to be prepared to open fire, signals for opening, switching, and ceasing fire, and sequence of position changes during the engagement;

—for the motorized rifle (tank) companies—combat missions, the line for going over to the attack, time and direction of attack, procedures for cooperation, and routes to be taken to the line for going over to the attack;

—and for the reserve—composition, axis, and order of position changes during the engagement.

As a rule, a commander assigns combat missions to the subunits by radio and later updates them on the spot. Artillery and subunits that will be engaging the enemy and operating on the main axis are the first to be assigned their missions. Basic questions of troop control and comprehensive support are pointed out at the same time.

The battle formations of subunits in meeting engagements must make it possible to make strong initial strikes. Therefore, it is formed up, as a rule, in a single echelon, with a reserve allocated.

Success in a meeting engagement also depends on **maneuvering quickly to seize a favorable line; forestalling the enemy's nuclear and fire strikes, deploying and going over to the attack; and hitting the enemy with strong surprise attacks, as a rule on his flank and rear.**

A favorable line for deploying forces might be one that commands terrain to the front, provides for the effective employment of all combat arms and types of combat equipment, particularly tanks, infantry combat vehicles (armored personnel carriers), ATGMs, and artillery, and has hidden approaches and routes for the advance and rapid deployment of troops and for hitting the enemy's flank and rear.

Forestalling the enemy in occupying a favorable line makes it possible to better exploit terrain features so that the main body can deploy and engage the enemy and helps in planning and organizing maneuvers for the purpose of making strong surprise attacks on the enemy's flank and rear.

Forward detachments, advance guards, and tactical airborne assault forces play an important role in seizing favorable lines that will ensure conditions advantageous to the main body when it deploys and engages the enemy. So that they can perform their assigned missions successfully, forward detachments and advance guards receive allocations primarily of tank subunits.

Today the importance of forestalling enemy fire strikes has drastically increased. As noted in the foreign press, field artillery, multiple rocket-launcher systems, missiles, and ammunition in the armies of a number of capitalist countries have undergone extensive development in recent years; remote mining of the terrain on troop advance and maneuver routes is employed extensively. In the US Army, for example, increasing efforts are going into the development of highly accurate reconnaissance-fire complexes, capable of locating and engaging tanks, infantry combat vehicles, and other armored targets.³

The initiative can be seized and major tactical advantages gained by forestalling enemy fire strikes and, when nuclear weapons are used in combat actions, also by making nuclear strikes; major losses can be inflicted, troop control compromised, advances disrupted, and deployment and organized engagement delayed by opening fire on the enemy's forces by surprise, thereby creating favorable conditions for completely routing him with fewer resources and in a shorter time.

In addition to forestalling the enemy in making nuclear and fire strikes, it is also very important to forestall him in deploying his main body and going over to the attack. The significance of this condition in

achieving success in a meeting engagement has been confirmed in many meeting engagements in past wars and is emphasized in the manuals of many modern armies.

Prior deployment makes it possible to gain time, hit the enemy force with powerful initial strikes when it is as yet unprepared for offensive actions, seize the initiative, and defeat the main enemy forces in detail, without giving them a chance to deploy completely. Prior deployment also enables one to maneuver freely, engage the enemy in an organized manner, and exploit the effects of fire strikes most effectively.

The enemy can be forestalled in deploying by making timely decisions; by creating groupings of resources in keeping with the concept of the forthcoming engagement before the line of probable contact with the enemy is approached; and by organizing the march formation in a suitable manner, reducing the depth of the columns and deploying troops quickly. It is also very important to prevent the organized advance of enemy groupings. This can be done by making powerful surprise nuclear, fire, and air strikes on advancing enemy columns, major crossings, defiles, road junctions, and other important targets on the enemy's movement routes whose destruction may cause extended delays in the enemy's advance and prevent his organized deployment; by capturing and holding key points of the terrain with airborne assault forces; and by setting up obstacles on the enemy's movement routes. Enemy deployment can be broken up by making powerful nuclear and fire strikes against his main grouping at the deployment line, when troops assume a more compact battle formation laterally and in depth.

Success cannot be achieved in a meeting engagement unless the initiative is seized and held during the engagement. This is achieved by highly aggressive and resolute actions and mobility on the part of the troops, by efficiency on the part of commanders and staffs, and by demonstrating creativity and forestalling enemy actions.

The open flanks and gaps between units and subunits in a meeting engagement enable the enemy to carry out wide maneuver aimed at making powerful surprise attacks on the flanks and rear. For this reason, it is particularly important to protect them if one is to achieve success in a meeting engagement. This is done by conducting constant reconnaissance on the flanks, detecting enemy preparations for strikes on the flank in good time, and taking measures to prevent such attacks; and by placing reserves and antitank weapons closer to the flanks and organizing resistance to the enemy quickly if he attacks. Experienced commanders employ echeloned formations on the flanks, which makes it possible to cover them in depth and successfully repel attacks by enemy units and subunits deployed for deep or close enveloping maneuvers.

A most important condition for achieving success in a meeting engagement is **firm and continuous troop control and the maintenance of constant cooperation among subunits**. Combat actions develop when there is active resistance from the enemy and in quickly and drastically changing situations. Often communications with the senior commander (chief) become difficult or are broken for a time, while the situation demands immediate action. In these situations, commanders must make decisions and implement them quickly, demonstrating creativity and initiative.

“Even with adequately equipped and well-trained personnel,” states Marshal of the Soviet Union D. F. Ustinov, USSR Minister of Defense, “the combat capabilities of subunits, units, ships, and formations will remain unexploited and missions will be threatened with ruin if troop control is not effective.”⁴

A commander's initiative is grounded in a correct understanding of the combat mission and the situation. It consists in endeavoring to find the most effective ways and means of carrying out combat missions, exploiting situations that are developing in his favor quickly and in good time, and taking measures to immediately eliminate threats as they occur.

The conditions that determine success in a meeting engagement are closely interrelated, but in specific situations certain of them may be decisive. Therefore, subunit commanders must be able not only to make provision for them in combat, but also to exploit them with skill in order to rout the enemy decisively and quickly.

3. Routing an Enemy in a Meeting Engagement

A meeting engagement may be conducted with both nuclear and conventional weapons or conventional weapons alone. In selecting a method of routing the enemy, the specific conditions in which the meeting engagement develops, the combat capabilities of the troops, the professional training of commanders and staffs and their skill in troop control, and the field training of the subunits are taken into account.

When nuclear weapons are employed in combat actions, direct contact with enemy subunits in meeting engagements will be preceded, as a rule, by nuclear strikes on advancing enemy groupings using weapons under the control of a senior commander (chief). These strikes will be made as the enemy groupings move up, and their effects will have a decisive influence on the nature of subsequent combat actions.

Nuclear strikes against enemy columns as they pass road junctions, crossings, defiles, and other choke points may be particularly effective. Such strikes make it possible to inflict damage on the enemy's advancing

force, hold up its advance, or create favorable conditions for forestalling him in deploying and carrying out synchronized attacks by motorized rifle and tank subunits.

The use of nuclear weapons puts the advancing enemy forces against which they are employed at a disadvantage even before they engage, makes it possible to seize the initiative, and sets up conditions that will lead to success in a meeting engagement.

In turn, the enemy will constantly endeavor to make nuclear strikes as well. Thus, it is imperative to anticipate this eventuality and take measures to reduce troop vulnerability to a minimum and prevent delays in their advance.

Reconnaissance subunits, once they have made contact with enemy reconnaissance and security subunits, usually bypass them and infiltrate to the main body, determine its composition, grouping, direction of movement, times for passing major lines, gaps, flanks, possible lines of deployment and the times when deployment will begin, artillery fire positions, and control post sites. The special mission of reconnaissance subunits is to establish the locations of enemy nuclear and chemical weapons. If necessary, the reconnaissance subunits attack individual enemy forward subunits, take prisoners, and disrupt movements. They quickly report information on the enemy to the commander who sent them.

Meeting engagements usually open when the forward detachment and march security element come into contact with the enemy's security elements and forward detachments.

The forward detachment, advancing at maximum speed, endeavors to beat the enemy to its indicated line. The chief mission of the forward detachment is to forestall the enemy in occupying a favorable line and to delay him until the main body approaches. Advancing to a designated line, the forward detachment eliminates the small groups it encounters by means of resolute actions, inflicts losses on the opposing enemy force using all of its fire resources, seizes its line from the line of march, and holds it until the main body draws near. If the enemy forestalls the forward detachment in reaching the indicated line, the detachment quickly moves against the enemy's flank and attacks it from the line of march. As a rule, motorized rifle battalions attack in their infantry combat vehicles (armored personnel carriers) without dismounting.

If the forward detachment engages a superior enemy force, it will hold the enemy on other favorable lines using all of its fire resources and by aggressive actions, providing favorable conditions for the main body to deploy and engage the enemy and to strike his flank and rear.

The actions of the march security elements (forward security element, advance guard) must be aggressive and resolute. They play a major role in seizing the initiative. The commander of a battalion (company) allocated to the march security element must be aware that success in the engagement hinges on his resolute actions.

On encountering enemy reconnaissance and security subunits, the forward security element eliminates them by deploying from the line of march and continues to carry out its assigned mission. On coming into contact with a superior enemy force, it takes up a favorable line and, holding it stubbornly, inflicts losses on the enemy with all its fire resources, enabling the column thus covered to deploy and engage the enemy. When the forward security element engages the enemy, the advance guard quickens its advance in order to provide timely support to the former.

The artillery usually takes up fire positions along the route of advance from the line of march and immediately opens fire on the advancing enemy columns. It neutralizes enemy artillery and antitank weapons and supports the forward security element, as well as the advance guard as it advances, deploys, and engages. The guns allocated for direct fire and the ATGM launchers advance to their fire positions. In order to hinder the enemy's deployment and restrict his maneuvers, they first hit the vehicles at the head and tail of a column.

The tank and motorized rifle subunits of the advance guard, in infantry combat vehicles (armored personnel carriers), exploit natural terrain features and move up to their axis, deploy for battle from the line of march, swiftly attack enemy covering subunits and eliminate them, penetrate to the main enemy force, make a decisive attack on it, and contain it, enabling their own main force to maneuver, deploy, and engage the enemy.

On encountering a superior enemy force, the advance guard quickly deploys on a favorable line (one already reached) and, using tank, artillery, antitank, infantry combat vehicle (armored personnel carrier), and small-arms fire, contains the enemy on a broad front, holds up further enemy advances, and enables the main body to engage under advantageous conditions. Strong antitank defenses are set up on axes accessible to tanks using all the antitank resources allotted to the advance guard. Combat engineer subunits construct antitank obstacles in front and on the flanks of the line occupied.

If the leading enemy subunits succeed in forestalling the advance guard in taking a favorable line, then actions are taken to seize this line from the line of march. The enemy is neutralized with artillery and tank fire and air and combat helicopter strikes, after which a hasty attack is

carried out. After taking the designated line, the subunits of the advance guard consolidate on it and with aggressive actions enable the main body to deploy and engage.

The actions of subunits in the forward detachment and march security elements provide advantageous conditions for the main body to deploy and engage the enemy. For this reason the senior commander (chief) must devote as much attention as possible to their actions, provide timely support mainly with his own fire resources, and take all possible measures to exploit their success using the main body, to hold up the deployment of the enemy's main body, and eliminate his leading subunits before their actions receive support from forces advancing from the depth.

Combat experience reveals that striking the enemy's flank and rear with the main body is an effective way of routing an enemy in a meeting engagement. The flanks and, even more so, the rear are the most vulnerable spots in an enemy battle formation. Attacks on the flank and rear create advantageous conditions for hitting the enemy with all fire resources on a broad front. When maneuvers are made covertly and these attacks made quickly, the enemy is unable to prepare to repel them, which in a meeting engagement may result in the defeat of his stronger, as yet undeployed grouping (figure 8).

During the Great Patriotic War, tank and mechanized units had great capabilities for maneuvering on the enemy's flanks and rear in meeting engagements. With their excellent cross-country performance and speed of movement and their ability to brush aside enemy screening forces from the line of march, they carried out deep and close envelopments and attacked where they were least expected.

On 8 November 1943, during the Kiev-Fastov Operation, the 55th Tank Brigade of the 7th Guards Tank Corps carried out a deep envelopment and made a surprise strike on the right flank of the units of the enemy's 25th Tank Division as they were deploying for a meeting engagement. The surprise achieved and the force of this strike largely determined the success of the engagement.⁵

Depending on the situation, attacks may be made on one or both flanks and the rear simultaneously.

At the same time, it may not always prove possible or advisable to attack a flank because of unfavorable terrain features, lack of time for maneuver, or the need for aggressive actions on the shortest axis that are aimed at swiftly exploiting the effects of a nuclear strike, or because one is in contact with the enemy's outflanking force.

In a meeting engagement, the enemy will also try to make extensive use of flank and rear attacks. For this reason, the axes of deep or close envelopments by friendly and enemy forces may coincide. In such cases, frontal attacks are made in order to split the enemy grouping and defeat it in detail. The subunits attack following nuclear and intense fire strikes,

making extensive use of breaches and gaps in the enemy's battle formation. The axis of attack is selected on terrain that is most advantageous to actions by tanks and infantry combat vehicles (armored personnel carriers).

In order to maneuver and strike the enemy's flank and rear with the main body, it is often necessary to contain him from the front. A small portion of the subunits, motorized rifle subunits as a rule, are allotted for this mission. They also operate aggressively and resolutely, so as not to give the enemy a chance to maneuver against the friendly grouping as it carries out a deep or close envelopment.

The order of deployment for the main body and the time needed to deploy depend on the composition of the main body, its configuration, the distance from the line of probable enemy contact, the actions of the march security elements, the enemy's composition and the nature of his actions, and also the terrain features. In all cases, it is advisable to advance and deploy as rapidly as possible in order to forestall the enemy's deployment and make a strong coordinated strike against him. Therefore, when deploying the main body, one should avoid complicated regroupings that will lead to delays.

Depending on the enemy's axis of actions, terrain features, and the concept of the meeting engagement, the main body may be deployed by re-forming into battalion, company, and platoon columns in sequence, and subsequently deploying for combat, or by having the subunits turn simultaneously in the direction of attack (figure 9).

Moreover, if prevailing circumstances permit and the terrain provides good masking features, the main body can move in march formation directly to the deployment line and, after simultaneously re-forming into battle formation, can immediately go over to the attack.

The main body's deployment line is selected so as to enable the main body to advance to it covertly and deploy rapidly to make a strong coordinated strike. The advance to the deployment line follows the shortest axes possible.

In order to approach the enemy swiftly, and also to protect friendly forces against NBC weapons, it is advisable for the main body, increasing the distances and gaps between subunits, to continue to advance in battalion columns to the range limit of enemy direct artillery and ATGM fire.

The main body's artillery is deployed as soon as possible, so that it will be able to provide support for the subunits as they deploy and go over

to the attack. In this case, the artillery occupies fire positions at a distance from the deployment line that will enable it to strike the enemy to a depth no less than half the range of the guns.

In a meeting engagement, it is often necessary to deploy toward one or both flanks. This is because of the presence of large gaps and breaches in the battle formation, the great maneuverability and mobility of the opposing forces, and their mutual drive to strike the flanks and rear.

If the main body is deployed toward a flank, the flank guard detachment acts as the forward security element. It eliminates the enemy march security elements, penetrates to his main body, and, with resolute actions, inflicts losses on him or deploys on a favorable line, whereupon, with fire and aggressive actions, it contains the enemy and provides the main body with advantageous conditions for engaging the enemy. A part of the main body deploys to contain the enemy from the front and create favorable conditions for striking the enemy flank and rear.

If the enemy is conducting simultaneous actions on the front and flank, the main efforts will be directed at routing the most threatening enemy grouping while simultaneously covering friendly forces against his other grouping.

The enemy will attempt to strike the main grouping with nuclear weapons, combat helicopters, and aviation the moment it deploys. Particular attention must therefore be given to air defense and troop NBC defense. The bulk of anti-aircraft resources will be used to cover the main grouping and other major targets. Fighter cover for troops will be increased at the same time.

In order to counter enemy combat helicopters effectively, a commander must constantly keep in mind the possibility that they may appear suddenly and remain in engagement zones only briefly; determine possible lines from which enemy helicopters can attack; and conduct constant air observation and be constantly ready for action against helicopters.

Troop NBC defense is provided when deploying by carrying out continuous radiological and chemical warfare reconnaissance, by setting up an early-warning system for the subunits, and by dispersing troops and exploiting terrain protective and masking features as much as possible. If the enemy employs nuclear and chemical weapons during deployment, strong measures are taken to restore the fighting efficiency of the subunits exposed to attack and to restore disrupted cooperation and troop control.

The most important reconnaissance missions in the deployment stage are location of enemy nuclear and chemical weapons, identification of

targets for nuclear strikes, timely discovery of enemy intentions to launch flank attacks, and identification of breaches, gaps, and other vulnerable spots in the enemy battle formation.

The commander and staff, while directing the deployment of the main body, take measures to move the subunits forward rapidly and switch them over immediately to the attack. In accordance with the commander's decision, staff officers are dispatched with communications equipment to the most important axes, from whence they report on the progress of deployment. If the enemy strikes the columns as they deploy, the staff determines the condition of the subunits, assesses the situation, and, in accordance with the commander's decision, takes measures to restore their fighting efficiency. Subunits that have lost their fighting efficiency are replaced by reserves. If losses are significant, the commander and staff quickly form up combined subunits, which continue to carry out the combat mission.

The main body goes over to the attack from the line of march. Preparatory fire for the attack may consist of one or several artillery strikes. It is important here that the first artillery strike eliminate the fire resources on which the fire superiority and stability of the enemy's battle formation depend, including tactical nuclear weapons, ATGM launchers, guns, tanks, infantry combat vehicles, and air defense weapons.

The main body may engage the enemy simultaneously or sequentially. Experience reveals that going over to the attack simultaneously enables the main body to make a strong initial strike that is difficult for the enemy to repel. The strike is carried out on a broad front, and hence the enemy is deprived of the ability to maneuver troops that are not under attack. This sort of strike requires better preparatory fire. However, preparations for a strong initial attack take a certain amount of time, which may not be available in many cases.

Sequential engagement of the main body as the subunits approach and deploy inevitably results in some dispersal of resources and reduces the force of the initial attack. The enemy may defeat individual subunits or repel their attacks. For this reason, the main body usually engages sequentially when it is necessary to exploit the effects of a nuclear strike immediately, when the enemy has not had time to deploy his forces and has thus created conditions favoring an attack on his flank and rear, or when, under pressure from a superior enemy force, the march security subunits are forced to withdraw and the enemy must be stopped immediately in order to deny him the chance to exploit his success.

Motorized rifle subunits in infantry combat vehicles (armored personnel carriers) may attack in conjunction with tanks. Firing on the move,

they eliminate enemy resources, striving to penetrate enemy positions to the greatest depth possible. The attack will be most effective if carried out while the enemy is deploying when his forces are on the move.

The attacking subunits are supported by artillery fire concentrated against targets that obstruct the advance, as well as by fire on the most important enemy targets, whose destruction and neutralization make it possible to develop the attack rapidly. Enemy nuclear weapons are destroyed as soon as they are discovered. The artillery changes position, following the attacking subunits, in order to provide continuous fire support to the entire depth of actions.

When the subunits go over to the attack, they penetrate the gaps between enemy columns, and the enemy grouping is split and defeated in detail. Exploiting their success, the subunits prevent the organized deployment of advancing enemy reserves and deny the enemy any opportunity to go over to the defensive and regroup his forces.

In meeting engagements, the enemy will usually engage as the subunits approach. Hence, the attacking force must operate in an exceptionally aggressive and resolute manner in order to defeat the enemy in detail.

Moreover, in order to rout the enemy's first echelon quickly, it is vital to seal the battlefield off from advancing enemy reserves. This can be accomplished by making nuclear, air, and combat helicopter strikes on the orders of the senior commander (chief) and artillery strikes aimed at hitting enemy reserves, preventing or hindering their advance, demolishing bridges, crossings, and roads, and setting up obstacles. Ambushes on the movement routes of enemy columns and minelaying may also play an important role.

If the enemy attempts to make a deep or close envelopment of the flanks of friendly forces, fire strikes are made against the forces carrying out this maneuver, and the necessary forces are allocated to cover the flanks with engineer obstacles and antitank weapons. Subunits, primarily tanks and artillery, are quickly regrouped toward the threatened flank, and the outflanking or enveloping grouping is eliminated by a decisive strike against its flank and rear.

Timely exploitation on one axis can have a positive effect on the entire front and lead to total defeat of the enemy. At the same time, the slightest delay will inevitably lead to increasing enemy resistance. Consequently, it is advisable to commit the reserve as soon as possible.

Meeting engagements must end in the total rout of the enemy. However, in many cases the enemy may attempt to withdraw or go over to the

defensive. Therefore, it is very important not to give him the opportunity to consolidate on favorable lines or begin an organized withdrawal.

When enemy attempts to go over to the defensive are detected, they should be broken up by resolute strikes on his flanks and front. If the enemy attempts to withdraw in order to escape total rout, pursuit is organized from the front and along routes paralleling his direction of withdrawal.

Thus, equipping forces with modern weapons and combat equipment and increasing the firepower, striking power, and mobility of subunits and units have greatly influenced the nature and essence of meeting engagements. The circumstances under which they occur have become more diverse. The depth and power of the opposing sides' fire effect have increased. Meeting engagements have become more dynamic, maneuvering, intense, and quickly evolving. The importance of the time factor in a meeting engagement and of forestalling enemy actions, particularly fire strikes, has increased dramatically. All this demands great professional skills on the part of commanders, political workers, staffs, and troops and requires that they demonstrate creativity and initiative in order to achieve victory.

The weapons in service make it possible to hit considerable numbers of tanks, infantry combat vehicles, and other types of combat equipment effectively over large areas and in a short time and to put whole elements of troop battle formations out of action long before they engage. Thus, problems of improving the survivability of troops and troop control systems and of forestalling enemy actions will become even more acute. Different ways will have to be found of advancing, deploying forces, and routing the enemy in a meeting engagement. Manuever, camouflage, air defense, electronic warfare, and reliable troop control in combat will increase in importance. All this demands that subunit commanders have a profound understanding of the modern meeting engagement and that they be creative in their search for ways of conducting it and achieving success.

Notes

1. See *Sovetskaya Voyennaya Entsiklopediya* [Soviet Military Encyclopedia], II, 407.
2. See *Razvitiye taktiki Sukhoputnykh voysk v Velikoy Otechestvennoy voyne* [The Evolution of Ground Forces Tactics in the Great Patriotic War], Moscow, 1981, pp. 315-24.
3. See *Zarubezhnoye voyennoye obozreniye* [Foreign Military Review], No. 4, 1978, pp. 11-12; No. 5, 1978, p. 31; No. 4, 1983, p. 16.
4. D. F. Ustinov, *Sluzhim Rodine, delu kommunizma* [We Serve the Motherland and the Cause of Communism], p. 95.
5. See *Taktika v boyevykh primerakh. Polk* [Tactics in Combat Examples: The Regiment], p. 181.

Chapter 4. The Defensive Engagement

1. The Essence of the Defensive Engagement

Defense developed simultaneously with the offensive, inasmuch as combat actions are a two-sided process. If one side attacks, that is, carries out an offensive, the other side repels the attacks, or defends.

When the art of war was still in its early formative stages, inequality in resources and the fact that the attacking force had the initiative and the ability to choose the axis and time for carrying out strikes determined the aim and methods of defense.

The aim of the defending forces was to repel offensives by superior enemy forces, inflict significant losses on them, and hold specific points or areas on the ground. Here, the defending forces would occupy an advantageous position that enabled them to halt the enemy offensive. If they were unable to do this in one position, they would hit the enemy at several positions occupied in succession. After the attackers had suffered losses and lost their superiority in resources, the defending forces would attempt to exploit the situation created to go over to the offensive.

When mass armies of many millions made their appearance and combat actions developed on fronts extending for hundreds or thousands of kilometers, the way in which defense was employed was determined not only by the need to combat an attacking enemy, but also by the need to combine offensive actions on some axes with defensive actions on others. In other words, defense began to be used to economize on resources on secondary axes and gain superiority over the enemy for attacking on the most important axes; to hold lines seized in the course of an offensive and repel enemy counterstrikes or counterattacks; to cover the flanks and rear of advancing groupings; and to consolidate lines taken and gain time to prepare for a renewed offensive. Thus, the way in which defense was employed was largely subordinated to the interests of the offensive.

The methods by which the defense could achieve its aims were determined primarily by the state of development of available military equipment. When firearms appeared, strikes against attacking enemy forces

were mainly made with infantry and artillery fire, while during World War I, and particularly during World War II, tank fire and aerial bombing attacks were used as well.

Inasmuch as the defending forces were, as a rule, inferior to the attacking enemy in resources and were forced to respond to his actions, the defenders had to search for ways to improve the effectiveness of their strikes against the enemy. Factors such as terrain and time were the primary ones exploited to deprive the enemy of his superiority in resources.

Insofar as possible, defensive positions were selected behind natural obstructions and on commanding heights and crests that provided good fields of view and fire over the terrain to the front. Natural obstructions hindered the actions of both advancing enemy infantry and tanks. Engineer preparation of positions became very important, as did the use of various obstacles by the troops.

The defenders attempted to occupy positions selected beforehand in order to gain time for carrying out engineer preparation and other preparatory defensive measures. In addition, positions were as a rule selected at a distance from the attacking enemy that would force him to expend a certain amount of time approaching and then preparing his troops for the attack. The defending forces used this time to set up stronger defenses.

Flexibility in maneuvering fire and resources in order to reinforce troops that had suffered losses, to counter enemy breakthroughs in depth and toward the flanks, to alter the correlation of forces, and to gain fire superiority over the enemy on the main axes became more important when the defense lacked sufficient resources.

The experience of combat actions revealed that the defender would succeed if, in addition to making fire strikes against the enemy from prepared positions and maneuvering resources, he also carried out counterstrikes against the enemy.¹

The principal methods by which the defense achieved its objectives were striking the enemy with planned fire from all types of weapons in combination with obstacles; stubbornly holding positions that were well selected and had good engineering preparation; flexibility in maneuvering fire and resources; and counterattacking. Of course, these methods of action were used most effectively by forces that demonstrated firmness and determination in defense, had been trained for extended defensive engagements under difficult conditions, and made skillful use of all their firepower and combat equipment.

Consequently, until nuclear weapons appeared, defense was a type of engagement whose objectives—repelling attacks by superior enemy forces, inflicting significant losses on them, holding occupied positions, and creating advantageous conditions for going over to the offensive—were achieved by striking the enemy with planned fire from all types of weapons in combination with obstacles, by taking advantage of favorable terrain features and engineer-prepared positions, and by the firmness and determination of the defending force and their use of varied maneuvers and counterattacks.

The essence of defense is wholly retained today as well, if combat actions are conducted with conventional weapons alone.

When combat actions are conducted with nuclear weapons, resolute strikes will be made against an attacking enemy with nuclear weapons. Thanks to the defending force's having missiles and aviation, preemptive nuclear strikes may be made against major enemy targets while the enemy is in the concentration area preparing to attack, as battle groupings approach the defenses, and while they deploy to attack from the line of march.

At the same time, the occupation of lines advantageous for defense and the exploitation of protective features of the terrain and engineer preparation give the defending force a number of fire and tactical advantages even when nuclear weapons are used and provide protection against the casualty-producing elements of nuclear and conventional weapons.

A major advantage of the defense continues to lie in its ability to make more extensive use of obstacles, especially mixed minefields, on the enemy axes of advance. When nuclear weapons are employed, obstacles make it possible to hold up or reduce the momentum of advance, deployment, and attack of enemy tanks, infantry combat vehicles, and armored personnel carriers and so increase the effects of both conventional and nuclear weapons on the enemy.

The defending force has greater opportunities to use camouflage effectively. By concealing his real positions and exposing dummy positions, the defender forces the enemy to expend nuclear and conventional warheads by striking unmanned positions and secondary targets. Therefore, through skilled and timely exploitation of its advantages, the defense can withstand attacks by superior enemy forces even when nuclear weapons are used.

Forces going over to the defense set themselves various objectives. Nuclear strikes are the primary means of achieving defense objectives. The most crucial of them, i.e., disrupting prepared enemy offensives, may be

achieved through large-scale use of nuclear weapons. At the same time, planned fire with conventional weapons in combination with obstacles is used extensively, since it is impossible to carry out all missions relating to defensive actions with nuclear weapons. This also applies to flexibility in maneuvering fire and resources and counterattacking and also to firmly holding advantageous positions with good engineer preparation.

When nuclear weapons are employed, one cannot count on being able to hold continuous positions where resources are disposed in close deployment. The attacking force can then use nuclear weapons to create sizable breaches in the defenses and rush to the depth. For this reason, the defending force must base its defense on holding principal (key) lines (areas) that intersect probable enemy axes of advance and provide the necessary conditions for carrying out effective nuclear and fire strikes and counterattacking from the depth. The struggle for these lines (areas) will be aggressive in nature and will demand determination and firmness on the part of the troops and extensive maneuver of fire and resources.

Thus, when nuclear weapons are employed, the essence of defense consists in breaking up or repelling attacks by superior enemy forces, hitting him with nuclear and fire strikes in combination with extensive maneuver of fire and resources, counterattacks, the use of obstacles, and stubbornly holding principal (key) areas and positions that intersect probable enemy axes of advance and thereby create advantageous conditions for going over to offensive actions.

2. The Characteristic Features of the Modern Defensive Engagement and Demands Made on the Defense

Defense develops mainly as a result of improvements in armament and combat equipment. The nature and methods of conducting defensive actions are affected not only directly by new weapons, but also by changes in the methods of attack used by the enemy. Specifically, the use of new weapons increases a defending force's combat capabilities, imparts new features to the defense, and makes it more stable and aggressive. At the same time, the use of new types of weapons and combat equipment by an attacking enemy increases the firepower and force of his assault, which in turn heightens the demands on such qualities and characteristics as the defense must have if it is to withstand the attacker.

The current stage in weapons development is characterized by improvement in enemy nuclear weapons, their extensive introduction in formations and units of all services, combat arms, and combat service support troops, and a buildup of nuclear warheads. The US and other NATO

armies consider that nuclear weapons must be used by surprise, on a large scale, and throughout the depth of the opposing force's combat formation.

Under these circumstances, the defense will be able to achieve its objectives if it is stable **in the sense of being prepared for nuclear defense**. Stability of the defense in this sense means primarily its capability to detect and destroy the attacking enemy's nuclear weapons before he uses them and to protect the maximum numbers of men and equipment against enemy nuclear strikes so as to repel attacks by enemy forces in the wake of nuclear strikes.

The defending force is made less vulnerable to NBC weapons by dispersing unit and subunit combat formations and periodically changing the areas where they are located; by using the armor of fighting vehicles to protect personnel; by digging in personnel unprotected by fighting vehicle armor; by using camouflage to impede discovery of defense systems by enemy reconnaissance; and by using deception to mislead the enemy with respect to the defensive configuration and concept of defensive actions.

When nuclear weapons are used on a broad scale, armored forces become increasingly important. NATO bloc armies devote a great deal of attention to improving tanks and designing armored personnel carriers and infantry combat vehicles that will enable infantry to fight directly from the fighting vehicles. They continue to equip their combined arms formations with large numbers of tanks, armored personnel carriers, and infantry combat vehicles. For this reason, the requirement that the defense be **configured for antitank actions**, that is, be capable of repelling massed attacks by advancing enemy tanks and other armored vehicles, will become at least as important as its stability in the face of nuclear attack.

The armed forces of the US and its NATO partners consider tactical aviation to be an important combat asset. It is capable of making strikes with conventional and nuclear weapons against the most important enemy targets, particularly small mobile targets. Much attention has been focused lately on establishing so-called airmobile forces. Combat helicopters are coming into service in NATO ground forces formations.

Tactical aviation, combat helicopters, airborne assault forces and airmobile forces are employed increasingly by attacking forces, thus drastically increasing demands on the defense **in terms of being prepared to defend against air and airborne attack**.

The enemy's offensives may be broken up or his advances halted only by fighting with determination using all available weapons, primarily nuclear weapons, and if the defense is highly **stable and aggressive**.

Stability of defense may be understood as its ability to withstand enemy strikes using all kinds of weapons, to repel offensives by superior enemy forces, to prevent the landing of and actions by enemy airborne assault forces, to hold important areas, and to eliminate enemy groupings should they penetrate.

Necessary conditions for a stable defense include the ability to give the friendly troop grouping maximum protection against nuclear strikes by the attacking enemy force, as well as firm and skilled troop control, timely organization and continuous maintenance of cooperation, rapid restoration of disrupted defense systems and comprehensive support for combat actions, and endurance, steadiness, and determination on the part of the defending forces. The defending units and subunits are not authorized to abandon their positions and withdraw without orders from the senior commander (chief). They must be prepared to operate when there is no tactical liaison with adjacent elements and when they are encircled.

Nuclear weapons are capable of striking troops over a large area. The battle formation of a defending force is normally dispersed laterally and in depth so as to reduce its vulnerability. Dispersal of defending forces results in the absence of a continuous front line. Dispersal in depth enables the defending force to withstand the growing force and depth of enemy strikes and to put up increasing resistance to the enemy, makes it more difficult for him to discover the system of defenses, and provides for extensive maneuver of fire and resources.

Aggressiveness in defense consists in hitting the attacking forces continuously with all resources, imposing one's will on the enemy, creating unfavorable conditions for him to fight under, and carrying out wide maneuvers and counterattacks.

Great aggressiveness cannot be attained by a defense that lacks stability, while the stability of the defense will grow as defensive actions are conducted more aggressively.

In wars conducted with nuclear weapons, defensive actions will be more decisive than was the case in the last war, since primary importance will attach to nuclear and fire strikes against the enemy on the distant approaches in order to disrupt his employment of NBC weapons and break up his offensive before he goes over to the attack. When fighting an enemy force that has gone over to the attack, the defending force will make nuclear and air strikes against it, hit it with fire from all resources, and employ varied maneuvers and decisive counterattacks.

With the increase in firepower, striking power, and momentum of advance of attacking enemy forces, it has become particularly important to

increase the rates at which the defense's resources can be maneuvered. Rates of maneuver must enable the defender to forestall the enemy's advance to designated positions or lines (areas).

Surprise is a most important factor in the defending force's actions if they are to employ nuclear and conventional weapons to make powerful surprise attacks on attacking enemy forces in order to break up their advance with the fewest resources. Surprise in defense is manifested when the enemy is misled regarding the actual disposition of friendly resources in an effort to force him to make nuclear and fire strikes against unmanned positions or secondary targets and thereby reduce his ability to affect the defending force's main grouping. This is achieved by concealing troop dispositions, by camouflage, by using methods of configuring the defense that are unknown to the enemy, by setting up forward positions and dummy positions and installations, and by maneuvering to counter nuclear attack. This maneuver consists in forces changing their areas of disposition and defended areas and positions before the attacking enemy force makes its anticipated grouped or massed nuclear strikes.

Defensive actions will be characterized by the formation of barriers, demolished areas, areas affected by fires and floods, and zones of radioactive contamination resulting from mutual nuclear exchanges, in which it will be difficult or even impossible to conduct aggressive combat actions. Troops will normally be airlifted across such areas and zones.

In sum, defensive actions will develop unevenly along the front and in depth. Characteristically, they will be conducted on the enemy groupings' axes of advance and simultaneously in the depth of the defense and in areas where enemy airborne assault and airmobile forces have been dropped (landed).

The tactical autonomy of units and subunits, their ability to conduct an all-round defense, and the state of the troops' preparation for aggressive defensive actions in zones of radioactive contamination will become especially important under these circumstances.

The resoluteness of the objectives pursued by both the attackers and the defenders, their use of nuclear weapons, the deep penetrations made by the attacking force when it advances on the defending force's flanks and rear, and the dropping (landing) of airborne assault forces will impart great ferocity and intensity to defensive actions and give rise to swift and sudden changes in ground and air situations. Success in such actions demands that battle formations be configured in depth, that groupings of fire resources, particularly nuclear weapons, be created, that various reserves be allocated, and that the troops be provided with effective cover against air strikes.

The employment of nuclear weapons by the opposing sides and the growing mobility of attacking and defending forces increase the **dynamism** of defensive actions and make them increasingly rapid in their development. The great losses caused by enemy nuclear strikes reduce the duration of subunit, unit, and formation defensive actions. Large-scale employment of nuclear weapons enables the defending force to achieve its objectives and switch more quickly from defense to offense.

Since each side endeavors to conduct combat actions without interruption, defensive engagements are often conducted at night and at other times when visibility is limited.

When nuclear weapons are employed in combat actions, the problem of **initiative** in defense is dealt with in a new way. Initiative was once considered the prerogative of the attacker, but now, thanks to the availability of nuclear warheads and delivery systems, the defender can seize the initiative and impose his will on the attacking force. All that is needed is skillful and timely use of this capability.

Success in modern-day defensive actions depends largely on the fighting efficiency and morale and the level of combat training and psychological indoctrination of personnel. They must be able to undergo the most severe trials and bear the greatest psychological and physical stresses in combat. Otherwise, the extent of the effect of the new weapons on morale will exceed the extent of their physical effects. This means that, in addition to those forces that have been hit with a nuclear strike, forces quite distant from the strike may also be put out of action.

Only great political awareness among soldiers, good organization and iron discipline, unshakable firmness and determination, great aggressiveness, and the will to perform the mission assigned, whatever the cost or effort, even life itself, can guard the defending force against confusion, panic, and defeat.

Thus, modern defense must be aggressive and stable, particularly as regards its ability to defend itself against attacks by nuclear weapons, tanks, aviation, and airborne assault forces. Modern defensive engagements are characterized by greater resoluteness of combat actions; great maneuverability; increased importance of the surprise factor; uneven development of defensive actions; the fact that they are conducted on axes; their ferocity, intensity, and highly dynamic nature; swift and drastic changes in the ground and air situations; and the growing importance of morale and psychological factors.

3. The Battle Formation

The battle formation is always set up in accord with the commander's decision for conducting the forthcoming engagement. It depends on the mission to be performed, enemy actions, the availability of resources, and the nature of the terrain.

The battle formation must ensure the defense's stability and aggressiveness; enable it to fight successfully with both nuclear and conventional weapons; provide for the most effective use of available resources for striking the enemy as he approaches the defense, in front of the FEBA, and when the defense is penetrated; reduce to a minimum the defending force's vulnerability to nuclear and fire strikes by the attacking enemy; enable it to carry out wide maneuvers of resources during an engagement, put up increasing resistance to the enemy, and quickly eliminate enemy forces that penetrate to the depth of the defense; enable it to effectively counter enemy aviation and airborne assault forces (airmobile forces); provide for ease of troop control and the ability to maintain continuous cooperation; and ensure the greatest possible use of advantageous terrain features and the ability to quickly carry out engineer preparation of the ground.

The complexity of these missions is caused primarily by the fact that the defending force must have its resources in the field disposed in certain areas, in certain positions, or on certain lines before the enemy offensive begins. This makes it easier for the attacking enemy to discover the groupings of resources in the defense and to hit them with nuclear strikes. As nuclear weapons develop, nuclear warheads are stockpiled, and delivery systems improve, the effectiveness of nuclear strikes against the defending force increases. This is affected as well by ever-increasing enemy offensive use of airspace in combination with ground strikes.

World War II experience revealed that in-depth, as a rule two-echelon, configuration of the troop battle formation is essential in defense. In addition to echelons, artillery and antiaircraft artillery groups, tank-killing areas, artillery and antitank reserves, and mobile obstacle detachments (and tank reserves in the case of divisions) were set up in the combat deployments of formations and units.²

However, when nuclear weapons appeared, the intervals and distances between battalions, which had been clearly defined in terms of defended areas and zones in the last war, proved inadequate. This was because defending units and formations may sustain great losses from nuclear strikes with medium-yield warheads (20 kilotons and over). For this reason, it was necessary first of all to increase the distance in depth between battalions located in two positions, so that it would be impossible to hit

both with a single nuclear warhead. Lateral gaps between battalions also had to be created. Naturally, in each specific case the size of the intervals and gaps depends on the nature of the terrain, maneuver conditions, and possibilities for maintaining tactical liaison and mutual fire support between battalions, on condition that the lateral and in-depth dispersal of the battle formation does not compromise the integrity of the defense.

When low-yield nuclear warheads (a few kilotons) appeared, the battle formation of the battalion also had to be dispersed, so that a strike by one such warhead could not eliminate more than a single company. The gaps between company strongpoints, laterally and in depth, were set up with due regard for the destructive properties of low-yield nuclear warheads, the direct-fire ranges of the antitank weapons and tanks in the company strongpoints, and the nature of the ground and of its engineer preparation. Because of this, each company's responsibility for holding its strongpoint and protecting the gaps between adjacent strongpoints increased considerably, which made it essential that companies be provided with a full complement of more effective organic and attached antitank weapons.

Further dispersal of defending subunits' battle formations resulted from the US development of, and the possibility of attacking NATO forces using super-low-yield nuclear warheads (less than 1 kiloton). The blast from such a warhead could cause considerable destruction to a company strongpoint. In order to reduce the extent of its destructive effect, the battle formation of the company also had to be dispersed to the point that one super-low-yield warhead would be unable to put more than a single platoon out of action. Now the gaps between platoon strongpoints are several hundred meters.

The two-echelon configuration battle formation that came out of the experience of the last war has proven the most suitable for offering increasing resistance to an attacking enemy when nuclear weapons are employed. Therefore, **it is advisable that a battalion in the defense, particularly on the main axes, be deployed for combat in two echelons.** Usually a single company is allocated to the second echelon.

On adverse terrain, when resources are in short supply, and also when occupying positions in the depth of the defense, a battalion's battle formation may consist of a single echelon. In this case, so as not to greatly reduce the depth of the battalion's defenses and to provide conditions for organizing flanking and crossfire, one of the companies may be moved forward or back and disposed as an echelon on the open flank. Depth in a battalion's battle formation is also created by allocating a reserve consisting of a reinforced platoon, as well as by using the fire assets (tanks, ATGMs, rocket launchers, and mortars) and air defense assets remaining at the battalion commander's disposal.

When necessary, a battalion's defenses are broadened frontally on adverse terrain by increasing the gaps between companies, although not by dispersing the battle formations of the component subunits.

The battalions that make up the second echelons (combined arms reserves) occupy defense areas in positions in depth and prepare to carry out wide maneuvers for counterattacking and performing missions to cover areas subjected to nuclear strikes and for moving up to axes where enemy tanks have broken through. They may also be used to eliminate enemy airborne assault forces (airmobile forces) that have landed.

The defense's need to acquire greater mobility and maneuverability has affected other elements of the battle formation as well. In particular, a tendency has arisen to increase the personnel and firepower of the **antitank reserves**, while mining has become more important for closing breaches in the defenses, laying minefields on axes where tanks have broken through, and covering flanks and gaps. For this reason, mobile obstacle detachments are used more extensively, and their equipment is being improved.

Considerable changes have taken place in the combat deployment of formations and units in the US and other NATO armies because of the inclusion of more powerful **artillery weapons** and battlefield nuclear delivery systems in their establishment. For example, artillery groupings of 203.2mm and 155mm howitzers capable of firing nuclear shells are part of the battle formation of US Army divisions at the present time.

In addition to such missions as striking enemy personnel, fire resources, and tanks, artillery in the defense now performs a number of new missions. It destroys and neutralizes tactical nuclear weapons, destroys radar equipment, and provides fire to cover breaches created in battle formations as the result of enemy nuclear strikes.

An important means of increasing the stability of the defense is to deceive the enemy with respect to the configuration of the battle formation. This is achieved by declining, no matter what, to follow stereotyped patterns in configuring battle formations and by employing methods of utilizing resources that are new and unanticipated by the enemy.

One way to increase the stability of the defense is to make skillful use of advantageous terrain features. In this case, it is particularly important to take advantage of the terrain to protect troops against the casualty-producing elements of enemy nuclear weapons and fire; to camouflage the battle formation against observation and all types of enemy reconnaissance; and to provide for the effective employment of fire resources to strike the attacking enemy.

The growing capabilities of reconnaissance equipment must be taken into account when organizing modern defenses. For this reason, it is inadvisable to leave even those elements of the battle formation that are concealed by terrain features in the same areas for a long time. The locations of elements of the battle formation that are situated in the depth of the defense must be changed in order to deceive the attacking enemy and make it more difficult for him to reconnoiter and fix the coordinates of targets for nuclear strikes.

The actual dispositions of the defender's main body may also be concealed by skillful construction of the forward position and forward defense area security zone. For example, the US Army may employ considerable numbers of covering forces and general and combat security outposts for actions in the forward defense area security zone in order to deceive the enemy as to the position of the FEBA.

However, measures to conceal the actual configuration of the defending force's battle formation will be effective only if determined counteraction is taken against enemy reconnaissance and if the defending force also conducts aggressive reconnaissance.

4. The Configuration and Engineer Preparation of Defensive Positions

The dispersal of battalion battle formations and the increased autonomy of company and platoon strongpoints have resulted in changes in the configuration of defensive positions. **They have begun to be based on company strongpoints that have been prepared for all-round defense and connected in battalion defense areas by a fire plan and obstacles** (figure 10). Here, because of the employment of tank subunits in the second echelon, tank company strongpoints have become increasingly important in defensive positions situated in the depth.

Defending subunits use mainly conventional weapons to strike the enemy. For this reason, the skillful use of advantageous terrain features, the outline of the positions, and the disposition of subunits and fire resources on the ground must enable subunits to strike the enemy at maximum range and to intensify fire on the enemy as he approaches the FEBA.

It is well known that the approaches to the defense can be best observed and covered by fire in great depth when defenses are set up on commanding heights, particularly on slopes that face the enemy. Today, however, the advantages and disadvantages of setting up defenses on commanding heights must be evaluated thoroughly in every case. In many

cases, it is more advantageous to hold adjacent heights after the approaches to the commanding heights have been covered with fire. Reverse slopes of heights are also used to put subunits into position covertly and enable them to make surprise attacks on the enemy.

Skillful exploitation of natural obstructions and obstacles has always contributed to a successful defense. They slow the enemy's momentum of advance and make it possible to strike him more effectively. It becomes even more important to exploit this factor in defense when nuclear weapons are employed. It is good practice to choose lines of defense that lie beyond water obstacles, swamps, ravines, various types of defiles, and other obstructions, so that these obstacles are under constant observation and fire from the defending force.

The great mobility and maneuverability of the defending force has led to the establishment, along with defensive positions, of **firing lines** allocated to second-echelon (combined arms reserve) tank and infantry combat vehicle subunits. Firing lines are prepared on probable axes of nuclear strikes and massed attacks by advancing enemy tanks on the defending force's positions, between positions, and on the flanks. Emplacements for tanks and infantry combat vehicles are prepared on the firing lines, as well as access routes to them.

There may be a great deal of variation in the outline of the firing lines. However, it must tie in with the outline of the defensive positions, making it possible to create pockets of fire that will prevent the enemy from developing attacks in depth and toward the flanks and create conditions for effectively striking enemy groupings that have penetrated the defense with nuclear strikes and fire from all types of weapons.

Counterattack deployment lines are designated on axes of probable enemy penetration to the defenses of the second-echelon (combined arms reserve) subunits. If time permits, emplacements for fire resources are prepared on these lines, as well as routes for moving up and deploying the subunits in battle formation.

If it proves impossible or inadvisable to counterattack, the deployment lines may also be used as firing lines. In turn, prepared firing lines may serve as counterattack deployment lines for second-echelon (combined arms reserve) subunits.

If time permits, **alternative positions** may be prepared in the defenses. They are usually laid out at an angle to the front line in order to prevent the enemy from widening breakthroughs toward the flanks and to enable

the defenders to create fire pockets in order to wipe out the enemy with fire and counterattacks. The alternative positions may be used as firing lines or counterattack deployment lines.

Antitank reserve deployment lines are prepared on axes of probable enemy tank attack and on the flanks.

Minefield lines, on which mobile obstacle detachments deploy, tie in with the firing lines of the second-echelon subunits and the antitank reserve deployment lines.

When missile subunits are placed, particular attention is given to ensuring their survivability and concealing their dispositions.

Artillery subunit **fire positions** are usually located on probable lines of tank approach and are echeloned in depth so that the artillery will be able to strike the enemy at maximum range as he approaches the defenses, deploys, and attacks and when he penetrates the defenses. The antiaircraft weapon positions must provide for effective cover of the defending force's battle formations, particularly on axes of probable enemy air attack.

In order to provide for surprise in their actions, defending forces devote special attention to setting up **reserve and dummy defensive positions**, defense areas, fire positions, and disposition areas for second-echelon and reserve subunits.

Engineer preparation of defensive positions must ensure protection for the greatest possible numbers of men and equipment when the enemy employs nuclear weapons and make it possible to restore the defenses quickly after a nuclear strike, as well as to repel enemy attacks and quickly maneuver resources along the front and up from the depth of the defense as needed.

As before, the greatest difficulties in engineer preparation of positions occur in going over to the defense while in direct contact with the enemy, inasmuch as it is not always possible then to use mechanized engineer equipment for this purpose on the FEBA and in the immediate depth. Under these conditions, the skillful exploitation of protective and masking features of the terrain to protect subunits, fire resources, and combat equipment becomes particularly important. Large and small ditches, ravines, and pits, even with minimal preparation, may replace trenches or fire trenches and thus provide the necessary degree of protection from both conventional and nuclear weapons.

As a rule, in transitions to the defense while in direct contact with the enemy, engineer preparation of company and platoon strongpoints is car-

ried out manually under enemy fire. For this reason, it is primarily the night hours that must be used for engineer work.

First, one-man (two-man) fire trenches are dug and the main fire positions for tanks, ATGMs, infantry combat vehicles (armored personnel carriers), guns, and rocket launchers are prepared for use. Then the one-man fire trenches are joined to form section-size trenches, and these are joined in turn to form sections of the main trenches, communications trenches are dug, and reserve fire positions for the tanks, ATGMs, and other fire resources are prepared for use.

Because of the difficulties of using engineer equipment on the FEBA, it is considered essential to go over to the defense while covered by forward or security subunits, which prepare **forward positions or combat security outposts**. The combat security outpost position is set up at a distance from the FEBA that will prevent enemy ground observation, machine gun fire, and direct fire from guns, tanks, and ATGMs on strongpoints in the FEBA. The forward position is set up at a greater distance in order to reduce the effect of enemy artillery and mortar fire on the FEBA and to mislead the enemy with respect to the true outline of the forward edge. One must make skilled use of terrain and local features in order to quickly prepare the positions occupied by the covering subunits.

Subunits making up the second echelon and reserve have more advantageous conditions for carrying out engineer preparation of company strongpoints and battalion defense areas. They can use various types of mechanized engineer equipment and prefabricated protective fieldworks, which enables better fieldworks to be constructed in a short time. Thus, a single tank fitted with a bulldozer attachment can prepare dugouts for a tank company in 5–6 hours.

Engineer preparation of company and platoon strongpoints and battalion defense areas usually begins after subunit positions, fire positions, and the fire plan have been decided on.

The areas for artillery, mortar, and antiaircraft weapons fire positions, missile subunit deployment areas, and reserve locations are prepared at the same time as engineer preparation of motorized rifle and tank company strongpoints. Fire trenches are also dug on firing lines and, if time permits, on counterattack deployment lines, and fieldworks are constructed at control posts; reserve and dummy strongpoints, defense areas and positions, and maneuver routes are prepared; and camouflaging measures are taken.

The times for performing engineer work have now been reduced considerably in comparison with those of the last war. This is mainly the

result of using excavating equipment to dig trenches, communications trenches, and tank and artillery emplacements, the mechanization of other types of work, the employment of explosives, and the extensive use of prefabricated components and assemblies in protective fieldworks.

However, in the opinion of foreign military experts, neither the time needed for engineer preparation of defensive positions nor the protective features of fortifications can be considered adequate. For this reason, many armies are working to produce new engineer equipment, to improve the protective features of defensive works, and to find ways to reduce the time needed for setting them up.

The lateral and in-depth dispersal of battle formations increases the importance of obstacles. The large-scale use of tanks, infantry combat vehicles, and armored personnel carriers by the attacking enemy have made it necessary for the defender to make extensive use primarily of antitank obstacles.

Before the engagement begins, engineer obstacles are set up in front of the FEBA, in the gaps between strongpoints, and on the defending force's flanks. Then obstacles are set up in depth. The greatest density of antitank obstacles here is set up on probable enemy axes of advance.

Minefields are laid beforehand in the depth of the defense on the most important lines of probable tank approach. During defensive engagements, mine obstacles are laid primarily by mobile obstacle detachments and other engineer subunits. Moreover, it is thought to be necessary to train personnel from subunits of other combat arms in minelaying, as well as personnel from engineer subunits.

As the experience of local wars reveals, helicopters are used more and more to move up to the minefield lines in order to lay mines more quickly. What is more, foreign armies have equipment for remote minelaying.

Demolition work as well as minelaying is extremely important in defense. Thus, it is considered necessary to demolish road sections, defiles, bridges, road junctions, hydroelectric works, railroad stations, and airfields in the defensive zones of US Army divisions during engagements.

The American military plans to use napalm (incendiary) mines against attacking infantry. In recent years, training has been intensified in the use of nuclear landmines as obstacles, which, on exploding, as well as destroying personnel by means of the shock wave, thermal radiation, and penetrating radiation, create deep craters, and contaminate the ground.

An important mission in engineer preparation of the ground is preparation of maneuver routes, which contributes to increased maneuverability in defensive actions, since development of road and rail networks has

made it possible to move reserves up quickly to the required axes. As a rule, existing roads are used in preparing maneuver routes. However, they do not always lie on the required axes. Moreover, many sections of road may be destroyed by the attacking enemy. In transitions to the defense, therefore, it becomes necessary to construct supplementary lateral and frontal lines of communication. Engineer road construction and combat engineer subunits outfitted with road-building and other equipment are employed for this purpose.

When the enemy employs NBC weapons, problems of troop water supply become vitally important, since a real threat exists that open water sources will be contaminated. The water supply points best protected against contamination are those supplied by underground water extracted through boreholes with special pumps. Therefore, at present all armies devote a great deal of attention to reconnoitering for and obtaining water with the equipment of engineer subunits.

Various camouflaging techniques are used in an effort to stabilize the defense. Their basic aim is to conceal the defense's actual configuration and intentions from enemy ground and air observation. Camouflaging measures must be varied and convincing to achieve the necessary effect. Inventiveness is required if they are to be used successfully.

During a defensive engagement, the commander must direct the engineer support's main efforts toward effective employment of engineer obstacles against attacking enemy tanks, infantry combat vehicles, and armored personnel carriers; carrying out engineer operations for NBC damage control, primarily by repairing roads and bridges and constructing new cross-country routes that will enable troops to move away from fires caused by nuclear and various other incendiary weapons; and consolidating the lines taken in successful counterattacks.

5. The Fire Plan

The fire plan comprises the skillful deployment and use of fire resources in accordance with the concept of a defensive engagement in order to strike the enemy on the approaches to the defense, in front of the forward edge, on the flanks, and when he penetrates the defenses.

During the Great Patriotic War, the organization of a fire plan consisted in preparing for fire strikes on the approaches to the defense, creating zones of massed fire from all weapons in front of the forward edge and positions in the depth of the defense, and preparing to maneuver fire so as to concentrate it quickly on any threatened axis or sector. The fire plan was built around cooperation of artillery, mortars, antitank and small-arms fire in combination with obstacles. It was based on artillery, mortar, tank, self-propelled gun, and machine gun fire.

Antitank defense systems were devised in an effort to employ, in an organized manner, all the fire resources of the subunits, units, and formations capable of countering tanks. Antitank defense constituted the basis of the defense and was organized throughout the tactical depth of the defense. By the end of the Great Patriotic War, the following elements of an antitank defense system had been established: company antitank strongpoints, combined into battalion antitank strongpoints; tank-killing areas; artillery, tanks and self-propelled guns, deployed on likely axes of tank approach, artillery and antitank reserves; and antitank obstacles.

When nuclear weapons appeared and armored vehicles underwent further development, in addition to such missions as striking the enemy on the approaches to the defenses, in front of the forward edge, and when he had penetrated the defenses, conducting counterbattery fire and so on, new missions arose: countering an attacking enemy's nuclear weapons and providing fire to cover breaches created in battle formations as the result of enemy employment of nuclear weapons. All this has made organizing a fire plan and the methods for performing fire missions more complex. It also demands integrated employment of various fire resources for carrying out fire strikes.

Countering the attacking enemy's nuclear weapons is considered the chief mission of **artillery fire** in defense. This must be done continuously. Certain distinctive features have now emerged in the organization of artillery and mortar strikes against enemy forces when they are on distant approaches to the defenses, advancing, and deploying for the attack. Troops are moved up from the depth in tanks, infantry combat vehicles (armored personnel carriers), and trucks to attack from the line of march. As a result, the time available for the defending force to carry out strikes against the enemy as he advances to the FEBA has been drastically reduced.

The defending force tries to hit the enemy with artillery and mortar strikes at maximum range in order to ensure the greatest possible fire effect. Particular consideration is given here to hitting the enemy at choke points, i.e., in defiles and at crossings, where an advantage can be obtained by holding up the enemy in order to carry out nuclear strikes against him.

Artillery fire on the approaches to the defense and in front of the forward edge is concentrated on axes of probable attack by the enemy's main force, so as to hit him with decisive combined artillery and nuclear strikes.

Gaps between subunits and flanks are covered primarily by organizing enfilade and cross antitank and small-arms fire in combination with obsta-

cles. Moreover, this mission is performed, especially on the main axes, by artillery and mortars, and target areas for concentrated fire and defensive fire lines are set up, particularly in front of gaps and in the gaps themselves.

Wide fire maneuver by artillery firepower and artillery subunits, performing fire missions both in front of the forces they support and in front of adjacent forces, is organized to provide fire cover in breaches created in the battle formation after enemy nuclear strikes and to restore disrupted fire plans. Artillery fire is supplemented by flanking and cross-antitank fire organized by adjacent subunits situated in a single position, as well as by the maneuver of antitank resources laterally and from the depth.

Fire effect on an enemy force that has gone over to the attack is achieved by massed and concentrated fire on the main axes, as well as defensive fire directly in front of the forward edge.

Artillery and mortars employ mainly defensive and concentrated fire to eliminate enemy forces that have penetrated the defenses and to support counterattacks. The greatest concentration of fire is planned for axes of probable enemy penetration of the defenses. Artillery and mortar fire are carefully coordinated with the actions of counterattacking subunits.

Artillery fire is coordinated with fighter-bomber strikes in order to increase its destructive effect on the enemy. Because of its great radius of action, aviation is assigned primarily to targets located beyond the maximum artillery range, such as large concentrations of troops and combat equipment, forces on the move, artillery, and control posts. Aviation is also employed to destroy nuclear weapons, to strike small mobile targets in the artillery fire zone, and to engage advancing enemy tanks.

Besides searching for new methods of hitting the enemy with decisive strikes while he is advancing and deploying, much attention is given in all modern armies to improving available fire resources and designing new ones to destroy tanks and other armored targets, as well as personnel, in close combat. Here, particular importance is attached to improving the accuracy, range, and effectiveness of fire of antitank weapons. Foreign military experts consider it impossible to engage modern armored targets effectively in close combat using a single standardized weapon. It is essential to have antitank weaponry, including antitank tube artillery, that is varied in its combat characteristics. Rocket launchers can also be used to destroy attacking armored vehicles at close quarters.

In recent years, combat helicopters armed with ATGMs and other fire resources have been used more and more extensively to engage tanks and

other armored targets. Combat helicopters with ATGMs achieve great effectiveness in actions by being able to appear suddenly and remain only briefly over the battlefield.

Tanks still constitute an effective antitank resource in the fire plan. This is because of their great fighting efficiency, which enables them not only to destroy attacking enemy tanks by fire, but also to maneuver quickly to cover breaches created in the battle formations by nuclear strikes, to replace subunits that have lost their fighting efficiency, and to counterattack. Tanks are also an effective means of eliminating enemy airborne assault forces that have landed in the depth of the defense.

Antitank fire plays a decisive role in the fire plan. When antitank fire is organized in company and platoon strongpoints and battalion defense areas, tanks, ATGMs, guns, and other fire resources are concealed and concentrated so that they will be able to fire at maximum range, to hit the enemy with very dense enfilade fire, crossfire, and surprise short-range concentrated fire, to fire in coordination, and to create pockets of fire. Linear disposition of fire resources in strongpoints is unacceptable.

Platoons are assigned supplementary arcs of fire to provide all-round defense for company strongpoints, and reserve fire positions are prepared for fire resources to be used on the flanks and rear. Some of the fire resources are positioned in the depth of the strongpoint.

The experience of the last war testifies to the great effectiveness of fire pockets set up in the defenses for use in countering large tank groupings.

In 1943, in the area held by the 307th Rifle Division in the vicinity of Ponyri, on the Kursk salient, the forces of the 3rd Tank Destroyer Brigade, three tank destroyer regiments of the 13th Tank Destroyer Brigade, and three light artillery regiments set up a fire pocket. Between 6 and 10 July, 82 tanks, including 25 Tigers, were destroyed by the 3rd Tank Destroyer Brigade alone.

Today, because of the increased ranges of antitank weapons and tanks, fire pockets may also be set up in battalion defense areas.

Ambushes by tanks, ATGM subunits, and other antitank resources have come to play an increasingly important role in fire plans. Subunits that are small in terms of establishment can, when allocated to an ambush, change location quickly and, firing by surprise, in a short time inflict considerable losses on attacking enemy tanks that have broken through into the depth of the defense.

Roving batteries, tanks, guns, and infantry combat vehicles play an important role in misleading the enemy with respect to the dispositions of

fire resources and in achieving surprise when opening fire on tanks. Their fire is coordinated with the maneuver of antitank reserves on the deployment line and strikes by combat helicopters.

Small-arms fire aimed at destroying enemy personnel in close combat is organized according to principles similar to those used in organizing antitank fire. The enemy is destroyed most effectively by crossfire and enfilade fire, which are the most lethal and have a strong effect on enemy morale. Machine guns mounted on armored personnel carriers are used to reinforce small-arms fire. The armored personnel carriers are situated in emplacements in the depth of platoon and company strongpoints and on the flanks to cover gaps and provide all-round defense.

Artillery, antitank, and small-arms fire in front of the forward edge is planned in such a way that even when strongpoints are dispersed laterally, mutual fire support between them will be guaranteed and a zone of concentrated fire of all types will be created. Here, fire must be made as intense and concentrated as possible on axes of probable enemy attack.

The fire plan in modern defense incorporates organized artillery and mortar fire from indirect fire positions, antitank fire zones, and zones of concentrated overlapping fire by all weapons. Preparations are also made for fire maneuver in order to quickly concentrate on any threatened axis (sector). The fire plan must be coordinated with planned nuclear strikes and combined with the use of engineer obstacles.

6. Hitting the Enemy on the Approaches to the Defense

The aim of the defense is to break up enemy offensives in the most effective way possible before he goes over to the attack. For this reason, the defender always endeavors to employ weaponry and methods of action that enable him to inflict the maximum destruction on the main enemy grouping on the approaches to the defense, thereby reducing the force of his initial strike and breaking up his attack when he approaches the forward edge.

Before nuclear weapons appeared, artillery and aviation were the primary means of achieving this aim. During World War I, attempts were made to use chemical weapons to break up enemy offensives. Preplanned brief, but powerful surprise strikes were made beforehand against the main enemy grouping poised for the offensive and against its main fire resources. Fire strikes of this sort were called counterpreparation fire.

In World War I, the defender was unable to completely break up enemy offensives with artillery counterpreparation fire because of the lim-

ited capabilities of artillery. At Ypres, in the early hours of 13 July 1917, it was only by making surprise use of a new weapon (50,000 chemical shells) that the Germans were able to inflict heavy losses on the Anglo-French forces with counterpreparation fire and to break up their offensive.

During World War II, counterpreparation fire was extensively employed, particularly in Soviet Army defensive actions. Soviet forces employed it in the defensive engagements on the Moscow axis in September 1941 (the 16th, 19th and 20th Armies of the Western Front), at Stalingrad in September–October 1942 (the 62nd and 64th Armies), and at Kursk in July 1943 (the forces of the Central and Voronezh Fronts).

Aviation as well as artillery took part in counterpreparation. The principal targets of attack were enemy infantry, tanks, and artillery. Constant increases were observed in the scope of counterpreparation fire and the numbers of forces involved in conducting it.

An average density of 30 guns and mortars per kilometer of front, and of about 60–80 guns and mortars on the main axes, was used in counterpreparation fire in the defensive battle at Kursk by the 13th Army of the Central Front and the 6th Guards Army of the Voronezh Front. On the other hand, approximately 100 guns and mortars per kilometer were used in counterpreparation fire in the defense conducted by forces of the 69th Army on the Pulawy beachhead on the Vistula in September 1944.

As a result of counterpreparation fire, enemy forces concentrated for an offensive sustained considerable losses in men and combat equipment, which led to delays in starting the offensive and reduced the force of the initial strike. In a number of cases, successful counterpreparation fire prevented the enemy from carrying out an offensive in a given area. That is how an enemy offensive against the 34th Rifle Corps of the 46th Army of the 3rd Ukrainian Front, holding a beachhead on the west bank of the Dnestr, was broken up on 1 June 1944.

Sometimes, following counterpreparation fire, the defending forces made limited-objective counterstrikes with a portion of their forces.

At Stalingrad on 27 September 1942, the 62nd Army carried out 15 minutes of counterpreparation fire against enemy forces that had deployed on a start line to attack in the area of hill 102.0. Exploiting the results of the counterpreparation fire, the 95th Rifle Division went over to the counterattack and took the southwestern slopes of hill 102.0, thereby considerably improving their position. As a result of the counterpreparation fire and counterattack, the enemy was obliged to refrain from attacking on this axis for several days.

However, it was rare for the defending force to make limited-objective counterattacks against the enemy after counterpreparation fire. Usually the defender did not have sufficient forces for such a strike.

Nuclear weapons have brought about a dramatic improvement in the defending force's capability to break up enemy offensives. **Counter-**

preparation fire and counterstrikes (counterattacks) against enemy groupings prepared for an offensive continue to be the principal methods used to break up enemy offensives or weaken enemy strikes. But, while preparations for an offensive used to be complete when the troops occupied a departure area in direct proximity to the defending force's forward edge, today the main enemy grouping is situated in the depth, and offensives may be undertaken from the line of march, with an advance from concentration areas or from the line of march. As a result, the planning and conduct of counterpreparation fire have become much more complex.

Establishing the level of enemy readiness for an offensive and the probable axes of enemy attacks has now become more difficult. The employment of nuclear weapons permits the enemy to avoid having to create large artillery groupings on the main axis of advance, which once took several days. Moreover, with nuclear strikes, the enemy can create conditions that will enable him to advance on any axis that will permit the use of tanks and other armored vehicles.

The defending force will not always have the resources to carry out short-duration large-scale nuclear strikes and counterpreparation fire against the main enemy grouping by means of powerful fire strikes with conventional weapons. When going over to the defense during an enemy offensive or as a result of an unsuccessful meeting engagement, a defender may have expended his nuclear and conventional warheads in preceding combat actions and then, most likely, will make individual strikes in an effort to weaken the enemy grouping and break up its attack on individual axes. In this case, the enemy's most important targets, particularly his nuclear weapons, must be struck as soon as they are discovered.

In addition to taking measures to break up the enemy's offensive, the defending forces also use other means to weaken his initial strike. In past wars, the configuration of the forward edge was often concealed by making skillful use of the masking features of the terrain and employing various methods of camouflage. Forward positions or combat security outposts were set up in order to deceive the enemy with respect to the outline of the forward edge and reduce the effectiveness of strikes on the defending force. Often minimal resources were left in the zones liable to be attacked most heavily, and the defending force's grouping and the locations of control posts were changed periodically in order to reduce losses from artillery fire and air strikes. In some operations, troops were withdrawn from the FEBA to the depth on certain axes before enemy artillery preparation. What is more, even before World War II some armies set up forward defense area security zones (forward defense areas) in front of the main defensive zones.

During the Great Patriotic War, forward defense area security zones were in many cases set up when our troops went over to the defense while out of contact with the enemy. The forward detachments operating in such zones held up the enemy's advance, inflicted losses on him, and forced him to deploy his main body prematurely, thereby gaining time for friendly forces to reinforce the defenses and revealing the enemy's grouping and intentions.

At Stalingrad in July 1942, forward detachments, each consisting of a reinforced rifle regiment, were moved up from three divisions of the 62nd Army to a distance of 40-60 kilometers from the FEBA. Conducting combat actions on several lines in succession, the forward detachments delayed the enemy's approach by five or six days. This enabled the defending force to reinforce its positions and determine the enemy's grouping and the axis of his main attack in more detail.³

When nuclear weapons are employed, measures to weaken the enemy's strike and wear him out on the approaches to the defense become even more important. Where there is a forward defense area security zone, the subunits defending it can, by using fire from all types of weapons, supporting artillery, and air strikes, repel the enemy's leading subunits, inflict significant losses on them, and force the enemy to deploy his main body prematurely as it moves up to the FEBA.

Skillfully maneuvering fire and resources, withdrawing from one position to another, and employing obstacles and demolition, the subunits in the forward defense area security zone hold up the enemy in areas designated for inflicting nuclear strikes on him in order to weaken his main grouping and gain the time necessary for the defense's main body to occupy an advantageous line.

If a forward position is set up, the fight to hold it will be conducted with great stubbornness. The subunits allocated to defend the forward position open fire on the approaching enemy at maximum range. Their actions are supported by artillery fire from the depth and by air strikes. It is important here that the nature of the enemy's actions be judged correctly so that enemy reconnaissance or attacks by limited forces will not be mistaken for an offensive by the main body.

The time for subunits to withdraw from the forward position is determined by the situation. If the enemy makes nuclear strikes against the forward position, it may be assumed that he has mistaken it for the FEBA. Support for the withdrawal of subunits from the forward position is provided by artillery and mortar fire and tank fire from ambush. Gaps, covered by fire from the depth, are left in obstacles so that the subunits can pass through the FEBA.

The Great Patriotic War provides many examples of aggressively conducted combat actions to hold the forward position, as a result of which the enemy committed large forces prematurely, sustained great losses, and was held up for a considerable time in his advance to the main defensive zone.

On 4 July 1943 at Kursk, the enemy, after mistaking the reinforced combat security outposts of a rifle battalion of the 52nd Guards Rifle Division of the 6th Guards Army for the main body, committed about a regiment of infantry and 50 tanks, supported by artillery and 100 aircraft. The Nazi troops fought for 17 hours to take the forward position. In that time, the division's main body was able to reinforce its defenses and determine the enemy's grouping and intentions in more detail.⁴

Actions by subunits in combat security outposts are based on the same principles as those on which the actions of subunits defending the forward position are based. However, it must be noted that the former are weaker in terms of combat capabilities, and it may therefore prove necessary to withdraw them from their positions after they have performed their mission of preventing a surprise enemy attack on the FEBA.

When the enemy employs nuclear weapons, the main aim is to preserve the maximum resources in the defending force. Resources situated in the depth of the defense may be moved to reserve areas or positions, as was the practice also in the last war, in order to reduce the effects of enemy nuclear strikes. Subunits can also be removed from areas threatened by nuclear strikes by withdrawing them from the FEBA. In an effort to deceive the enemy, combat security outposts with the necessary numbers of tanks and antitank weapons may be left to maintain the previous level of fire at the FEBA.

The objective of maneuvering to reserve areas and positions can be achieved only if the maneuver is kept concealed from enemy reconnaissance. For this reason, the maneuver must be carried out under the strictest camouflage discipline. It should be timed to coincide as nearly as possible with the beginning of the enemy's advance, so that he will have less time to discover the true dispositions of the defender's resources. In order to conceal the maneuver, it is advisable to move subunits to new areas at night or under other conditions of limited visibility.

In taking measures to break up the enemy offensive or weaken his strike and to wear him out on the approaches to the defenses, the defending forces take actions to reinforce the defenses on identified axes of enemy advance. To this end, the missions of subunits may be updated, the density of fire and obstacles increased, resources maneuvered, and additional engineer preparation of positions carried out.

However, a commander must bear in mind that, regardless of the increased firepower of defending units and subunits, their capabilities for striking enemy fire resources, particularly

nuclear weapons, will often be greatly limited as a result of losses sustained. On his part, the enemy will take every possible measure to prepare his offensive covertly and initiate it by surprise. For this reason, the defending force must be in a state of constant readiness to repel strikes by an attacking enemy.

7. Repelling Enemy Attacks

At the present time, enemy attacks are preceded, as a rule, by preparatory fire using nuclear and conventional warheads. A defending force's most important mission, on which success in the defensive engagement depends entirely, is to withstand powerful nuclear and fire strikes and maintain a high degree of fighting efficiency.

While under preparatory fire preceding an enemy attack, the defending force attempts to get personnel under cover in good time in dugouts, trenches, and other cover and takes measures to protect weapons and equipment against, or diminish the extent of their damage by, enemy nuclear and fire strikes. In order to enable subunits to assume their positions quickly to repel an enemy attack, commanders and observers remain in their positions and continue to observe the enemy. When the enemy goes over to the attack, subunit commanders signal personnel to take up their positions.

Measures to minimize the effects of the enemy's nuclear and fire strikes and interfere with his attack preparations are extremely important to the defending forces for reducing losses. Therefore, when the enemy starts preparatory fire for an attack, defending units and subunits make fire strikes against known enemy nuclear weapons, on his artillery, antiaircraft, and electronic resources, as well as on tanks, combat vehicles, armored personnel carriers, and infantry that are advancing or preparing to attack. Commanders of subunits, particularly those defending the forward edge, maintain continuous observation of enemy actions in an attempt to detect targets in time to hit them with all weapons.

Maintaining the fighting efficiency of defending subunits depends more than ever on successfully countering enemy aviation. For this reason, all antiaircraft assets will be used to hit enemy aircraft and helicopters within firing range.

While the enemy is conducting preparatory fire for an attack, it is important to maintain high morale in personnel so that they will not become confused or panic as a result of enemy NBC strikes. Commanders and political workers must, by personal example, sustain the coolness, courage, and self-control of personnel.

As a result of enemy nuclear strikes, some of the defending subunits' personnel and fire resources will be destroyed, the fire plan and troop control system will be disrupted, and fieldworks will be demolished. Therefore, at the same time that the enemy is being struck in front of the forward edge with all resources, measures are taken to clarify the situation in areas subjected to nuclear strikes, to quickly close breaches created in the battle formations of first-echelon subunits, to restore troop control and the fire plan, and to carry out NBC damage control.

Breaches can be closed by concentrating artillery and mortar fire on areas that have been subjected to enemy nuclear strikes and by maneuvering reserves, particularly antitank reserves, and mobile obstacle detachments. If necessary, second-echelon subunits (combined arms reserves), which consist for the most part of tanks, are maneuvered (figure 11).

The methods of action used by subunits being moved to cover breaches depend on the distance from the enemy, availability of time, radiation conditions and the nature of the terrain. If the advancing subunits forestall the enemy in advancing to the nuclear blast area and terrain and defensive works are not significantly contaminated, they may hold a defensive line in front of or in the blast area, using intact defensive works. If the enemy cannot be forestalled, the subunits allocated to cover the breaches will occupy lines behind or on the flanks of the area subjected to the nuclear strike. If subunits in the nuclear blast area lose their fighting efficiency, the commanders of the arriving subunits will assume command and proceed to carry out nuclear damage control.

Detachments made up of motorized rifle subunits reinforced with combat engineers, chemical warfare troops, and evacuation, repair, and medical subunits are employed for nuclear damage control. Their mission is to search for casualties, to remove them from combat vehicles, defensive works, and shelters, and to recover weapons and combat equipment, to clear barriers, and to extinguish fires.

Subunits that have been subjected to nuclear strikes, but have not lost their fighting efficiency, use their resources for NBC damage control by providing first aid to the wounded, removing them from the attack area and evacuating them to medical aid posts; decontaminating personnel, weapons, combat equipment, and occupiable fieldworks; clearing barriers that hinder the movement of personnel and the recovery of equipment from damaged shelters; and extinguishing fires.

The complexity of these measures results from the extremely limited time available and the effect of enemy fire. Enemy tanks and motorized infantry may undertake attacks against the FEBA 20-30 minutes after the nuclear strikes. For this reason, it becomes most important to gain time to

maneuver resources to restore the defenses and to take nuclear damage control measures. This is done by using massed artillery and mortar fire, by making strikes with aviation and combat helicopters against advancing and deploying enemy forces and by making use of various obstacles. Particular attention is given to hitting the enemy as he approaches and negotiates the obstacles in front of the FEBA. It may be possible to gain time to close breaches and carry out nuclear damage control, primarily in the battle formations of the subunits defending the forward edge, by fighting determinedly to hold the forward position.

When the preparatory fire ceases and the enemy goes over to the attack, the subunits, at their commanders' signal, quickly leave cover, assume their positions, and open fire.

The switching of artillery and mortar fire to the depth usually signals the beginning of an attack. However, the enemy may use feinting actions (a feint switch of fire) in an attempt to force the defending subunits to leave cover to repel an attack. If the enemy succeeds in doing so, he may make repeated artillery and aviation strikes to inflict additional losses on the defenders.

Preservation of a subunit's fighting efficiency depends largely on the commander's ability to correctly determine the moment at which the subunits can leave cover. At the same time, a subunit's readiness to repel enemy attacks depends largely on whether the command to assume positions has been given in time. A commander must have a good knowledge of enemy tactics and an ability to foresee the course of events in order to correctly determine the moment at which to bring the troops out of cover. He may be aided by a well-organized observation and reconnaissance system, reliable communications, and continuous information on enemy actions. Prior training of subunit personnel in leaving cover is also very important.

During the Great Patriotic War, defending forces always tried to repel enemy attacks before they reached the FEBA, since holding up the enemy, particularly when the defenses were not configured in depth, meant the breakup of the enemy offensive. Having expended a considerable portion of its ammunition and sustained great losses, the attacking force would no longer be able to bring high densities of fire and personnel to bear for repeated attacks. In this case, it was always taken into consideration that the morale of the attacking force would fall after their attack was repelled, while the defenders' morale would improve.

Battles for the FEBA were stubborn and fierce. During such actions, repeated enemy attacks were repelled, and the enemy suffered losses in personnel, tanks, and other combat equipment, forcing the attacking forces to refrain from subsequent attacks on some axes. If the enemy was able to overcome the FEBA anyway, the time gained enabled the defenders to determine his concept of action and grouping with greater accuracy and

to take measures to reinforce threatened axes by maneuvering fire and resources from the depth positions and from axes that had not been attacked.

In the Balaton Defensive Operation, at 0600 on 6 March 1945, the enemy attacked units of the 233rd and 74th Rifle Divisions of the 135th Rifle Corps with two motorized regiments and one cavalry regiment, supported by 60-65 tanks. The density of artillery, mortar, antitank, and small-arms fire increased as the enemy approached the FEBA, the attack was repelled, and the enemy, suffering great losses, was forced to withdraw to his departure areas. Nazi forces were able to penetrate the FEBA only after 15 hours of repeated attacks. In all, the enemy spent about 9 hours overcoming the FEBA.

Fighting to hold strongpoints on the FEBA is no less important today. However, holding them for long periods of time has become considerably more difficult. After the enemy has carried out nuclear strikes against the FEBA, breaches are created in the battle formations of the subunits defending it. On some axes, the breaches will be covered by resources moved up from the depth by the time the attacking enemy tanks, infantry combat vehicles, and armored personnel carriers approach, while on other axes, because of the great losses sustained, the breaches will be covered only by artillery and mortar fire and obstacles.

Under these circumstances, the missions of subunits that have retained their fighting efficiency or moved up from the depth will consist in inflicting losses on the attacking enemy with available fire resources, preventing him from penetrating to the depth of the defense, breaking up his battle formation in order to gain time for nuclear damage control in the depth of the defense, maneuvering resources, and preparing and carrying out nuclear and fire strikes against the enemy. Successful performance of these missions is ensured by organized fire from all weapons and by the firmness and determination of the subunits defending strongpoints in the forward edge and moving up to the areas subjected to enemy nuclear strikes.

As the attacking forces approach the FEBA, artillery, mortar, tank, antitank, and small-arms fire achieves maximum intensity. The artillery and mortars conducting concentrated defensive fire on tanks and other armored targets create conditions under which they can be destroyed by antitank fire. Simultaneously, newly discovered enemy nuclear weapons and other important targets are destroyed. Antitank weapons and tanks open fire on the attacking tanks, infantry combat vehicles, and armored targets at maximum range.

As the enemy approaches the FEBA, the defending subunits separate the attacking infantry from the tanks and eliminate it with fire from all weapons. Tanks and other armored targets that break through the FEBA are destroyed by fire from antitank weapons positioned in the depth.

Commanders of first-echelon battalions move up their reserves or some of the subunits and fire resources from unattacked sectors to threatened axes, seeking to inflict the maximum losses in personnel, tanks, and infantry combat vehicles on the enemy. If the situation permits, they use available forces to carry out counterattacks against the flanks of enemy forces that have broken through the FEBA.

While the enemy attack is being repelled on the ground, aviation and antiaircraft weapons aggressively combat enemy aircraft. Defending subunits destroy low-flying enemy aircraft and helicopters and enemy airborne assault and airmobile groups in flight, using antiaircraft and small-arms fire.

The antiairborne reserve, second-echelon subunits, and other special subunits, near to whose dispositions the enemy has landed, move up to the landing areas of airborne assault or airmobile groups. Artillery and mortar fire is concentrated on the landing areas in an effort to inflict casualties on the enemy and support the subunits involved in eliminating the enemy.

If the enemy lands in several areas simultaneously, measures are taken to prevent him from consolidating his efforts and to defeat the airborne assault or airmobile groups in detail. If sufficient forces are not available to eliminate the enemy groups landed, the landing areas must be sealed off, and the airborne assault or airmobile groups can be eliminated once the reserves arrive.

In sectors where the enemy attack has been repelled, measures are taken to quickly restore the fire plan, particularly the antitank fire plan, obstacles, and demolished defensive works, to evacuate the wounded, and to replenish stores. The subunits that have stopped the enemy prepare to repel repeated attacks.

8. Counterattacking

The advancing forces, having seized the initiative and established considerable superiority in resources on a selected axis, may in some cases penetrate the defenses. Under these circumstances, the defending force may alter a situation that is developing to its disadvantage by counterattacking and may often even succeed in defeating the enemy force that has broken through to the depth of the defense.

Counterattacks were carried out extensively in defensive engagements during the Great Patriotic War. When they were conducted in combination with stubborn holding of defensive lines, they wore down the attacking

enemy, inflicted great losses on him in men and fighting equipment, delayed further development of the offensive, and helped friendly forces gain time to maneuver resources.

In defensive engagements conducted on the Kursk salient in the summer of 1943, a powerful grouping of Nazi forces attacking in the region of the Voronezh Front was able to advance only 35 kilometers in 10 days because of the stubborn and aggressive defense and counterattacks carried out by our forces. During this time, the Soviet command was able to transfer seven tank and mechanized corps and great numbers of artillery to the axis of the enemy's main attack, which radically altered the correlation of forces and in the final analysis led to the enemy's defeat.

In the last war, counterattacks were conducted, as a rule, on division and corps scale. In a division, a second-echelon rifle regiment and some of the troops of the first-echelon regiments were employed for this purpose, while in a rifle corps, a second-echelon division, and some of the troops of the first-echelon divisions were used.

Today, the defending force's employment of nuclear weapons to defeat enemy forces that have penetrated the defenses and also to defeat his approaching reserves makes it possible to alter the correlation of forces in one's favor far more quickly, and thereby increase the effectiveness of counterattacks. As a result, the aim of counterattacks may not be limited to regaining lost positions, as was the case in the past, but may also include defeating enemy forces that have penetrated and seizing lines that will be advantageous for subsequent aggressive actions.

One condition for a successful counterattack is the firm holding of lines and areas in front of which the attacking enemy will be halted and forced to move up additional resources to develop the offensive. The resulting compaction of the battle formations of the penetrating groupings and advancing reserves creates conditions favorable for making nuclear strikes against the enemy, while stabilizing the line of contact for a time enables defending forces to move up, deploy, and go over to the counter-attack.

If the enemy is not stopped, then the counterattacking subunits will be forced into a meeting engagement with an enemy grouping that is superior in resources, deployed in battle formation, and advancing into the depth of the defense.

A situation may even develop where, using large-scale nuclear and fire strikes, the attacking enemy succeeds in disrupting the stability of the defense and establishing overwhelming superiority in resources or where the second echelon (reserve) of the defending force sustains considerable losses or is employed to perform other missions. Then the defending subunits must take every possible action to hold the positions they have retained, prevent the enemy from developing his offensive toward the

depth and flanks, and create conditions in which a counterattack can be made with resources under the control of the senior commander (chief).

However complex the situation, the defending forces exert the maximum effort and show determination, firmness, and good organization in order to halt the enemy advance and prevent their own battle formation from being broken up. Particular attention is given here to holding lines on the flanks of a breach so that the enemy grouping that has broken through will be boxed in and the defending subunits will be occupying close envelopment positions in relation to this grouping.

The experience of the Great Patriotic War revealed that usually counterattacks will not succeed against an enemy who has not been neutralized by fire and who has retained superiority in resources. For this reason, if a counterattack is to succeed, it is important for the enemy grouping that has penetrated to be hit with nuclear, fire, aviation, and combat helicopter strikes in an effort to weaken this grouping, break up its battle formation, and thereby make it easier to destroy it with a counterattack.

For a counterattack to succeed, in addition to hitting the enemy with nuclear and fire strikes, it is essential to cut off his approaching reserves.

Enemy reserves may be cut off by nuclear strikes, concentrated and massed artillery fire, air strikes, and minefields and other obstacles. This will result in fragmentation of the efforts of the reserves and the penetrating grouping, make it more difficult for the attacking forces to intensify their strike, and create conditions for defeating in detail the enemy that has penetrated. Thus, the moment when the enemy troops that have penetrated have been stopped as a result of losses and the reserves approaching from the depth have been held up or have sustained considerable losses is viewed as advantageous for a counterattack.

As the experience of the last war confirms, it is essential to gain superiority in resources on the axis selected for a counterattack in order for it to succeed. This can be attained primarily by nuclear, artillery, and air strikes against the enemy that has penetrated. Nuclear strikes against the penetrating enemy are carried out so as not to hit the defending subunits or restrict their maneuver.

As formerly, it is considered most advisable to make counterattacks against the flank and rear of the enemy that has penetrated. The flanks are still the most vulnerable spots in the attacking force's battle formation. If the enemy sustains great losses or it is impossible to move second-echelon subunits to his flank because of terrain features, a counterattack may also be carried out from the front.

It is also important to achieve surprise in order for a counterattack to succeed. As the experience of the Great Patriotic War reveals, surprise counterattacks stun the enemy. Today, however, the great effectiveness of enemy reconnaissance equipment makes it far more difficult to achieve surprise in actions. It has now become especially important to achieve speed in actions, i.e., counterattacking from the line of march without halting on a deployment line. This is made possible because counterattacking subunits have tanks and infantry combat vehicles (armored personnel carriers) that increase their mobility and striking power.

Counterattacks are usually organized while the defenses are being prepared. When the decision to counterattack is made during an engagement, aspects of organization are updated with reference to the specific situation that has developed. The commander of a second-echelon battalion must always be aware of the situation on the forward edge. On receiving the order to counterattack, he dispatches his reconnaissance, assigns (updates) combat missions for the subunits and fire resources, and gives the signal to move up to the deployment line.

The second-echelon subunits are moved up to the deployment line as rapidly as possible in small columns, along previously designated routes, and they are covered by artillery fire and fire from all the weapons of the first-echelon subunits operating on the counterattack axis, as well as by minefields laid on the flanks of the advancing subunits. Preparatory fire is usually employed so as to enable the counterattacking subunits to deploy and defeat the enemy force that has penetrated.

Tanks usually comprise the principal element of a counterattack grouping. Motorized rifle subunits attack in infantry combat vehicles (armored personnel carriers) or dismounted behind the tanks.

The counterattack proceeds rapidly until the enemy force that has penetrated the defenses is completely eliminated or until a designated line is reached (figure 12). The first-echelon subunits support the second echelon's counterattack with fire or, on the orders of the senior commander (chief), counterattack with it and eliminate the enemy force that has penetrated the defenses.

While moving up to the deployment line and during the counterattack, the counterattacking subunits are protected from enemy air strikes by anti-aircraft fire.

After successfully counterattacking and defeating the enemy force that has penetrated, the defending subunits take measures for restoration of disrupted defenses and for nuclear damage control as quickly as possible and prepare to repel repeated attacks.

9. Night Defense

The defense must withstand enemy strikes both day and night. Night defensive actions may be continuations of engagements begun in daytime or may arise from the need to repel enemy night offensives. In addition, subunits may be forced to go over to the defense at night.

The principles of conducting night defensive engagements are basically the same as those of defense in daytime. At the same time, night has a certain effect on the methods used to conduct defensive engagements. Night gives the defenders advantages that, if skillfully exploited, can enable them to perform defensive missions more effectively.

Night helps the defending force to achieve greater surprise in its actions and to conceal the configuration of its battle formation and fire plan. As a result, it may be possible to stun the enemy while repelling an attack by opening up on him with sudden concentrated fire and by making unanticipated counterattacks. By deceiving the enemy, one may hold up his advance with a small force and thereby gain time to prepare the main body for daytime combat actions or for maneuvering to more important axes.

Under cover of darkness, one may withdraw subunits from threatened areas before the enemy begins preparatory fire and thereby not only conserve resources, but also force the enemy to make nuclear and fire strikes on lightly held or unmanned positions. Moreover, engineer work is carried out, obstacles are set up, stores are replenished, the wounded are evacuated, and restoration work is carried out covertly at night.

The main factors that make planning and conducting night defense more complicated are the limited visibility, the difficulty of orienting on and maintaining assigned axes when maneuvering and counterattacking, and the vagueness of the situation on the battlefield.

Today the difficulties created by darkness have been reduced somewhat by means of various illumination and night vision devices. However, limited visibility makes it easier for the attacking enemy to approach the defenses covertly and to mount surprise attacks.

Night makes it difficult for the defending force to select targets against which to carry out nuclear strikes and air actions, and to conduct aimed artillery, antitank, and small-arms fire. Troop control, maintenance of communications, and nuclear damage control are made more complicated by poor visibility on the battlefield.

At night, personnel fatigue increases and people are more susceptible to fear and panic.

Thus, it is essential to train subunits for night actions beforehand, and commanders at all levels must maintain great troop stability in night engagements and demonstrate self-control, coolness, and firmness in troop control. The commander's personal example plays a great role in repelling enemy attacks.

In organization of defense at night, provision is made for measures to reduce the effect on the defenders' actions of negative factors caused by nighttime conditions. Subunit commanders strive during the day to organize defenses to repel enemy night offensives. This makes it possible to better study the terrain, organize fire plans, maneuver resources for night engagements, and carry out engineer preparation of positions, thus gaining a number of advantages over the attacking enemy.

If subunits go over to the defense at night, commanders make decisions and assign missions to the subunits, usually on maps. The subunits move covertly up to their assigned defense areas and strongpoints and consolidate on the indicated lines. At dawn, subunit missions, arrangements for cooperation, and the fire plan are updated, and necessary changes are made in the disposition of resources on the spot.

Combat security outposts are reinforced, observation of the enemy and the obstacles in front of the forward edge is intensified, and sound monitoring is initiated in order to prevent an enemy surprise attack and detect in good time his movement up to the forward edge and transition to the attack.

Illumination of the ground in front of the FEBA and of enemy installations and targets during an engagement is set up to improve conditions for observing the enemy and using fire resources when repelling his attack. Moreover, countermeasures are taken against the enemy's illumination and night vision devices, thereby reducing the effectiveness of his fire and making his troop control more difficult. Artillery, mortar, and anti-tank fire, air strikes, and small-arms fire are used for this purpose; smoke is used to blind enemy observers.

In order to increase the effectiveness of the defending subunits' fire at night, it is important to have prepared weapons for aimed fire, including those using night vision devices.

Because the enemy conducts night offensives along roads as a rule, fire resources are used primarily on these axes.

Primary emphasis is placed on reinforcing antitank fire. For this purpose, the number of antitank weapons on call is increased, and when

darkness falls, some of the guns, ATGMs, and rocket launchers are moved up to temporary positions closer to the FEBA. The numbers of fire resources moved up and their disposition for night actions are determined by the subunit commanders.

Some of the artillery battalions (batteries) are readied for defensive fire on possible axes of enemy attack. Antitank reserves may be moved up to the main axes.

In order to improve conditions for orienting and controlling fire, reference points are designated that are easily visible both day and night. If necessary, means of illuminating them are prepared. Recognition signals for friendly forces are also established.

In night engagements, the attacking enemy will most likely carry out nuclear strikes against targets quite distant from the FEBA. However, it is essential to take measures to guarantee the safety of subunits holding the forward edge, particularly against thermal radiation from nuclear bursts, since in darkness it may put personnel out of action at distances 3–4 times greater than in daytime.

Subunit night maneuvers must be simple in conception and not demand complex regroupings. They are organized so as to avoid having the subunits' lines of movement intersect, and to prevent large concentrations of troops on roads. Routes of maneuver are marked with signs that are illuminated or easily visible in darkness. Routes and deployment lines are studied during daylight hours by the commanders of all the subunits that are to be maneuvered. Speed of maneuver of resources is less at night than during the day. For this reason, the second-echelon subunits and reserves must be situated as close as possible to the sites where they will be employed.

Although night itself serves to mask the troops, it is nonetheless essential to institute camouflage measures at night. In such a case, the distance from the enemy and his possession of surveillance equipment are taken into consideration. In areas within range of radar equipment and night vision devices, camouflage must be just as thorough at night as during the day.

In order to maintain a state of heightened combat readiness, at least 50 percent of subunit personnel remain in their positions at night, ready to quickly open fire and repel enemy attacks.

If enemy movement is detected on the approaches to the defense, specially detailed artillery and mortars illuminate the ground in front of the forward edge with illumination shells and bombs. Illumination of the

attacker's first echelon, the areas of the enemy's missile launcher and artillery fire positions, and his approaching reserves receives primary consideration.

Aviation, artillery and mortars, exploiting the ground illumination, destroy the enemy's tactical nuclear weapons, artillery, and also his advancing tanks, infantry combat vehicles, and armored personnel carriers.

When threatened by enemy nuclear strikes, personnel take cover in dugouts, shelters, at the bottom of foxholes and trenches, and in tanks.

Enemy attacks are repelled by opening fire by surprise. Extensive use is made of fire resources equipped with night vision devices and antitank rocket launchers to destroy enemy tanks, other armored targets, and infantry.

At night it is even more important to repel an enemy before he reaches the forward edge than it is during the day, because if even a small enemy force penetrates the defenses, the fire plan will be disrupted, and it will be difficult to restore it in the dark. The subunits defending the forward edge must take every measure possible to repel enemy attacks and hold their positions. Their actions are supported by artillery fire from the depth and the fire resources under the direct control of the senior commander (chief).

If the enemy penetrates the defenses, the subunits will fire on him with all weapons, holding their lines and positions stubbornly.

Surprise counterattacks are more effective at night than during the day. They make it possible to make substantive changes in the situation in favor of the defending forces. Counterattacks may even be carried out by small forces at any time of night, with the provision that by dawn they will have defeated the enemy that has penetrated.

The experience of the last war provided many examples of successful night counterattacks.

On 17 January 1943, about a battalion of enemy infantry penetrated the boundary between two rifle companies of the 147th Independent Rifle Brigade following an artillery strike. Further enemy advance was halted. The brigade commander decided to use the reserve to make a night counterattack against the flanks of the battalion that had penetrated in order to encircle and eliminate it. By 2200, the counterattack groupings had assumed a departure area at the base of the penetration. To mislead the enemy, the brigade reconnaissance group fired continuously on him from the front. The counterattack was preceded by a 10-minute artillery strike, during which members of the reconnaissance group, feinting a frontal counterattack, intensified their fire. In response, the enemy opened up with a hail of fire in this sector and began to illuminate the ground. At that time, the enemy was hit by a surprise

counterattack on the flanks. The counterattacking subunits successfully advanced toward one another. The enemy, perceiving the threat of encirclement, quickly withdrew. By morning the defenses were restored.

Organizing counterattacks is more complicated at night than during the day. For this reason, counterattacks are planned to be simple in conception and are carried out on open ground well provided with visible night reference points. Special attention is given to supporting the movement of the counterattacking subunits to the deployment lines. For this purpose, in addition to marking the routes of advance, guides may be assigned and reconnaissance and local security stepped up. When the counterattacking subunits reach the deployment line, the enemy and the terrain ahead will be illuminated. The enemy force that has penetrated is defeated by decisive surprise actions on the part of the counterattacking subunits.

At dawn, the attacking enemy usually operates more aggressively. At night, he does his best to bring up the second echelon (reserves) in order to carry out more powerful strikes against the defending forces at dawn and achieve success on a decisive axis. For this reason, the defenders must try to covertly concentrate their reserves on the most important axis during the night, then at dawn make a preventive strike against the enemy grouping that has penetrated and seize the initiative.

When enemy airborne assault forces are engaged at night, surprise is particularly important. It is achieved by covertly moving up the resources assigned to eliminate the assault force and attacking its flank and rear. In transitions to the attack, the ground held by the assault force is given increased illumination to make it easier to find one's position and to maintain cooperation among the subunits eliminating the assault force.

10. Defense in Mountains

Mountainous terrain has a twofold effect on the actions of defending forces. The harsh ruggedness of the terrain and the presence of obstructions forces the attacking enemy to conduct his combat actions mainly along valleys, roads, and mountain ridges. The enemy's momentum of advance in mountains is reduced in comparison with that on regular terrain, and maintenance of cooperation between groupings advancing on separate axes separated by obstacles is made more difficult. For these reasons, forces going over to the defense in mountains can set up stable defenses with fewer resources than on moderately rugged terrain. The strongest, most deeply echeloned defenses will be set up on sectors of terrain that intersect axes of likely enemy advance, i.e., at road junctions, on commanding heights, and in passes. Sectors that are difficult of access will be covered by company and independent platoon strongpoints.

The negative effect of mountains on organizing defenses is apparent in the great areas of dead ground and numerous deep and hidden approaches that hinder observation and make it possible for the enemy to approach the forward edge unnoticed and attack it by surprise. The large gaps between strongpoints make it easier for attacking enemy forces to make deep or close envelopments.

The limited numbers of roads, the possibility of landslides, and the creation of barriers on roads after nuclear bursts make it more difficult for attackers and defenders alike to maneuver resources from one axis to another.

The effects of the casualty-producing elements of nuclear bursts vary in mountainous terrain. On slopes facing bursts, the lethality of the blast is greater than on reverse slopes. Levels of radioactive contamination will be greater in valleys and gorges than on slopes or watersheds.

Stony and craggy terrain makes engineer work more difficult. When fortifications are constructed, sudden weather changes are taken into consideration and measures are taken to warn subunits about and protect them from rock falls, avalanches, and flooding by rivers.

Mountains have a screening effect on the functioning of radios, which necessitates measures to improve the stability and range of communications (setting up relay stations and so on).

In the mountains, battalions as a rule set up their defenses on broader fronts than on regular terrain, intersecting the most easily accessible axes of enemy actions, while defenses on plateaus and in wide valleys are set up in the same way as under regular conditions. Defenses are set up so as to create company and independent platoon strongpoints with the aim of holding commanding heights, passes, road junctions, and other important terrain sectors. Strongpoints are set up so as to provide for all-round defense and mutual fire support between them. In sectors that are difficult of access and hard to cover by observation and fire, and in the gaps between strongpoints, ambushes and obstacles are set up and reconnaissance and patrols are organized.

Forward edges are chosen that lie on the slopes of mountain ridges, heights, and spurs, providing good fields of view and fire over their approaches and on the reverse slopes of hills.

When a fire plan is organized, preparations are made for overlapping enfilade fire, crossfire and surprise short-range concentrated fire in front of the forward edge, in the depth of the defense area, in the gaps between strongpoints, and on the flanks. Fire resources are disposed in stepped

formation on the slopes facing the enemy and on the reverse slopes of heights in order to make it possible to hit the enemy in the valleys and eliminate dead zones and hidden approaches to the forward edge.

Tanks attached to motorized rifle battalions, antitank guns, and ATGMs are usually employed in company strongpoints that are defending road junctions, exits from valleys, defiles, the edges of forests, and mountain river crossings. Their fire positions are selected to enable them to hit the enemy at maximum range.

If a battalion is defending a narrow mountain valley (ravine), fire resources are positioned on adjoining mountain slopes, from which the valley is covered by crossfire.

The main efforts in defending a pass are concentrated on holding heights situated on the approaches to it. A portion of the battalion's forces assumes defensive positions directly in the pass. Obstacles are set up on the roads leading to the pass from both directions; the approaches to them are covered by crossfire from the adjacent heights.

In the engineer preparation of strongpoints, fortifications built in rocky soil consist primarily of banked semi-dugouts made of stones and covered with a layer of soil and sandbags filled with earth. Demolition charges are used extensively in engineer preparation. Foxholes, shelters, and other fieldworks are prepared so as to prevent incendiary mixtures and water from leaking into them. Mine workings, caves, and other types of natural cover are adapted to protect personnel against NBC weapons.

When obstacles are prepared, extensive use is made of natural obstructions, some set up with stones, while in mountainous woodland, tree barriers are constructed, sections of roads (trails) and man-made structures are prepared for demolition, and minefields are laid on roads.

The attacking enemy is hit by fire from the time he reaches the distant approaches. His attack is repelled using all fire resources. Tanks and other armored targets are destroyed as they negotiate gradients, particularly on hairpin bends where their speed is reduced.

The defending subunits hit enemy outflanking groups with concentrated fire. Artificial landslides are used extensively to counter their penetration into the depth of the defense.

When the enemy penetrates the defenses, subunits stubbornly hold their strongpoints, maintain all-round defense, and inflict the maximum losses on the enemy. If conditions are favorable, a battalion will counterattack to eliminate an enemy force that has penetrated.

In order to move up covertly to the counterattack deployment line, tank subunits making up the second echelon (reserve) take advantage of hollows, the reverse slopes of heights, mountain roads reconnoitered beforehand, and the beds of shallow rivers. As a rule, counterattacks are carried out from above, along the slopes of mountains, valleys, and ridges, with artillery support.

Today's motorized rifle and tank units and subunits possess considerable capabilities for setting up stable defenses quickly and successfully repelling an offensive by superior enemy forces. Still, it is essential to bear in mind that there are great difficulties involved in conducting defensive engagements when the enemy is employing powerful weapons and tactical airborne assault forces. For this reason, commanders must, under conditions that approximate actual combat as nearly as possible, foster in their subordinates a confidence in their capability to repel enemy attacks with available weapons and combat equipment and to create conditions for going over to a decisive offensive.

Notes

1. See *Taktika v boyevykh primerakh. Polk* [Tactics in Combat Examples: The Regiment], p. 195.
2. See *ibid.*, p. 189.
3. See *Armeyskiye operatsii* [Army Operations], p. 176.
4. See *Tactics in Combat Examples: The Division*, p. 269.

Chapter 5. Troop Movement

Troop movement is the organized relocation of troops by marching or by means of motor, rail, water, or air transport or any combination thereof, the aim being to bring them to a designated area or line within a specified time, fully prepared to accomplish any combat mission.

The troops' timely arrival at the designated area (or line) in battle-ready condition is achieved by choosing skillful methods of movement, by advance preparation of troops, roads, and transportation, by meticulous organization, and by ensuring comprehensive movement support, reliable air defense cover for the troops, thorough subunit training, and capable action on the part of commanders and staffs.

Troop movement is executed while regrouping and maneuvering resources.

1. The March

The basic method of troop movement is the march. The march is the organized movement of troops in columns, using their own resources—on foot (skis in winter) or in organic vehicles, using roads and cross-country routes, with march security and observing intercolumn spacing and speed of movement regulations. Tanks and other vehicles with low speeds and range can be transported on heavy tractor-trailer units included in the columns.

The march is always combined either with combat or the regrouping of subunits in the field. Alternatively, it may take the form of troop deployment for an offensive, meeting engagement, or defense, for taking a designated line situated out of enemy contact, or for concentrating in a designated area.

The march has always played an important role in achieving victory, and therefore military leaders of the past have given much attention to the art of its execution. **Today, with the exceptional maneuverability, dynamism, and broad spatial scope inherent in troop actions, the march has become an integral part of preparation for and conducting of combat.**

The fact that the march can be used in a great variety of circumstances, both well to the rear of friendly forces and in the combat zone, makes it the most common form of movement. Marches may be made toward, along, or away from the front line. In terms of the conditions under which they are carried out, it is customary to distinguish between marches made in anticipation of engagement and those with no threat of encountering the enemy.

A march in anticipation of engagement refers to the possibility of combat with enemy ground forces during the march or to a move up to an indicated line (area); it is executed close to the line of contact and is usually limited to a day's march. It may include one or, more rarely, two halts or none at all if the march is not long. After the march, the troops may concentrate in the designated area or else deploy on the indicated line in order to go over to the offensive, a meeting engagement, or a defensive position.

The Great Patriotic War provided a great many examples of marches in anticipation of engagement. The formation of offensive groupings, the transfer of efforts to new axes, advancing to defensive positions, and the execution of regroupings and troop maneuvers for other reasons all involved marches.

In January 1942, units of the 93rd and 338th Rifle Divisions were committed from the second echelon of the 33rd Army to develop the offensive in the direction of Vyaz'ma. The march covered 80-100 kilometers. In August 1944, during the liberation of the Baltic states, the 145th Rifle Division made a 50-kilometer march to cover the flank of the attacking troops against attacks by enemy reserves.¹

During a **march without threat of enemy encounter**, combat with enemy ground forces is ruled out; however, troops must be constantly prepared for intense combat with enemy air attack weapons. Such marches usually take place deep in the rear of friendly troops and generally last several days, although they may sometimes be limited to a single day. At the end of the march, the troops concentrate in the assigned area or deploy on the indicated line for advance preparation for combat.

A troop movement using organic resources over a distance greater than a day's march is considered a long-distance march.

The extent of a long-distance march may amount to several hundred or even several thousand kilometers. The march will have 2-3 halts every day, with a day- or nighttime rest period at the end of each day's march and, if need be, a day's rest every few days. When moving from deep within home territory into a combat zone, troops can move without threat of enemy encounter for most of the time, but on the last day's march they

must anticipate engagement. If a march is carried out parallel to the front at a negligible distance from the line of contact, it is executed in anticipation of engagement.

Today, long-distance marches with various objectives are practiced extensively, especially given increased enemy capability for disrupting the movement of troops by rail.

The great maneuvering quality of modern combat actions and the increased range and power of weapons significantly complicates conditions for executing marches, especially in the daytime and when close to the line of contact.

Troops may be hit by enemy nuclear or chemical strikes and sustain losses in personnel, weapons, and equipment; they may be required to negotiate (or skirt) radioactively contaminated zones, chemically contaminated sectors and areas affected by demolition, fire, or floods. Heavy losses in personnel or combat equipment, significant destruction of roads, bridges and tunnels, or the creation of extensive areas of radioactive contamination may force troops to halt temporarily in order to restore fighting efficiency, prepare passages through obstacles and demolished areas, or await a drop in high radiation levels. All this requires that the troops be constantly ready to restore their fighting efficiency, to take chemical and nuclear damage control measures, and to ensure continued advance. When the march is being organized, it is necessary to choose and prepare alternate and lateral routes in addition to the principal routes; they can be used in the course of the march to skirt contaminated zones and demolished areas.

During a march, troops may be subject to the action of tactical aviation and, as they approach the front, that of army aviation. Enemy fighter-bombers are, even in adverse weather, capable of making bomb strikes and employing rockets, cannons, and incendiary weapons. Combat helicopters using ATGMs and unguided rockets, incendiary mixtures, and mines are capable of striking columns, mining the terrain, and landing reconnaissance and combat subunits on troop movement routes.

This calls for effective cover for troops from enemy air strikes and strict observance of camouflage rules and march discipline. The probability of action by airlifted diversionary reconnaissance groups and airborne assault forces increases when troops are moving through close or broken country, built-up areas, defiles, and bridges, especially at night. These enemy troops may destroy roadworks along the routes and water development works at water obstacles, create road blocks on mountain or forest roads, capture crossings and passes, and attack control posts and missile and logistics subunits. Under these conditions, it becomes particularly

important to maintain great vigilance, to guard movement routes, columns, control posts, missile and logistics subunits, and to organize traffic control meticulously. Movement routes should not pass through densely populated areas, near railway stations, or through road junctions and defiles.

As the troops near the front line, the chances of coming under the effects of guided and unguided missiles are increased, and, as they approach the designated deployment line, long-range tube artillery and multiple rocket launchers may be employed against them. The enemy may not only carry out reconnaissance and make effective hits on troops with precision weapon systems, but may also carry out surprise remote mining of the terrain, resulting in increased losses to troops on the move and the necessity of using organic resources to negotiate the obstacles thus created. Such enemy actions are more likely when troops are negotiating barely passable sectors of terrain—mountain passes, for instance—and when moving through areas where the enemy cannot make effective use of aviation. The possibility of enemy use of precision weaponry requires that commanders at all levels constantly carry out reconnaissance, observe spacing regulations and camouflage measures, and provide the columns with air defense cover during both movement and halts.

Troops may stage marches with various levels of strength in personnel, armament, combat and other equipment and material resources. On marches conducted when an engagement is anticipated, they may be reinforced with artillery, antitank and antiaircraft weapons, engineer subunits, and other resources, which may join the troops in the area of their dispositions before movement begins or else may be incorporated into the columns during halts or as they approach the designated line of deployment.

Marches usually take place under concealment, whether at night or under other conditions of limited visibility, but movement during combat actions or well to the rear of friendly forces may also take place during the day. Circumstances may call for troop movement by march at any time of year, in any kind of weather, and over varied terrain. In the course of a march, troops will have to negotiate large rivers and mountainous regions and frequently travel cross-country, laying down cross-country routes and fully exploiting the excellent off-road capabilities of fighting vehicles and transport. There may be a variety of economic conditions, sociopolitical makeup, and attitudes among the population in the regions in which the troops are moving.

Difficult marching conditions may have an adverse effect on the troops' fighting efficiency and momentum of advance, especially if there has been insufficient preparation for the march, the subunits have been

poorly march-trained, and the commanders and staffs are inept in directing them during the march. In order to eliminate undesirable consequences, it is necessary to thoroughly prepare personnel, armament and combat and other equipment for the march, to organize it capably, and to ensure comprehensive support, together with a high level of subunit march training.

The march capabilities of a subunit are indicators of its ability to cover a given distance within the time limit, neither overtaxing personnel nor overusing vehicles, while maintaining constant readiness to engage the enemy. The march capability of troops is judged by their average speed of movement and the distance covered in a day's march.

During the Great Patriotic War, troops usually staged marches at night; they lasted from 6 to 8 hours, although they would sometimes run between 10 and 12 hours. Average speeds in motor transport on paved roads were 15–20 km/h at night and 20–25 and sometimes 30 km/h in the daytime; a day's march would cover 150–200 kilometers, and sometimes even 250–300 kilometers.

The 133rd Rifle Division, moving by motor transport from Kotalino to Dmitrov in November 1941, covered 240 kilometers a day; their average speed was 25 km/h. The troops of the 2nd Ukrainian Front covered 170–190 kilometers a day in May 1944.

Today troops are fully motorized and mechanized and equipped with better developed armored vehicles and motor transport equipment. The mechanical reliability of the vehicles is also significantly greater; speed and cross-country performance have improved, as has range between refuelings. They are capable of negotiating water obstacles, radioactively contaminated zones and mixed minefields; they have effective night driving instruments and reliable blackout devices. All this, combined with better troop march training, makes possible increased subunit march capabilities, allows movement at night to be approximately as rapid as it is in the daytime, and renders obsolete the earlier categorizing of marches into normal and forced. Troops can move under their own power over considerable distances, under any conditions of terrain or weather, and at any time of day, yet remain constantly battle-ready.

The average speed of troop movement depends on the effectiveness of enemy action, commanders' skill in column control, drivers' level of training, mechanical condition of the vehicles, column composition, march route conditions, weather, and other factors. When a subunit is performing an independent mission, its rate of movement will be higher than it would be as part of a unit. In the event of nuclear or chemical attack or air strikes or when the march routes pass through demolished areas, barely negotiable sectors and crossings, or under unfavorable road and weather

conditions, the rate of troop movement will be reduced, sometimes fairly significantly. Columns of wheeled vehicles move more rapidly than tank or mixed columns.

Troops must in all cases execute marches with the maximum possible speed under the given conditions, negotiating observable sectors especially quickly with a view to protecting themselves from enemy precision weapons. Average speeds of 25–30 km/h or more are now attainable not only by motor transport columns on paved roads, as was the case in the last war, but also by tank and mixed columns, even when moving along dirt roads; motor transport columns may attain an average speed of 40 km/h or greater.² In mountains, deserts, arctic regions, wooded and swampy areas, and other unfavorable conditions, the average speed is reduced to 20 km/h. If a march is made on foot, a subunit's average speed of movement may be 4–5 km/h, or 5–7 km/h on skis.

Average speed is calculated without regard for the time of march (day or night) or for time elapsed during halts. When a march is planned, average speed is defined as the ratio of the distance of a day's march to the time taken for the move. Since troops will move at various speeds through different sectors, subunit commanders and traffic control service personnel should know the boundaries of each sector within which a given speed is to be maintained.

The term "day's march" signifies the distance that troops can cover in a 24-hour period. This figure depends on the mission being performed, the average speed and the length of time the column will be moving during the 24-hour period. The period of actual movement is governed largely by the drivers' physical and mental capabilities, their ability to endure the high stress levels of a march and still maintain fighting efficiency. Indeed, in the course of a day's march, the driver has to move the gearshift and steering mechanism alone at least 6,000 times; the total equivalent mass moved by a driver in a day is 150–200 metric tons.³

Although during the Great Patriotic War it was exceptional for a driver to work for 10–12 hours without a break, with today's vehicles this is the norm. The remaining 12–14 hours are spent in servicing armament and combat and other equipment, providing personnel with rest and food, moving columns out of disposition areas, and dispersing and camouflaging the vehicles in the rest area (whether it be a daytime, nighttime or a day's rest) or in the designated concentration area.

Day's marches of as much as several hundred kilometers were extremely rare during the Great Patriotic War; today such a day's march may be considered the norm when traveling in average road and weather conditions and for motor transport columns traveling for 10–12 hours a

day at average speeds of 30–40 km/h, the distance of a day's march may be even greater. On marches in unfavorable road and weather conditions (in mountains, deserts, arctic regions, wooded or swampy areas, etc.), the extent of a day's march will be less.

On the map, the extent of a day's march is measured in kilometers along the march routes from the line of departure to the furthest boundary of the designated concentration (rest) area or to the troop deployment line. Depending on the map scale, the local terrain, and how crooked the roads or cross-country routes are, the calculated overall distance of the march must be revised upward by 5 to 15 or 20 percent. This ensures greater accuracy in determining the distance of the troops' daily march and makes any derived calculations more realistic. When the routes are broken down into segments of 5–10 kilometers on the map, the necessary correction is made to each segment.

Troops execute marches in march formation, a configuration of resources created especially for moving in columns and determined by the mission assigned, the objectives of the upcoming actions, the number of march routes, and other prevailing conditions.

In the case of a march where the possibility of engagement is foreseen, the troop march formation must ensure that the march is completed by deadline; it must also ensure combat readiness in the event of an enemy nuclear strike or attack by chemical or conventional (including precision) weapons, and rapid deployment of troops into battle formation.

A troop march formation consists of columns, whose number depends mainly on the number of march routes. A subunit will march in a single column. A battalion assigned to the forward detachment (advance guard) or following a different route advances with a main body column and march security. As Great Patriotic War experience has shown, the march formation for units (formations) may include a forward detachment, march security, a movement support detachment, main body columns, and technical and logistic support subunit (unit) columns (figure 13).⁴

The forward detachment is dispatched to forestall the enemy in capturing an advantageous line and holding it until the main body arrives; it is also responsible for reconnaissance. The forward detachment is dispatched a few hours before the main body begins to move in order to ensure that the dispatching commander has time to organize combat and maneuver resources; consideration is given here to the ability of the forward detachment to independently engage numerically superior enemy forces without support from the main body. During the last war the following groups would be sent out as forward detachments: from a division—a reinforced

regiment, and when moving in a broad march zone—several reinforced battalions, one from each of the leading regiments; a regiment would send out a reinforced battalion.

March security is organized at the front, on threatened flanks, and at the rear in order to ensure unhindered movement by the main body and to prevent sudden enemy attacks or penetration by enemy reconnaissance, and also to ensure the troops advantageous conditions for engaging. In front, the troops are protected by advance guards, forward security elements, forward patrols of the advance guard, and patrol sections (tanks).

During the war a reinforced regiment would sometimes be sent out as part of an advance guard. Today, anything up to a reinforced battalion is sent out on each march route to a considerable distance, which gives the dispatching commander time to make decisions and task the troops and gives the main body time to maneuver and deploy for combat. The forward security element may consist of anything up to a reinforced company, and the forward patrol of an advance guard—a platoon; patrol sections (tanks) are not sent beyond visual communication range.

To protect the main body from threats to its flanks, flank parties of about the strength of a reinforced company are sent out; in especially dangerous sectors, stationary flank security elements are put out, holding advantageous lines until the protected columns have passed. Protection from the rear is provided by rear parties. The flank and rear protection proceed at distances of about 5 kilometers in order to protect the troops from sudden enemy attack from a threatened flank or the rear.

Movement support detachments consisting of engineer subunits are dispatched on each march route to provide close support for the movement of the main body along roads and column routes. In order to have more time to prepare march routes, the detachment usually begins to move out of the troop disposition areas behind the forward security element. Their grouping also includes motorized rifle or tank subunits.

The main body forms one or several columns, dispersed laterally and in depth. The distance between adjacent columns following parallel routes must be sufficient to prevent them from being hit simultaneously by a nuclear strike. The distance maintained between battalion columns following each other must be sufficient to prevent a medium-yield nuclear warhead from putting them out of action simultaneously.

In establishing intercolumn spacing, one must proceed from the actual conditions of troop movement, the various yields of the nuclear warheads in use by the enemy, the features of the local terrain, weather, and the degree to which organic vehicles reduce the destructive effects of nuclear

strikes on personnel. The distance between vehicles is set at 25–50 meters, as it was in the last war. However, while the overall depth, for example, of a motor transport battalion column in the last war was 2 kilometers and that of a motor transport regiment column was 10–15 kilometers, today the increased complement of resources in subunits, units, and formations and the need to observe requirements for defending against nuclear and precision weapons have resulted in a significant increase in column lengths.⁵

Columns are grouped so as to allow any one of them to engage the enemy independently. Tanks and infantry combat vehicles usually move at the head of a column, artillery a little further back, and antiaircraft weapons are distributed throughout the column's depth. Antitank weapons and some artillery may be located between the main body and the march security. Depending on the prevailing circumstances, logistics and technical support subunits may march right behind the combat subunits or further back—as much as several kilometers—in independent columns. Some of the medical and repair subunits, and also those vehicles carrying fuel and ammunition, may move in the main body columns.

When there is no threat of enemy contact, the troop march formation is organized with due regard for ease of movement, attaining high march speed with minimum strain to personnel, and maintaining the condition of armament and of combat and other equipment. It therefore differs from the march formation in cases where engagement is anticipated, namely: no advance detachment is sent out; march security at the front of a column may have a smaller complement and not be sent as far ahead; if conditions are favorable, flank and rear march security may not be sent out at all. The main body is reorganized into fewer but consequently longer columns. Subunits in tracked vehicles may be combined into joint columns and either follow different routes or follow the subunits on wheeled vehicles. Movement support detachments move out ahead of time, and some of the personnel of the logistics subunits are sent ahead to the halt and daytime (nighttime, day's) rest areas.

If troop movement is to be successful, it is extremely important that **march discipline** be observed.

In the Vistula–Oder Operation during the Great Patriotic War, for example, a formation consisting of three rifle corps of the 21st Army was able to move 210 kilometers under its own power between 13 and 18 January 1945 without being hit by enemy air strikes, largely because of excellent march discipline. They moved mainly at night, stopping at dawn, and during halts and rests they would disperse in areas with good natural camouflage.

Today, with increased enemy capabilities for reconnaissance and inflicting casualties, even on troops marching at a great distance from the line of contact, the importance of march discipline continues to grow.

March discipline must be observed from the moment movement begins. Subunit columns are formed up in the disposition area and calculate their move out to the starting point so that the head of each column will pass it at the specified time, while maintaining the assigned speed; each succeeding subunit column passes the starting point when the tail of the preceding column has reached the requisite distance. If troops are moving along several routes, the lead vehicles of all leading subunits (units) must cross the line of departure precisely at their assigned time, maintaining the required speed of movement. The correct timing for beginning a march is controlled by the senior commander (chief) and staff officers (figure 15).

During the march, speed of movement, spacing, safety measures, camouflage, and the set times for crossing report lines are all strictly observed. With the onset of darkness, special attention is paid to observing blackout procedures. It is forbidden for vehicles to move without blackout headlamps, or for fires to be lit during halts or disposition for nighttime rest periods. Vehicles in columns move with the help of night vision devices or blackout apparatus, but if it is a bright night, neither will be used at all.

Moving columns use only the right side of the road; the left side is left free for oncoming traffic or for overtaking the column, which may be done only with the permission of the senior commander (chief). When the vehicles are moving at high speed, along dusty or icy roads, or roads with steep up- and downgrades and sharp turns, the distance between them is increased. The troops pass through built-up areas, crossings, passes and defiles without stopping and at maximum possible speed. If troops are held up at choke points or barely negotiable spots, the columns following will halt in open terrain in good time; immediate measures are taken to eliminate the congestion. During a long march, drivers (driver-mechanics) will be periodically replaced.

Every 3-4 hours of movement, troops halt for about an hour; there is also one halt of about 2 hours that takes place in the second half of a day's march. The leading vehicles of all battalion columns must stop for the halt simultaneously and not disrupt the configuration of the column. The vehicles stop on the right shoulder of the road at set distances from one another, but the minimum intervehicular distance is 10 meters. Personnel leave the vehicles and disperse for rest to the right of the road. Observers, antiaircraft alert crews, and radio operators remain in the vehicles. In the interests of protection against nuclear and precision weapons, the protective and camouflaging features of the terrain are fully exploited; if there is no natural cover near the route, it is advisable for personnel to dig themselves slit trenches and, if time permits, to prepare very simple shelters for weapons and combat equipment. During the halts, general inspection and technical maintenance of weapons and combat and

other equipment are carried out. During halts of about 2 hours' duration, hot food is distributed to personnel. At the end of the halt, all vehicles resume movement simultaneously, gradually increasing speed and spacing.

At the end of a day's march, at the designated time, the troops stop for a rest (day- or nighttime) and, after several such marches, for a day's rest (if necessary). The duration of the rest depends on actual conditions. At the rest area, the troops leave the road and disperse to concealed positions, giving due regard to requirements for protection against precision and NBC weapons; the dispositions adopted also provide for maintaining battle-readiness and for rapid resumption of convoy formation in order to continue movement. Rest and food for personnel and technical maintenance and repair of damaged vehicles are organized; any necessary column reconfiguration is carried out, and basic shelters are prepared for personnel and combat equipment. Antiaircraft weapons are deployed in their positions. Local security is organized in each subunit; the march security becomes a bivouac guard or is replaced by a newly appointed bivouac guard.

The traffic control service plays an important role in maintaining good march discipline. The experience of the last war reveals that when it is well organized, troops strictly observe the prescribed order of movement and camouflage measures, carry out the move more systematically, and arrive at the designated area or line at the right time.

The traffic control service was well organized for the regrouping of the First Baltic Front formations onto the Memel axis in the autumn of 1944. Rigid control of troop movement over all routes and situation reports from report lines to headquarters along existing and specially laid communications lines contributed greatly to the success of the troop regrouping. On the other hand, the traffic control service was absent for a regrouping in the operation conducted by the Northwestern Front to destroy the enemy's Demyan grouping at the beginning of 1942; this was one of the reasons that the troops did not arrive at the line of commitment into the breakthrough on time.

Traffic control service on movement routes and in halt and rest areas is organized ahead of time by the staff. To control movement on the line of departure, the report lines, crossings and road junctions—in other words, wherever troop movements become more complex, it is more difficult for them to orient themselves, and a column could leave the proper route—traffic officer posts and traffic control points are set up. In order to cut down on the number of posts, road and traffic signs are used that are easily seen by troops moving in darkness or other conditions of limited visibility, but that are inconspicuous to the enemy. Helicopters may be widely used for aerial monitoring of troop observation of march discipline, to lead back to the route columns that have lost their way, to show the troops detours around areas affected by demolition, flooding and fires, and to give them new axes in response to changes in the mission.

In the set of measures for **comprehensive march support**, especially marches conducted when an engagement is anticipated, an extremely important one is combat support, aimed at preventing enemy surprise attacks and reducing the effectiveness of enemy strikes. Among the most important aspects of combat support are reconnaissance, troop NBC defense, and engineer support.

Reconnaissance is carried out constantly throughout the full extent of the day's march, on the axis of movement, and along the flanks. Reconnaissance of march routes and halt and rest areas is conducted under all march conditions, and if a move is made in anticipation of engagement, reconnaissance of the enemy is continuous.

The main missions of reconnaissance are timely detection of the enemy and determination of his fighting strength and intentions; it is especially important to determine whether he has nuclear or chemical weapons or precision weapons system components, where they are located, and their state of readiness. Reconnaissance also determines the condition of march routes, the passability of off-road terrain and its nature at lines of possible contact with enemy ground forces. It is very important to clarify the radiological, chemical, and bacteriological situations in the march zone, to detect contaminated zones in good time, and to reconnoiter detour routes. Reconnaissance missions are carried out by surveillance, investigation of the terrain, and other methods involving extensive use of new technical equipment.

For reconnaissance purposes during the Great Patriotic War, observers were assigned and reconnaissance forces, reconnaissance parties, independent reconnaissance patrols, engineer and chemical warfare reconnaissance patrols, scout vehicles and foot patrols were dispatched from formations, units, and subunits on the march. In addition to organic reconnaissance subunits, tank, motorized rifle, and rifle subunits on horseback or on motor transport were also included in the reconnaissance elements; they were reinforced with antitank artillery, combat engineers, and sometimes with tanks and self-propelled guns, which allowed them to carry out reconnaissance along a broad front and in great depth.

On 28 January 1945, while on a march during the development of an offensive on the Lodz axis, horse- and motor-transported reconnaissance subunits of the 47th and 57th Rifle Divisions conducted reconnaissance to a distance of 30-35 kilometers from the main body; on 14 January 1945, reconnaissance subunits of the 88th Guards Rifle Division, using tanks, penetrated the enemy's rear to a depth of 20 kilometers in the course of a pursuit.⁶

Today reconnaissance forces, reconnaissance, independent reconnaissance and battle reconnaissance patrols and reconnaissance detachments (tanks) can also be dispatched and observers assigned from reconnaissance, motorized rifle, and tank subunits and engineer and chemical warfare

reconnaissance patrols, artillery reconnaissance subunits, etc., may be dispatched from subunits of various combat arms and the combat service support troops. If need be, reconnaissance parties for actions in the enemy's rear and officers' reconnaissance patrols may be dispatched.

The fact that troops today are fully mechanized and motorized and equipped with improved reconnaissance hardware allows them to obtain information about the enemy and terrain during marches that is more accurate and reliable and over a significantly greater range than was the case during the last war; the extensive use of helicopters for reconnaissance purposes makes it possible to quickly discover the condition of march routes, identify contaminated zones, barriers, areas affected by demolition, fires and flooding, and search out detours to negotiate or skirt them.

Protection against NBC weapons is provided by timely detection of them, by warning troops of the immediate threat and onset of their employment by the enemy, and by quickly notifying personnel about NBC contamination. An important role in NBC protection is played by regular lateral and in-depth dispersion of the march formation; skillful use of protective and masking features of the terrain while on the move, on halts and during dispositions for daytime (nighttime) or day's rests; engineer preparation of rest areas; timely use of personal and collective protective equipment; and skillful use of the protective features of fighting equipment and motor transport.⁷

It is very important to be strict about camouflage, and to prevent troops from massing in front of the line of departure, at report lines, at halt and daytime (nighttime) or day's rest areas, at crossings and passes, in defiles, and in built-up areas. Troops must always be ready to negotiate extensive contamination zones or areas affected by demolition, fires or flooding, all from the line of march.

NBC damage control should be carried out quickly and should not delay troop movement. Personnel, armament, and combat and other equipment undergo partial decontamination on leaving contaminated zones, but when contamination is by chemical warfare agents, this must be done immediately; full decontamination usually takes place in the daytime (nighttime) or day's rest area or on arrival in the designated area.

As the experience of the Great Patriotic War testifies, engineer march support is an important factor in ensuring successful troop movement, especially if they are forced to negotiate water obstacles or other obstructions. In order to ensure that the troops arrived in the designated area or at the deployment line in time, subunits, units and formations had to perform great volumes of work in engineer march support.

On 6 and 7 July 1943, on the march from the Korocha region near Belgorod, advance reconnaissance was conducted in the 280th Guards Rifle Regiment concerning the nature and condition of difficult sectors and choke points along their march routes; the order in which the subunits would negotiate them was determined, combat engineer alert subunits with engineer equipment and recovery and repair facilities were detailed, detour routes were assigned, and the order in which the subunits would negotiate crossings, bridges, defiles and large built-up areas was established. The regiment passed through choke points without stopping. If it encountered demolished sectors on the route, it strove to bypass them; if this proved impossible, it had the movement support detachment or specially detailed combat engineer and rifle subunits carry out repair work. This ensured the accomplishment of their mission.⁸

Today, when troops are equipped with large numbers of combat and other equipment, and especially with march conditions having grown considerably more difficult, engineer support missions are becoming increasingly varied, while the times for carrying them out are constantly reduced.

A successful march is impossible without continuous engineer reconnaissance, the timely removal of obstacles and damage on march routes and in troop rest areas, the maintenance of route passability, road and bridge repair, the preparation of cross-country routes, and the preparation and maintenance of crossings at water obstacles. The major engineer support measures include creating passages across obstructions, and breaches in obstacles created by enemy remote mining of an area; preparing routes around or through obstructions, zones with high NBC contamination levels, barriers, and areas affected by demolition, fires and flooding; enabling troops to travel barely passable sectors of roads; preparing shelters in rest areas; and setting up and maintaining water supply points.

Great importance attaches to camouflage measures, to the skillful use of organic and local materials to camouflage vehicles and combat equipment during movement, on halts or in rest areas, setting up various types of screening using engineer subunit resources on open sectors of the route, and using camouflaging smoke screens when negotiating crossings and defiles.

In the course of a march, troops may be subject to enemy aviation and nuclear strikes and the effects of precision and incendiary weapons, and remote mining. It may become necessary for columns, before they reach their designated area or line, to counter enemy reconnaissance and sabotage groups and airborne assault forces (airmobile forces) or to employ part of their resources to defeat enemy ground groupings breaking through from the flank or approaching from the depth. This makes it necessary not only to take combat support measures, but also to preserve troop fighting efficiency and to skillfully **repel enemy strikes** (figure 14).

Troop air defense on the march is conducted with due regard for measures envisaged by the senior commander (chief). All-round air obser-

vation is conducted from every vehicle in all subunits. In the event of enemy air attack, troops are alerted immediately by a set signal. As a rule, the columns continue to move at a higher speed and with greater intervehicular spacing. If road structures are heavily damaged and it is impossible to skirt the demolished sectors, some columns will halt until the obstruction is removed.

Antiaircraft weapons destroy the enemy by firing on the move or from the short halt. Small arms fire by subunits so detailed may also be directed against aerial targets. Road sectors destroyed by air strikes are bypassed on reserve or newly reconnoitered routes.

Subunits and units that have retained their fighting efficiency after enemy nuclear strikes continue their move. Columns suffering direct hits take steps to restore troop control and the fighting efficiency of personnel, to carry out nuclear damage control, and to clear the roads or reconnoiter detour routes. Areas hit by nuclear strikes are bypassed; if the resulting areas of barriers, high levels of radiation, demolition, flooding and fires prove impossible to bypass, they are negotiated at maximum speed and with increased spacing along axes assuring the least damage to and contamination of personnel and combat equipment. Under these circumstances both individual and collective protective equipment is used; vehicle hatches, doors, ports, and louvers are all closed.

If, on the orders of the senior commander (chief), the column must wait for high radiation levels to drop, troops disperse, take shelter, and camouflage themselves. Contaminated personnel are evacuated to the nearest medical facilities, while damaged weapons and combat and other equipment that cannot be repaired in the unit are sent to the recovery and repair facilities under the direct control of the senior commander (chief).

If the enemy deploys incendiary weapons against troops on the march or if these troops have to negotiate an area of fires from the line of march, measures are taken to ensure the safety of personnel, to safeguard the weapons and combat and other equipment, and to fully exploit the protective features of this equipment and personal protective equipment. The columns are quickly led out, either straight ahead or to the windward side of the burning area, where they stop. Armament and vehicle fires are put out, and personnel are evacuated and given first aid. After this, the columns resume movement, while the wounded and sick are either evacuated to the nearest medical facilities or else proceed with their subunits.

In the event the enemy conducts surprise remote mining of an area in the troop movement zone, reconnaissance of the mined sectors is organized immediately and, if it is impossible to bypass them and continue to move

in the assigned direction, the necessary resources are detailed to clear passages in the obstacles thus created through which personnel and materiel can pass.

Gaps in minefields on march routes are made by movement support detachments, breaching teams, tanks with mine clearing attachments, or manually. Each of these tanks clears two tracks, along which dismounted motorized rifle subunits, following the tanks, negotiate the minefield. Tanks not so equipped, infantry combat vehicles, prime movers, and trucks negotiate minefields along lanes at least 5–6 meters wide that have been cleared throughout their width either manually, by detonating the mines with specially prepared explosive charges, or through offset minefield clearing by tanks with the appropriate mine clearing attachments.

During the Great Patriotic War, troops on the march always took measures to counter enemy diversionary reconnaissance groups or airborne assault forces. When information was received about an area in which diversionary reconnaissance groups were active or where enemy airborne assault forces had landed, units and formations would step up reconnaissance, the protection of dangerous sectors on the march route, especially bridges and defiles, and local security for the main body; in each column, alert subunits would be assigned to move at the head of the column. Sometimes when, in the commander's estimation, there was a likely area for an airborne assault landing on the axis of advance of the troops, the necessary resources were dispatched in advance to guard the area until the arrival of the main body.

Troops usually went over to aggressive action against enemy diversionary reconnaissance groups and airborne assault forces only when enemy subunits attacked columns or seized sectors of the movement route. However, only the minimum necessary forces were called on for this, while the other subunits and units continued the march.⁹

Today, the enemy has increased capabilities for employing diversionary reconnaissance groups, airborne assault forces, and airmobile forces. Therefore, it is necessary to resort to aggressive action against diversionary reconnaissance groups and airborne assault forces more often than in the last war, and more resources must be enlisted to counter them.

Enemy diversionary reconnaissance groups and airborne assault forces encountered on movement routes are destroyed by reconnaissance, march security and traffic control service subunits, and by specially detailed subunits from the main body. If there are large groups of airborne assault or airmobile forces to be destroyed, the first to be called on are the

following that are located closest to the area where they landed: the combined arms subunits, antiaircraft weapons, artillery, and, on the orders of the senior commander (chief), aviation.

Enemy airborne assault forces are defeated by air strikes against them, by resolute tank and motorized rifle subunit attacks, and by splitting them up and defeating them in detail. If the circumstances call for uninterrupted movement, troops seal off the assault forces with part of their forces, while the main body bypasses the enemy-held area and continues the march. In this case, the assault forces are defeated by subunits detailed by the senior commander (chief). If there is any threat of continued aggressive action from the remainder of the defeated enemy assault forces, local and march security of the column is stepped up, especially on the flanks and rear; if necessary, stationary flank security elements are posted on threatened march route sectors.

During the march, troops may encounter enemy groupings that have broken through from the flank or advanced from the depth. To defeat them, only the minimum necessary resources should be committed: the forward detachment, the advance guard, the forward artillery and, if need be, some of the main body's motorized rifle or tank units. The remaining resources bypass the combat area, dispatch a new forward detachment and march security, and continue their move to the designated area or indicated line.

The actions of the subunits detailed to defeat the enemy must be directed toward the quickest possible accomplishment of the assigned mission, attacking from the line of march. Hitting the enemy with damaging fire, they use part of their forces to contain the enemy from the front, while the main forces execute a maneuver and carry out a resolute strike against him, primarily in the flank and rear. If insufficient resources have been detailed to defeat the enemy and circumstances do not permit the detailing of additional resources, these subunits may temporarily go over to the defensive on an advantageous line. After the enemy has been defeated, the subunits advance at higher speed to rejoin the main body.

Whatever the conditions, reliable cover against air strikes must be provided for both the main body and the subunits detailed to defeat enemy forces on the ground.

Technical and logistic support of troops on the march has become considerably more complex in both nature and scope of missions than it was in the Great Patriotic War. This is explained by the fact that today's troop movement takes place under different conditions, troops are better equipped, organizational structure is greatly improved, and troop requirements for materiel, recovery and repair, and medical aid for the wounded

and sick, have increased drastically, especially when troops are moved in situations where nuclear weapons are employed.

On long-distance marches, consumption of food and of petroleum, oil, and lubricants has increased drastically, while on marches where an engagement is anticipated, the consumption of ammunition for anti-aircraft weapons and sometimes for anti-tank weapons, tanks, and artillery has also dramatically increased; the same applies to recovery and repair of equipment, medical aid for the wounded and sick, and the need to evacuate them.

The purpose of technical support for troops on the march is to maintain armament, combat and other equipment, ammunition, and military technical stores in good condition and constant readiness for use in combat and, if necessary, to meet the needs of the troops for weapons, ammunition, and military technical stores on a continuous basis. Technical maintenance of vehicles is performed at halts, and during daytime (night-time) and day's rests and is extensive enough to ensure that they function reliably for the entire move and arrive in the designated area or on the indicated line in good mechanical working order; the servicing is done by crews (details), driver-mechanics (drivers), and also by the personnel of technical support subunits. Vehicles that break down during the march are taken off to the right of the road and usually repaired on the spot; should such repair prove to be impossible or impractical, the vehicle is recovered and transferred to the repair facilities under the direct control of the senior commander (chief).

Logistic support of troops on the march is carried out with a view to uninterruptedly meeting troop requirements for fuel, provisions, kit and medical stores, and other material resources, delivering these resources to the troops, replenishing petroleum, oil, and lubricant supplies, feeding personnel, giving medical assistance to the wounded and sick, and evacuating them. Reserves of material resources are usually replenished in the daytime (nighttime) or day's rest areas, while vehicles with limited range are also refueled during halts, primarily during the halts of about 2 hours' duration in the latter half of a day's march. Hot meals are prepared and distributed to personnel three times a day, as a rule: before the march begins, during the halt in the latter half of a day's march, and in the daytime (nighttime) rest area. Medical assistance is provided for the wounded and sick on the spot, after which they either proceed with their own subunits or are evacuated to the nearest medical facilities; if circumstances do not permit evacuation, they proceed with the medical subunits of their units.

During the Great Patriotic War, **troop control on the march** was conducted from mobile control posts. Subunit commanders moved at the

heads of columns on foot, on horseback, or in a tank or transport vehicle and maintained the established march order. Regiments were controlled from command posts that traveled at the head of the main body column or behind the advance guard. In cases where the command post moved with the main body, the regimental commander traveled with the advance guard.¹⁰ Divisions were controlled from command posts that moved at the head of the main body column.

As a rule, radio communication during a march was forbidden. In the interests of troop control, only mobile communications facilities and the traffic control service radio nets were used, as well as commands and signals.

Today, as in the past war, subunit commanders move at the head of a column, usually in a tank, infantry combat vehicle (armored personnel carrier) or transport vehicle. Checking the march route against the map and using signals and mobile communications facilities for troop control, they strictly maintain the established march order. Subunit and unit troop control is carried out from mobile control posts equipped with modern means of transport, communication, and surveillance.

The constant threat of enemy use of NBC weapons makes it necessary to disperse officers and means of communication and transport to several control posts operating simultaneously and to move them via various routes during the march at the head of the main body columns and of the technical and logistic support subunits. If necessary, the commander, with a small group of officers and communication equipment, can move forward and travel with the forward detachment or the advance guard.

Communications on the march are provided mainly by mobile communications facilities and signaling equipment. Helicopters can be used to perform these and other missions: monitoring the movement of troops; passing the necessary orders on to them; and supplying more detailed data about the situation in areas hit by the enemy with nuclear strikes and on routes bypassing zones with high radioactive and chemical contamination levels, as well as areas affected by fires, floods, and demolition. Radios are set to receive only. On the instructions of the superior staff, ultrahigh-frequency radio, radio relay, and line communications can be used on the march routes for warning the troops and for fire control and directing the traffic control service.

High levels of morale, psychological stability, and combat skills of personnel are crucial to the success of a march. In combat conditions a great many situations arise, and skill in turning them to advantage may contribute to improving the morale, psychological stability, and combat skills of personnel.

The 280th Guards Rifle Regiment was marching from the Korocha region near Belgorod on 6 and 7 July 1943, when they came across eight Nazi tanks, knocked out and burnt, at the

village of Maruskevichi. A halt was called by the tanks, during which the regimental commander, the commander of artillery, and the battalion commanders recounted to personnel how the Nazi Tigers had been knocked out; they pointed out the tanks' vulnerable spots, reminded the men of methods used by infantry to counter them, and cited examples of successful action against tanks by courageous soldiers. This activity had a positive influence on the subsequent actions of regimental personnel.¹¹

On marches, especially those during which an engagement is anticipated, the rapport of commanders and political workers with their subordinates and their personal example in resolute actions, bravery, combat skills, and self-denial take on great significance.

If, while on a march, troops receive a new mission that involves changing their axis of movement, the decision must be made and subordinates given the missions for the march on the new axis in the shortest time possible. Missions are immediately updated for those subunits that have already proceeded on the old axis. Reconnaissance, march security, a march support detachment, a subunit to provide traffic control service, and, if necessary, a forward detachment are all dispatched along the new axis. The main body is moved onto the new route by the shortest way possible, if possible without stopping and with minimal reconfiguration of march columns.

If troops receive a combat mission during a march, all planning for the enemy's defeat is done on the move, while closing with the enemy.

The march ends when the troops arrive in the designated area or reach the indicated line.

2. Movement on Heavy Tractor-Trailer Units

At the current level of troop motorization and mechanization, for all practical purposes each subunit of any combat arm, the combat service support troops and logistics, and all combined arms subunits, can move in organic tanks, infantry combat vehicles, armored personnel carriers and other means of transport. However, marches, particularly over long distances, make great demands on personnel, primarily on driver-mechanics and drivers of combat and transport vehicles, increase the wear and tear on armament and combat equipment, and lead to rapid expenditure of motor transport assets, particularly in terms of the fuel consumption of heavy armored vehicles and engineer and other equipment. This is why subunits with such equipment are more and more often moved on large trailers. These are heavy tractor-trailer units consisting of tractors pulling trailers carrying loads of about 50 tons.¹²

Heavy tractor-trailer units are a new means of moving subunits and their equipment. Motor transport units equipped with trailers can move at a rather high speed and are not as tied to communication routes as rail or

water transport. The use of heavy tractor-trailer units makes it possible to conserve motor transport assets, reduce wear and tear on equipment, save the energies of crews, and reduce consumption of petroleum, oil, and lubricants. Moreover, subunits thus transported maintain a high degree of combat readiness since, when necessary, after quickly unloading from the trailers, they can engage the enemy from the line of march or after brief preparation. Therefore, troops are moved with heavy tractor-trailer units both when marches are conducted where there is no threat of enemy contact and when engagements are anticipated, especially if the purpose of the march is to move forces to areas far from the line of contact.

It is mainly tanks that are moved on heavy tractor-trailer units. When sufficient numbers of tractor-trailer units are available, they can be used to move engineer and other equipment that is limited in range and speed. As a rule, tanks and other equipment are moved on trailers in single columns, which are either included in the main body of the unit carrying out the march or proceed independently to the appointed area. The latter mode of column movement occurs only when equipment is moved deep in the rear of the friendly forces.

If a column of heavy tractor-trailer units carrying tanks and other combat equipment is traveling within the grouping of a unit on the march, the conditions under which the column moves equipment and operates while preparing for and executing the move will be similar to the movement conditions and actions of the main body's column on the march. They may differ somewhat when the tractor-trailer column carrying the heavy equipment is moving independently at a considerable distance from the line of contact.

Loading areas for heavy tractor-trailer units are assigned to tank subunits and subunits with heavy equipment. Loading areas are chosen so as to provide good masking against air observation, ease of approach, and natural cover. In addition to the main loading areas, reserve loading areas are planned in case it proves impossible to use the main areas as a result of enemy air actions and nuclear or chemical strikes.

Tanks and other equipment are loaded onto the trailers precisely at the designated time and covertly, while safety measures are observed in order to avoid accidents and damage to combat and transport equipment. Loading sequence and times depend on specific conditions: whether all vehicles are loaded simultaneously or in succession, one vehicle after another; the nature of enemy action; meteorological conditions, weather, time of year and day; and level of crew training and skills in loading combat vehicles onto trailers quickly and correctly under difficult conditions. A trained crew can load and secure a tank in 10–15 minutes. A tank

company can complete a simultaneous loading in 15–20 minutes, and a tank battalion can finish in 30–40 minutes; loading in succession takes a tank company about an hour.¹³

The tank and motor transport subunit commanders supervise the loading of tanks onto the trailers together. Loading is carried out on level horizontal surfaces. Tractor-trailer units are arranged so that they face in the direction in which they will be departing on their movement route.

The tank commander personally supervises the loading and securing of his fighting vehicle. The driver-mechanic drives the tank onto the trailer platform under its own power, while the tractor driver-mechanic is in his cabin ready for immediate action. The tank, turret locked in travel position, must drive smoothly onto the trailer platform, in low gear and at minimum speed. Once loaded, the tank is fastened down securely onto the trailer with guy wires; wooden wedges are hammered between the road wheels to prevent the tank from shifting; the engine is shut off, and the tank is put in low gear with the brake on.

To reduce loading time, equipment may be secured after the tractor-trailer unit has been driven out of the loading area. Depending on the type of tractor, the tank crew travels in the tractor cabin or body. When the column's air defenses need to be reinforced with tank weapons, one crew member may be placed in each tank.

The trailer column's route is chosen with due regard for the load capacity of bridges on routes skirting large built-up areas, for road junctions and other likely targets of enemy nuclear strikes, and for defiles and other choke points where the column might be exposed to enemy air strikes. In the interests of defense against precision weapons, the route selected must run along folds in the ground and through wooded areas, and must be protected against enemy radar reconnaissance by screens and smoke screens. Insofar as possible, the route must not have steep upgrades or inclines, sharp turns that would require the vehicles to drastically reduce speed, or extended sections of sandy or other soft surfaces that would cause them to skid.

On routes that are in good condition, trailer columns can develop speeds of 45–50 km/h.¹⁴ However, because of the difficulty of controlling trailers carrying heavy loads (a trailer carrying a heavy load drifts when traveling fast), it is not advisable for the column to move at more than 30 km/h. On inclines, the speed should not exceed 40 km/h; level crossings are negotiated at no more than 15 km/h. The distance between trailers may reach 50 meters; this is increased on upgrades or inclines.

During a move, bridges with insufficient load capacity to carry the entire heavy tractor-trailer unit at once are crossed first by the tractor, and then by the trailer, which is pulled over to the tractor with a winch. In order to get over sections of road that are difficult for the trailers to negotiate, the tanks may be unloaded and used to tow their tractor-trailer units, then reloaded onto their transport to continue the move. If there is damage on the route, if fires or floods occur, or if it is necessary to cross a bridge with a low load capacity, then the tanks may also be unloaded from the trailers, proceed under their own power around the obstruction confronting them, and then be reloaded onto the trailers.

Insofar as possible, tractor-trailer units should unload on level sections of the road, halting before the approaches to an obstruction, either maintaining the distance between vehicles that was established for the move or reducing it to 20–25 meters. Depending on the specific conditions, mainly on the skills of commanders and tank and tractor driver-mechanics, the weather, and time of year and day, a tank company may take about 30 minutes to unload and a tank battalion about 45 minutes. The tanks are reloaded after they reach a road with a firm surface.

A trailer column carrying tanks may consist of dozens of moving tractor-trailer units and be several kilometers in depth. When a column of this sort is moving at a considerable distance from the front lines, enemy aviation is likely to exert pressure on it with any type of weapon. This is why great emphasis must be placed on providing the column cover against enemy air strikes while loading, moving, and unloading. Cover is provided mainly according to the plan of, and using resources controlled directly by, the senior commander (chief). Antiaircraft weapons assigned to provide direct cover travel at the head and tail of the column.

As a rule, columns continue moving during air attacks, increasing their speed and the distance between vehicles, while the antiaircraft weapons repel the enemy attack by firing on the move or from short halts. Tank crew members in their tanks use antiaircraft machine guns to fire on the aircraft as they descend. When continued movement is impossible, the column halts and personnel take cover in folds in the ground and fire on low-flying enemy aircraft.

In addition to conventional weapons, including precision weapons, enemy aviation may also employ NBC weapons against subunits being transported on heavy tractor-trailer units. When passing near important large installations, the column may be exposed to the destructive effects of enemy strikes against these installations using high- and super-high-yield nuclear warheads and as a result may suffer casualties. Some tractor-trailer

units and the combat equipment they carry may be damaged, and contaminated zones, barriers, and areas of destruction, fire and flood may be encountered on the route.

After an enemy nuclear strike, subunits that have retained their fighting efficiency continue moving. Measures are taken to restore the fighting efficiency of subunits that have been exposed to the direct effects of NBC weapons and to control the damage. The fighting efficiency of subunits may be restored with resources from the subunits themselves or by drawing on resources from other subunits in the column on the orders of the senior commander (chief).

Tanks and other combat equipment are reloaded from damaged tractor-trailer units onto reserve units taken from the column's technical maintenance echelon. After receiving first aid, the wounded and sick are evacuated to the nearest medical facilities or proceed with their subunits when immediate evacuation is impossible. Damaged combat equipment and transport that can not be repaired with resources in the column is transferred to repair facilities under the control of the senior commander (chief).

Areas with high radiation levels, barriers, and areas of destruction, fire, and flood are skirted or negotiated on routes that will ensure minimum damage to and contamination of personnel and combat equipment. In so doing, personnel employ personal protective equipment; tractor cabins, infantry combat vehicle hatches and firing ports, and tank louvers are closed tight. Partial decontamination is carried out after leaving the zone of radioactive contamination or, in cases of contamination by chemical warfare agents, immediately. Complete decontamination is carried out in the rest area or after the move has been completed.

A subunit's move on heavy tractor-trailer units is completed when the column has arrived in the assigned area and the tanks and other combat equipment carried on the trailers have been unloaded. After the subunits have been unloaded and assigned a new mission by the senior commander (chief), they proceed to carry it out, while the transport departs as assigned.

3. Movement by Rail

In modern warfare, as during the Great Patriotic War, rail transportation is used extensively in moving troops over long distances. This method of troop movement makes it possible to conserve the strength of personnel, to protect weapons and combat and other equipment from wear and tear, and to conserve motor transport resources. It ensures rapid move-

ment of troops regardless of the season and of the physical condition of personnel at the time of the move. The rate of movement is practically independent of weather conditions.

However, troops use rail transportation less often than marches, because of the great complexity involved in preparing for and ensuring the safety of the move. As a rule, the locations of stations, bridges, and other structures on rail lines are known to the enemy, who has a large arsenal of long-range weapons at his disposal and can inflict significant losses on troops and disrupt their movement by making surprise strikes with aviation or nuclear, chemical, or precision weapons.

In order to ensure that troops being transported arrive at the designated area on time and fully battle-ready, what is needed primarily are thorough preparation for transporting armament, equipment, and personnel; able organization of and comprehensive support for the move; secrecy in carrying it out; and high levels of vigilance and discipline among the troops.

Before entraining, troops are usually stationed in waiting areas, where they go through final preparations for the move. In each such area are stationed the subunits that comprise a single troop train and are assigned to entrain at one railway station. Waiting areas are selected about 3–5 kilometers from the entraining station, i.e., at a distance that precludes the troops' being affected in the event of a nuclear strike on the station. It is chosen with due regard for the nature of the terrain, the presence of natural cover, convenient approach routes, and possibilities for camouflage, especially against aerial observation. In addition to the main waiting area, a reserve area is chosen, in case circumstances make it impractical to get to the main area or if serious contamination, destruction, or fires should force the troops to leave (figure 16).

In the waiting area, troops disperse, prepare cover for personnel and combat equipment, and carefully camouflage themselves. Preparations for the move are carried out under concealment. The subunits organize observation, local security, radiological and chemical reconnaissance, and warning of air attacks or NBC contamination. Alert fire weapons are detailed, which, along with the antiaircraft weapons, are constantly ready to repel enemy aircraft. Fire fighting measures are implemented, as well as measures to protect personnel and materiel. Traffic control is organized along the routes the troops will take to their loading sites.

During the preparation period, medical precautions are taken; supplies of personal protection equipment for personnel are checked. Weapons and equipment undergo technical inspection and repair and vehicles are fully refueled. The order in which the subunits are to move out and the loading

sequence and times are established. Personnel, weapons, equipment, and stores are allocated to boxcars and flatcars. A movement support estimate is compiled that keeps in mind the need to preserve the organizational integrity of the subunits during the move and ensure their readiness to join combat after detraining.

Personnel, rations, and kitchens in operation during the move are slated for allocation to boxcars, while weapons and combat equipment are placed on flatcars and gondolas, and stores in transport vehicles and boxcars. Fuel and other hazardous cargo may be transported in boxcars, gondolas, or flatcars if it is in fuel cans or other special containers; if it is in bulk, it is transported in railway tank cars, tanker or refueling trucks, and also on specialized rail cars.

A troop train with its complement is configured so as to locate the cars with personnel and operating kitchens in its middle section, while the flatcars and gondolas with combat equipment are at either end. In order to permit ease of fire for the antiaircraft weapons, the flatcars carrying them must be separated from the locomotive and from boxcars and gondolas by at least one flatcar with a low-profile load. Cars with hazardous cargo are separated from the locomotive, the end of the train, passenger cars, and those with operating kitchens—and, if need be, from each other—by special means: empty cars or cars carrying nonhazardous cargo.

Armament, stores, and combat and other equipment are loaded and personnel entrained under concealment, observing safety measures with a view to preventing accidents and damage to equipment, stores, and means of transportation.

Loading equipment and stores takes the most time. It is therefore done first. Immediately before loading, combat equipment is prepared for transport by rail. At precisely the set loading time, the subunits move out to the loading sites in the set sequence and, on the order of the troop train commander, begin to load the weapons, equipment, and stores onto the rail cars; this is usually done simultaneously along a good portion of the train's length, using all available cargo handling equipment.

Combat equipment is loaded either with cranes or under its own power. The subunit commander directs each combat vehicle as it drives onto the train, while the vehicle commander directs its subsequent movement on the flat or open car and its final placement. The vehicles must move only on the commander's signals, without jerks or sharp turns and in low gear. The arrangement of weapons and combat and other equipment on the rail cars takes into account the sequence in which they will be

unloaded and brought into action; they are arranged as densely as possible, in order to make full use of the car's load capacity, and also so as not to endanger trains moving on adjacent tracks.

After the combat equipment and stores have been arranged on the rail cars, they are firmly secured to prevent both lateral and longitudinal shifting. Fastening materials (wires, wooden beams, inserts, struts, stakes, chocks, shackles and pins) and securing equipment (sturdy metal chocks, cable and chain stays, and wood beams, found in every vehicle) are used for this. The vehicles are parked in low gear with the brake on; turret traverse mechanisms are locked and sealed. The flatcars' side boards are raised and secured with catches, although if the vehicles' dimensions make this impossible, they are secured firmly in the dropped position. The weapons, combat equipment, and stores on flatcars and gondolas are carefully camouflaged.

After the combat equipment and stores have been loaded, the personnel board the troop cars; this operation must be completed at least 10 minutes before the train departs. Small arms are placed on bunks, beneath them, on specially equipped racks, or on the floor of the car. After boarding is complete, the troop cars are camouflaged.

Depending on the type of equipment transported and the condition of the loading sites, loading may take from three to five hours; if loading takes place at night under blackout conditions or if personnel have to work in gas masks, these time norms may increase by as much as 20 percent.

If an air raid warning is given while a troop train is being loaded, all work ceases immediately, and personnel and combat equipment are dispersed and concealed. If loading and boarding have already been completed, either the train leaves the station or personnel detrain and withdraw to cover, while a guard detail is left to protect the combat equipment and stores. If there is an enemy nuclear or chemical strike, the troops withdraw from the contaminated zone, restore their fighting efficiency, and take NBC damage control measures. Depending on the situation, the troops may be brought to a new waiting area, continue loading at the original station, or begin loading at a new one.

During the move by rail, all personnel must maintain great vigilance and discipline.

Observation of move regulations by personnel is monitored by subunit commanders, who implement their control function using runners and sound and light signals and also by personal contact with subordinates

during halts. The troop train commander also uses line communications. Radio communication is forbidden on the train for the duration of the move.

Troop movement by rail may take several days. If the enemy discovers the troop train, he may hit it with aviation or nuclear, chemical, or precision weapons, especially when the train is passing through large stations, mountain passes, or over bridges spanning water obstacles. As the train approaches the front line, airborne assault force landings, diversionary reconnaissance group action, and even breakouts to the movement route by mobile enemy groupings may be anticipated.

In order to rule out surprise enemy attacks, to prevent strikes from being made against the subunits, or to minimize their losses and to ensure the timely arrival of the troop train in the designated area, subunit commanders must organize effective air defense and implement measures for comprehensive support, especially combat and logistic support, during the move.

Troop train air defense is carried out by subunit antiaircraft weapons as well as those under the direct control of the senior commander (chief) organizing the move. If enemy aircraft appear, a warning signal is given, either one established by the troop train commander or else the one generally used in transport (a series of short sounds). At the signal, the doors, windows, and hatches of the troop cars are closed and protective equipment is put into the ready position. Antiaircraft weapons and other guns detailed to repel enemy aircraft open fire from the moving train on the order of the troop train commander; if it is a surprise attack, they may fire at will.

Observation and local security of the troop train are provided by observation posts (at the head, middle, and end of the train), alert weapon crews, patrols and alert subunits, and a guard detail assigned to protect the combat equipment and stores.

To repel enemy ground forces, guns and tanks are enlisted; they are detailed in advance and prepared to fire on the move right from the flatcars. Troop train antiaircraft weapons not engaged in repelling enemy air raids are also used.

Warning of NBC contamination is given either by a signal established by the troop train commander or the one used in transport (a series of long and short sounds or, in a station, repeated striking of a rail). Personnel don gas masks and, if necessary, other personal protection equipment and, as far as possible, take up places on the middle and upper berths of the troop cars. Doors, windows, and hatches are closed tight and cracks

stopped up with rags, paper, and other materials at hand. Food preparation in kitchens is forbidden; reserves of drinking water, provisions, and the kitchens themselves are carefully covered; combat equipment is also covered as well as possible.

If a sector of the rail line is radioactively contaminated, it may be crossed on condition that the radiation dose received by personnel does not exceed permissible norms. The train will negotiate such sectors at maximum speed and without stopping. Personnel use their personal protection equipment; tank and other armored vehicle crews may take their places in the vehicles. After the contaminated sector has been negotiated, the subunits undergo partial decontamination without delaying the train; full decontamination is carried out only after detraining.

Hot meals from the operating kitchens are distributed to troop train personnel at least twice a day, as a rule, during halts. The wounded and sick are given necessary and timely medical assistance. Those unable to proceed with their subunits are sent to the nearest medical facilities. Those with communicable diseases are put into the isolation car or transferred to special medical facilities. If 2–5 percent of the personnel are found to have a communicable disease or if even one case of an especially dangerous infection is found, the troops detrain and go to an observation point.

Circumstances may arise in which troops are forced to interrupt their move, whether to engage enemy ground forces or to bypass a demolished or heavily contaminated area under their own power, and then continue the move by train or by march to their destination. Troops being moved must therefore be constantly ready to detrain suddenly and quickly at unprepared sites, to march either to their destination or around demolished and heavily contaminated areas, and to entrain again or engage enemy forces on the ground.

On arriving at the detraining station, personnel leave the troop cars on the order of the troop train commander and split up by subunit to the sites where the combat equipment and stores will be unloaded. Those subunits not detailed to unload equipment and cargo immediately withdraw from the station area to the assembly area, 3–5 kilometers away from the unloading sites. As the unloading proceeds, all personnel make their way there with the weapons, combat and other equipment, and stores.

Unloading takes place under cover and must be completed by deadline. Depending on the type of equipment transported and the condition of the unloading sites, a troop train may take 2.5–4 hours to unload; if personnel are unloading at night under blackout conditions or if they have to work in gas masks, these time norms increase by as much as 20 percent.

If a warning signal for enemy aircraft is given between the time the train arrives in the station and the time it unloads, either the train leaves the station with its troop complement, or personnel detrain and withdraw to the nearest cover, and a guard detail is left with the train to protect the combat equipment and stores. If the enemy makes a nuclear or chemical strike on the troop train during unloading, steps are taken to restore the fighting efficiency of subunits, carry out damage control, and speed up unloading. The subunits withdraw without delay to the assembly area or to a special decontamination center within the unloading area, where either partial or full decontamination is carried out.

Troop movement by rail ends when the train has arrived at its station of destination and troops have all detrained. Personnel, combat equipment, and stores concentrate in the designated area; troops are brought to full combat readiness, are given their new mission, and proceed to carry it out.

4. Movement by Water Transport

During the Great Patriotic War, water transport was used to move troops. Sea and river transport was used when a sea or large lake lay on the movement routes or when the courses of navigable rivers coincided with the direction of troop movement. Water transport was also used for actions on coastal axes, i.e., on the coasts of the Baltic, Black, or other seas.

Troops are moved by water transport even today. True, it is not as commonly used as marches or troop movements by rail, since it requires the availability of equipped wharves and heavy cranes, which are needed for more protracted loading and unloading operations, and sometimes also for the transfer of men and equipment in the roadstead. Moreover, the locations of ports (docks) are easily discovered by the enemy, which increases their vulnerability to air, nuclear, and chemical strikes and attacks using precision weapons and incendiary agents.

Nevertheless, movements by water transport make it possible to conserve the strength of personnel, protect equipment against wear, economize on motor transport, and move troops at a minimum of 25–30 km/h, with increased efficiency being achieved the greater the distance over which the move is made. Therefore, if the situation permits, seagoing or river transport may be used to move troops and will consume less time than marches. It is expedient to move troops by water, especially over great distances.

Troops that have arrived for embarkation are placed in waiting areas located 3–5 kilometers from the loading ports (docks); if it is not possible

to use the main waiting areas, reserve areas are employed. Both the main and reserve waiting areas are chosen with due regard for the protective and masking terrain features and the availability of convenient routes for moving to them and from them to the loading ports (docks).

In the waiting areas, subunits disperse and prepare the cover needed for men and equipment, organize air defense, institute all types of security measures, and set up movement control on the routes to be used for embarkation on seagoing or river transport. Subunits are situated so that those that load first are located close to the routes leading to the loading sites. This eliminates the need for one subunit to pass another, prevents congestion on the routes for moving out, and eliminates pileups of personnel and combat equipment at the wharves.

The time spent in the waiting area is used to prepare for loading. Essential medical measures are taken, combat equipment undergoes maintenance inspection and repair, and vehicles are refueled. Finally, the loading plan and the schedule for the embarkation of personnel, weaponry, combat and other equipment, and stores are updated.

For movement by water transport, troops are distributed by echelon, ship, and ship accommodations. A troop echelon is a military unit or subunit organized for a move on a single ship or towed barge. Several echelons may be transported on a large ship. The troops are formed in echelons so that subunits are not split up, to ensure that constant combat readiness is maintained, and, if necessary, to enable them to fight independently after debarkation.

Self-propelled ships and towed barges that have bays and decks suitable for accommodating men and combat equipment and that provide safe transport can be used to transport troop echelons. Ship bays are prepared and equipped to accommodate personnel for long stays; available cargo handling equipment, implements, and pumping, firefighting and emergency rescue equipment are put into good working order; the ships are fueled, stocked with fresh water, and provided with the necessary rescue and firefighting equipment, and a sick bay and isolation ward are prepared to provide medical services for personnel.

The troops in the waiting area remain in constant communication with the officer in charge of the echelon. At a precisely determined time, immediately before the echelon is to embark, they are called from the waiting area to the embarkation site. They move by subunit, in order of priority of loading, and in such a way that the subunits can proceed with embarkation immediately on arriving at their embarkation sites. Since the enemy may detect and disrupt troop embarkation, even if the port (dock)

is far away from the front lines, armament, equipment and stores must be loaded and personnel embarked covertly and quickly, without allowing any delays in loading.

Troop echelons are loaded onto seagoing or river craft in ports and at moorings on wharves or, using collapsible transshipment ramps or temporary wharves, on unprepared river banks. When the water at a wharf in a port is shallow, troop echelons are loaded onto seagoing vessels in the roadstead using harbor craft.

The armament, equipment, and stores of an echelon are loaded first. As a rule, loading is carried out on a broad front, using mechanical equipment and cargo handling devices and implements, observing safety measures in order to prevent accidents and damage to armament, equipment, and transport. First of all, the holds are loaded as much as possible through all hatches. If conditions permit, equipment and stores are loaded into the holds and onto the decks simultaneously. When loading, it is essential to try to make maximum possible use of available load capacity, cargo capacity, useful deck space, and ship accommodations.

Combat equipment must be stowed with due regard for the strength of the decks and bottom of the ship, where possible along its center line, so that the ship's clearance limits are not exceeded. Ammunition, explosives, petroleum, oil, and lubricants and other hazardous cargoes should be stowed in specially designated places.

Amphibious equipment, antiaircraft weapons covering the embarkation area against enemy air strikes, and tractors used to speed up the loading of combat equipment are loaded onto the ship last, just before the personnel embark.

Armament, combat and other equipment, and stores are loaded onto seagoing and river vessels using wharveside and floating cranes, ship booms and winches, under their own power, and with the aid of tractors.

Dock workers and ship crews load cargoes using cranes and ship booms; they are assisted by echelon loading teams. Combat equipment, moving at low speed, moves onto a wharf, is placed in the spot allocated for it, and is prepared for slinging. Vehicle engines are turned off, tank turrets are turned with their gun barrels to the rear, guns are put in travel position, etc. The cargo handling teams working on the wharf and the ship sling the equipment and set it in place on the ship. Loading implements such as straps, nets, cargo trays, and slings are used to sling the combat equipment.

Equipment must be lifted from the wharf and transferred and lowered to the deck or hold of the ship slowly, without jerking, observing safety measures. This is controlled with the aid of guide ropes. Loading seagoing ships with cranes and ship booms takes, on the average, 4–10 minutes for a gun, 8 minutes for a truck, 10 minutes for a tractor, and 20 minutes for a tank. The times for loading combat equipment onto river vessels are approximately 20 percent less.

Loading of combat equipment under its own power or with winches or tractors occurs only in the case of river vessels and low-sided seagoing vessels, such as amphibious ships, flat barges, and so on. Tanks, infantry combat vehicles, armored personnel carriers, tractors, trucks, and other tracked or wheeled fighting vehicles are brought up to their assigned loading places, aligned with the axis of the ramp, then in low gear, without jerking or turning, they ascend the ramp under their own power to the deck of the ship and stop on the designated spot, after which their engines are turned off and brakes set.

The subunit commander directs every fighting vehicle as it is driven onto the ship, and the vehicle commander controls its movement on deck and its placement. Loading combat equipment onto river vessels under its own power takes on the average 3–4 minutes for a truck, 4 minutes for a tractor, 5–8 minutes for a tank, and 2–5 minutes for a towed gun.¹⁵

After the combat equipment and stores have been stowed, they are fastened down securely to prevent them from shifting from front to back or from side to side as the ship rolls. When troops are moved on river vessels along rivers, only the combat equipment that is placed athwart the ship's fore-and-aft axis is fastened down. When troops are transported on river vessels across large reservoirs or lakes, or on seagoing ships, all the combat equipment is fastened down. Combat equipment is secured by the vehicle crews under the supervision of the subunit commanders, using bars to block the tracks and wheels, fastening equipment and stores to the ship's frames, bollards, ribs, and beams with the aid of wires, cables, and chains. The necessary fastening materials are wire, nails, clamps, bars, wedges, and guys, which are provided by the loading port.

During the move, subunit commanders must constantly check to see that combat equipment and stores are fastened securely.

After the equipment and stores have been loaded, echelon personnel embark onto the ship. Subunits embark in a set sequence using gangplanks and gangways with safety lines; subunit commanders supervise the embarkation and accommodation of personnel in the ship bays. Small arms are stowed in specially fitted rifle racks, in the men's quarters in the passages

between sections, and on the decks (except the upper ones). Personnel must finish embarking at least 10 minutes before the ships are to leave.

Special harbor vessels are used to embark troops onto ships standing in a roadstead. In the loading port, these vessels are loaded in a set sequence, the echelon's combat equipment and stores are fastened down immediately, and personnel are embarked. Harbor vessels carry echelon personnel, equipment, and stores from shore to the seagoing vessel in the roadstead, approaching from the leeward side. There, on the echelon commander's order, fastenings are removed and the combat equipment is prepared for loading.

Echelon combat equipment and stores are loaded using ship booms or floating cranes; the port workers and the ship crew are helped by the echelon cargo handling team. Loading with ship booms takes on the average 6–15 minutes for a gun, 10–12 minutes for a truck, 12–15 minutes for a tractor, and 30 minutes for a tank. Personnel disembark by gangways. When an echelon is loading in the dark or under other conditions of limited visibility, the illumination necessary for loading must be provided. In an open roadstead, when the sea is running and safety is threatened, loading is suspended.

If an air raid warning is given while an echelon is loading in port or being transported in a roadstead, work stops immediately and actions are taken to disperse men and combat equipment on the wharf and get them under cover, while the harbor vessels pull away from the ship's anchorage. If the alarm is given after loading in the port has been finished, the ship pulls away from the wharf or personnel debark and pull back under cover, while a guard remains to protect the echelon's combat equipment and stores. If the alarm is given after a troop echelon has finished loading onto a seagoing ship standing in the roadstead, it will weigh anchor as quickly as possible and put out to sea.

Antiaircraft and other weapons allocated to repel enemy air attacks are readied to open fire immediately. Ship doors, portholes, and hatches are closed and individual protective gear is placed in the ready position. Enemy air raids are repelled using all fire resources.

While troops are being moved on water transport, commanders direct subunits with line communications equipment, by personal contact with subordinates, via messengers, and with light and sound signals. The resources of the forces being moved take measures to provide comprehensive support for the troop echelon.

All personnel must be alert, maintain a high state of organization and discipline, and strictly observe prescribed rules of conduct during the sea passage or movement by river, and also during stops in ports or at moorings en route to their destination.

When information is received about the presence of contaminated areas of water along the ship's route, the ship's portholes and hatches are closed tight, cracks are stopped up with rags, paper, and other materials at hand, food preparation in the galleys ceases, and reserves of drinking water and provisions are carefully covered; combat equipment is also covered as well as possible.

Ships may move through areas of water contaminated by radioactive materials if the radiation dosage to which personnel are exposed does not exceed permissible levels. When a contaminated area is approached, an alarm is given and personnel don gas masks or respirators and, if necessary, other protective gear as well. Ships cross the contaminated areas without stopping. The radiation dosage to which personnel are exposed is monitored, and, after crossing the area, the level of contamination of personnel, ship accommodations, equipment and stores is checked, and subunits undergo partial decontamination.

When the ships approach the debarkation area, drivers (driver-mechanics) test their engines, abiding by fire safety rules. When the ships arrive in port or at the wharf, personnel debark onto the shore at the echelon commander's order. Subunit commanders, drivers (driver-mechanics), and cargo handling teams quickly begin unloading equipment and stores from the ship onto the wharf. Personnel not engaged in unloading, as well as combat equipment and stores as they are unloaded, are sent off to the assembly area, which is 3-5 kilometers from the debarkation area. Unloading is executed covertly and quickly.

Troop movement by water transport is completed once they have debarked from the vessels. Personnel, armament, combat and other equipment, and stores are concentrated in the designated area; troops are brought to a state of complete combat readiness and, receiving their new mission, proceed to carry it out.

5. Movement by Air Transport

During the offensive operation carried out by the Western Front in winter 1942 in the area of Vyaz'ma, the 4th Airborne Corps, numbering about 10,000 men, was dropped successively by battalion and brigade. In the Belorussian Operation of summer 1944, aviation supplied the mechanized cavalry groups and tank armies and corps by air with 1182 tons of fuel, 1240 tons of ammunition, and about 1000 tons of various technical supplies and spare parts for tanks.

These examples show that during the Great Patriotic War air transport was employed extensively to transport various cargoes, primarily ammunition, fuel, and other supplies, to evacuate wounded, and to drop troops behind enemy lines.

Air transport could be used to transfer rifle subunits, and sometimes even units, to the front lines or behind enemy lines.

In January 1942, over a period of three nights, an airborne assault force was dropped in the area southeast of Vyaz'ma. It consisted of 1,600 men of the 250th Rifle Regiment, dropped to support the 33rd Army in encircling the enemy's Yukhnov-Myatlevo grouping.¹⁶

However, it was rare for combined arms subunits and units or those of other combat arms (excluding airborne) or combat service support troops to be transported by air from deep inside the country to the front lines.

Air transport is used extensively today for moving troops. This type of transport is less vulnerable to the effects of enemy NBC weapons than rail or water transport and makes it possible to transport troops more quickly over considerable distances, even over vast contaminated zones and areas of destruction, fire, and flood. It does not depend on road networks and may be employed not just to transport troops over friendly territory, but even to fly over the line of contact to drop troops in the enemy rear. The use of air transport makes it possible to conserve manpower, preserve the motor transport serviceability of combat equipment, significantly reduce consumption of stores and, most important, surprise the enemy by delivering troops to a specified area in a higher rate of combat readiness than if they had moved under their own power.

Air transport is a means of moving troops that has prospects for further development. The lifting and cargo capacity of aircraft and helicopters is increasing. Work is going on in the West to produce new types of vertical takeoff and landing aircraft. Even today, air transport is capable of carrying not only subunits and units by air, but even combined arms formations.

However, even though moving troops by air transport has many advantages over other means of movement, it cannot be used as extensively or as often as, for example, marches. This is mainly because moving forces by air, particularly combined arms units and formations, requires considerable numbers of aircraft and large details of combat aircraft to provide cover for them in flight. Besides, aviation must have prepared airbases or fields in the embarkation and debarkation areas.

Depending on the situation and the size of the troop formation being transferred by air, troops can be moved by air transport in one or several flights. A subunit will be transferred in a single flight, and a unit or formation in several.

Specialized aircraft from military transport aviation, passenger and cargo aircraft, helicopters, and perhaps even transport gliders, may be used to move troops by air; airbases or fields of embarkation and debarkation are assigned, the number of which depends primarily on the force's mission and the type and number of aircraft used for the move. A subunit with support weapons embarks (debarks) at a single airbase or field. Subunit loading and embarking areas are assigned in the region of each airbase (field) or in the immediate vicinity of the aircraft and helicopter standing areas.

Troops usually undergo immediate preparations for movement by air in a waiting area. They stay briefly in these areas before leaving for the airbases or fields assigned for loading. Waiting areas are selected 5–10 kilometers from subunit loading areas and are chosen for their capability to provide masking against air and ground observation and reliable protection against enemy nuclear strikes where possible. Troops are positioned covertly and in dispersed deployment, observing NBC defense measures and camouflage against observation from the air.

In the waiting areas, calculations of allocations for the troop air movement are updated with a view to preserving, insofar as possible, the organizational integrity of the subunits and ensuring their readiness to fight independently after debarking. Particular consideration is given in this to distribution of personnel, combat equipment, and stores among the aircraft (helicopters, gliders).

At an assigned time, in set order, the subunits move up along a prepared route from the waiting area to the loading area. There, on prescribed signals and orders from the air subunit commanders, they first load armament, equipment, and stores onto the aircraft (helicopters, gliders), after which the personnel embark. Measures are taken to avoid overconcentrations of personnel, equipment, and stores near the loading and embarkation areas. Loading and embarkation are carried out quickly and covertly, observing safety measures in an effort to avoid accidents and damage to armament, equipment, and transport.

Armament and combat and other equipment are placed in the aircraft (helicopters, gliders) with due regard for the sequence in which they will be unloaded and put into action. Ammunition and fuel reserves are loaded onto different aircraft (helicopters). Everything loaded onto air transport must be secured with ropes, nets, and special devices securely enough to

prevent any sort of shifting of combat equipment and other loads on the aircraft and to preserve the aircraft's trim. The loading of combat equipment is finished in at least an hour and the embarkation of personnel at least 20–30 minutes before the aircraft (helicopters, gliders) take off.

A subunit commander travels in the same aircraft as his subordinates. If a subunit is moved in several aircraft or if a larger troop formation is moved, the commander travels in one aircraft with the necessary communications equipment, his deputy travels in a second aircraft, and his staff in a third. Resources under the direct control of the senior commander (chief) provide comprehensive support for troops being moved by air. In flight, troop control is exercised using brief radio signals broadcast over the military transport aviation radio net.

Aircraft must land at the debarkation airbases or fields at set times. Personnel debark and combat equipment and stores are unloaded immediately after aircraft have landed and taxied aside, clearing the runway for the next aircraft, or after helicopters or gliders have landed. In order to reduce the length of time that aircraft remain at the airbases, aircraft crews may be enlisted to unload combat equipment and stores. Aircraft are unloaded without switching the engines off, and those that have been unloaded take off immediately.

As the subunits with their armament, combat and other equipment, and stores are unloaded, they are moved away from the debarkation airbases and fields without delay to assembly areas, which are located at least 10 kilometers from the debarkation areas. In the assembly areas, the troops are made completely combat ready in order to proceed to carry out their combat mission. Troops may be assigned a combat mission while still unloading from the aircraft and may engage the enemy on the ground without proceeding to the assembly areas.

6. Combined Movement

Combined troop movement means transferring forces from one area to another or moving them to an indicated line by a combination of various methods of movement. In some cases, forces may employ various methods of movement simultaneously, while in others they are used alternately, changing in succession. Here, all or only some modes of transport may be used. Depending on the size of the troop formation, the distance of the move, the nature of the lines of communication, and the availability and type of transport to be used for the move, a combined march, a combined move, or a combination of march and movement may be carried out (figure 17).

At the levels at which troops are now equipped, **combined marches** may be carried out by subunits from section to platoon size, and more rarely by companies or battalions. On such a march, various modes of march transport are used alternately or simultaneously, including organic tanks, infantry combat vehicles (armored personnel carriers) and trucks, or movement on foot or, in winter, on skis. Today, larger troop formations do not make combined marches, since our troops do not move on foot either in a combat zone or the rear, but rather employ organic vehicles for movement.

As a rule, **combined movement** assumes the execution of sequential and sometimes even simultaneous troop movement combinations by various modes of transport, i.e., rail, water (seagoing, river), and air transport. It may be employed to shift the positions of subunits and larger troop formations from one area to another.

Currently a simultaneous or sequential **combination of march and movement** is widely employed. It can be carried out by troop formations of any size. In the simultaneous combination of march and movement, one part of a force proceeds under its own power, while the other (tanks, heavy equipment, vehicles with limited range or speed) is moved by rail or water transport. When the sequential combination is used, a march may precede a movement or may be made after it has finished. Both the simultaneous and the sequential combinations of march and movement may be used when moving large troop formations, or the combinations can be used alternately.

The success of a combined troop movement depends largely on the ability of the commander and staff to provide ahead of time for measures that will ensure a swift transition from one mode of transport to another, or to the march. In a simultaneous combination of march and movement, the skill of the commander and staff in coordinating the actions of the subunits moving under their own power and those being transported become particularly important.

Estimates for the movement of troops by various means are coordinated so that in the event of the move being stopped, all the troops will be able to join up and, wherever possible, arrive at the indicated concentration area simultaneously.

If sudden changes in the situation result in the move being stopped while troops are moving by combined means, subunits being moved by rail or water transport will debark from the trains or ships and proceed by march to the new loading area to continue their move. If the situation demands that the move be stopped altogether, the subunits debark and proceed independently under their own power to a designated concentration area or will join up with the troops moving by march.

Under the complex conditions of modern warfare, it is becoming increasingly important that troops be capable of moving by any means over any distance, maintaining a high state of fighting efficiency and readiness to proceed with their combat mission from the line of march or after brief preparation. Troop training pertaining to the march is improving constantly. In order to be able to load and unload combat, specialized, and transport vehicles, and stores into railway cars, onto flat cars, and into ships, aircraft, helicopters and gliders, personnel from all subunits train in and work through in practice the problems of embarking onto and debarking from rail, water, and air transport, and the rules for securing, transporting and unloading weaponry, combat and other equipment, and stores from transport, since now all troops must be trained to move by various means and be constantly ready to carry out marches and moves by any mode of transport.

Notes

1. See *Taktika v boyevykh primerakh. Diviziya* [Tactics in Combat Examples: The Division], p. 150.
2. See *Sovetskaya Voyennaya Entsiklopediya* [Soviet Military Encyclopedia], V, 166.
3. See *Peredvizheniye podrazdeleniy na bol'shoye rasstoyaniye* [Long-Distance Movement of Subunits], Moscow, 1967, p. 11.
4. See *Soviet Military Encyclopedia*, V, 166.
5. See *Taktika v boyevykh primerakh. Polk* [Tactics in Combat Examples: The Regiment], p. 161.
6. See *Tactics in Combat Examples: The Division*, p. 162.
7. See *Soviet Military Encyclopedia*, 1977, III, 422.
8. See *Tactics in Combat Examples: The Regiment*, pp. 169-72.
9. See *ibid.*, pp. 172-73.
10. See *ibid.*, pp. 164, 173.
11. See *ibid.*, pp. 167-168.
12. See *Voinskiye avtomobil'nyye perevozki* [Troop Movements by Motor Transport], Moscow, 1974, p. 173.
13. See *Long-Distance Movement of Subunits*, p. 56.
14. See *Soviet Military Encyclopedia*, 1980, VIII, 86.
15. See *Long-Distance Movement of Subunits*, p. 119.
16. See *Armeyskiye operatsii* [Army Operations], pp. 103-5.

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Tactical Maps

U.S. Editor's Key to Map Symbols and Abbreviations

(A) CC	(Maps 6, 7)	(assistant) crossing commander
ARTY		artillery
ATGM	(Maps 6, 7)	antitank guided missile
AT PLT	(Map 10)	antitank platoon
B	(Maps 4, 5, 11, 12)	air burst
BN		battalion
BR	(Map 3)	brigade
CF	(Map 3)	concentrated fire
CO		company
(COMB) ENGR		(combat) engineer
CRP	(Map 6)	combat reconnaissance patrol
GSP	(Maps 6, 7)	tracked self-propelled ferry
H	(Map 14)	ground burst
ICV	(Maps 4, 6, 7)	infantry combat vehicle
MI		motorized infantry (blue)
MR		motorized rifle (red)
PLT		platoon
PTS	(Maps 6, 7)	amphibious transporter
RES	(Maps 3, 11, 12)	reserve
TK		tank
b in triangle		ammunition supply point
b in oblong figure	(Map 5)	mobile ammunition supply
p in triangle	(Map 10)	forward observation post
K in circle	(Maps 6, 7, 16)	commandant's control point
R in circle	(Maps 6, 16)	traffic control
KPP in circle	(Map 6)	movement control point

Figures 4, 5, 11 and 12 contain formulas for 10-kiloton air bursts (10—B), with the date-time group given in the denominator position in the order time-day-month.

Figure 14 contains a formula for a 10-kiloton ground burst (10—H), with the same kind of date-time group on the bottom. Two other formulas in figure 14 also have date-time groups. Of those two, the one just above the remote mining section has an “av” on top, which indicates that the mining was carried out by aviation.

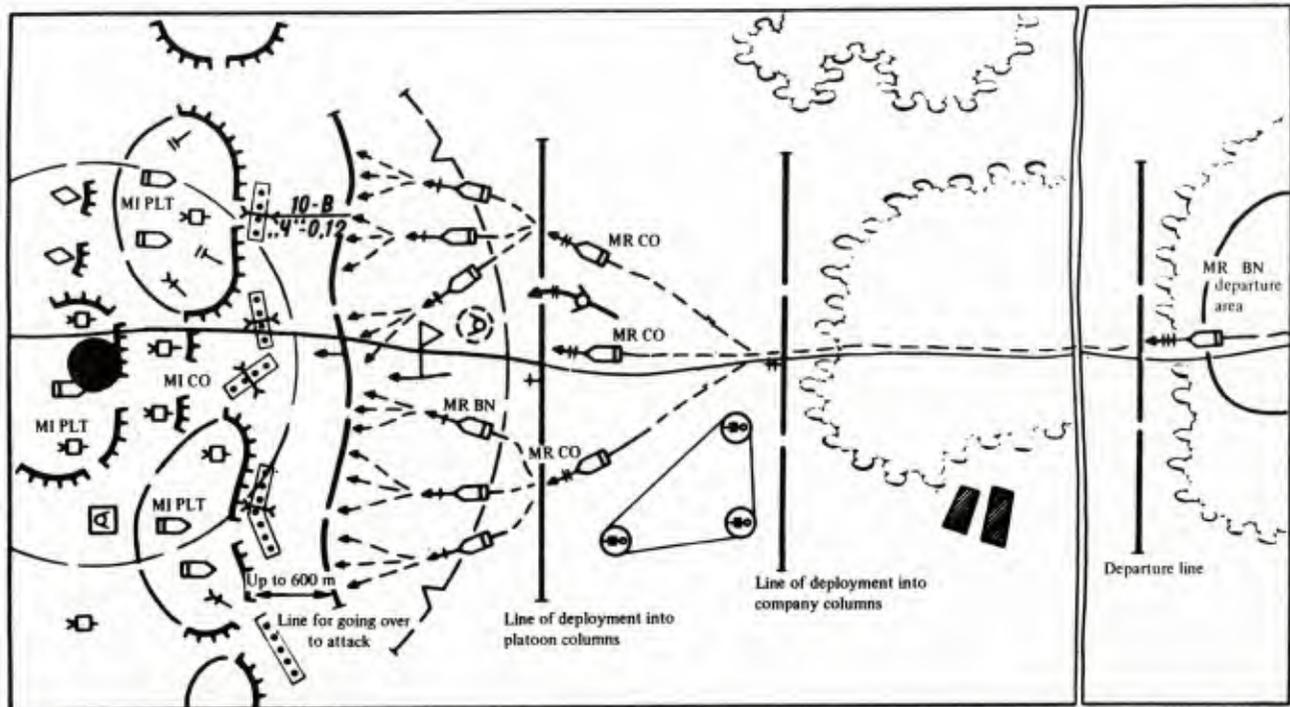


Figure 1. Shift to Offensive Against Defending Enemy From the March.*

* [The formula in the upper left area of the map indicates a 10-kiloton air burst, with the denominator position signifying H-hour minus 12 minutes—U.S. Ed.]

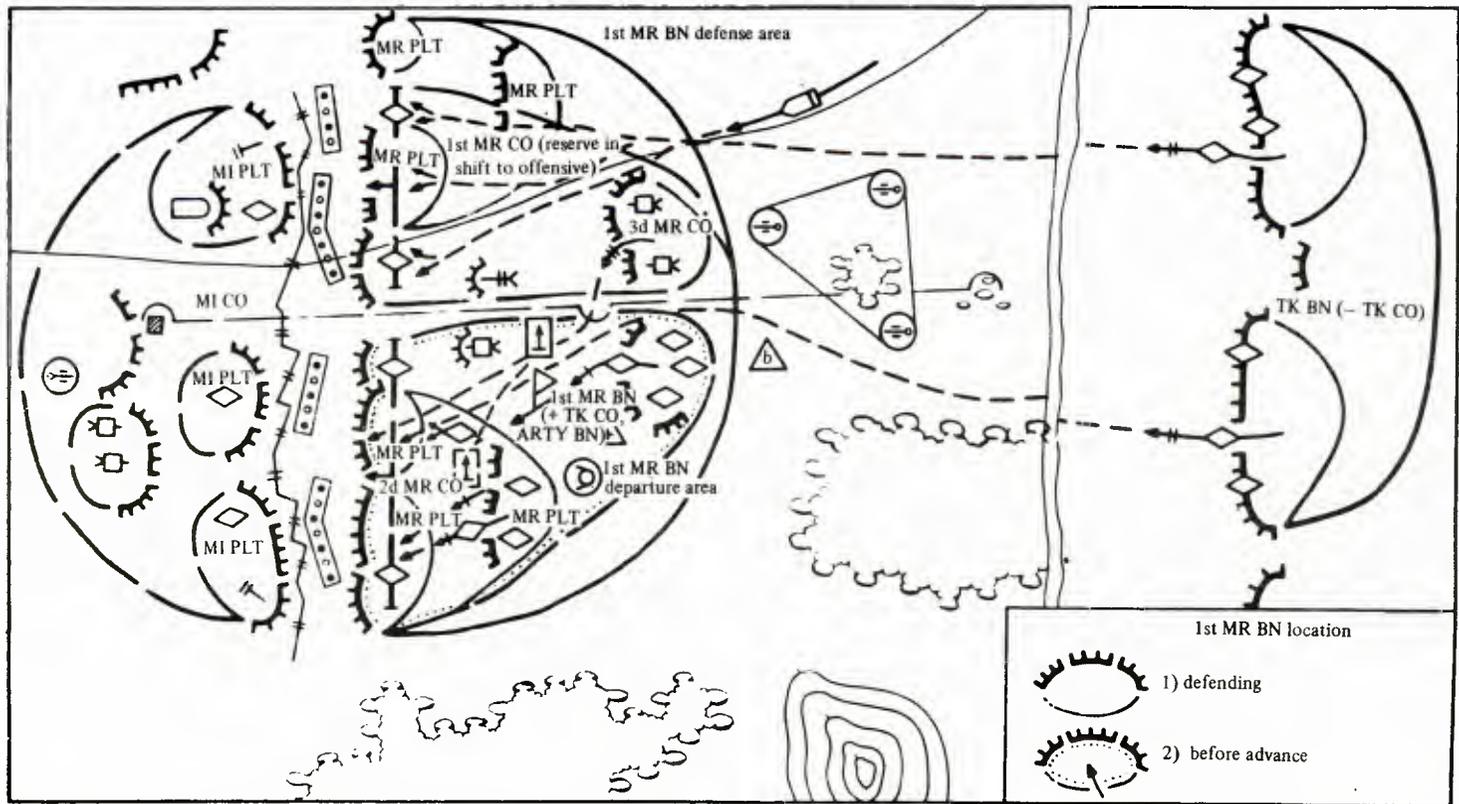


Figure 2. Shift to Offensive From Position of Direct Contact With Enemy.

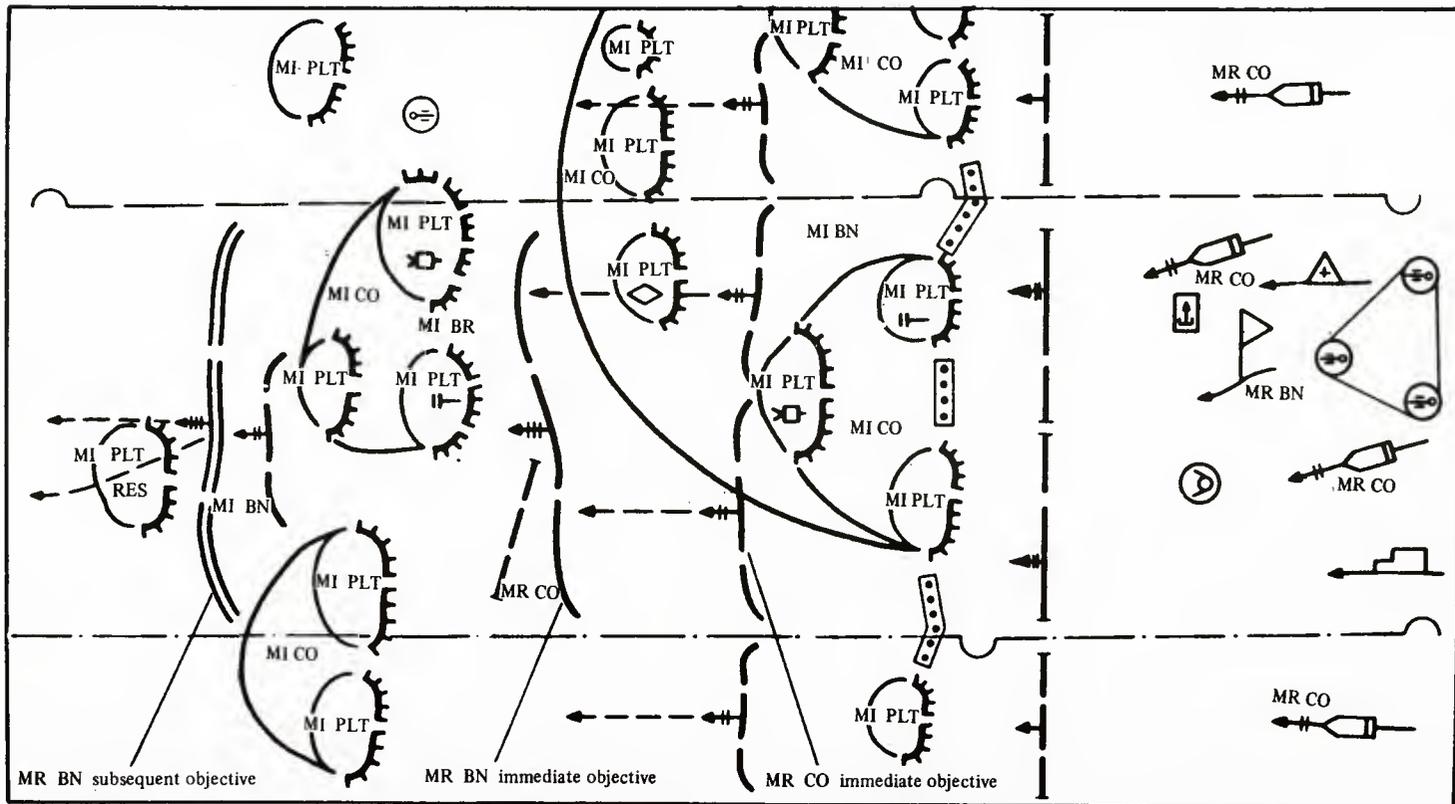


Figure 3. Combat Missions of Motorized Rifle Battalion (or Company) in an Advance.

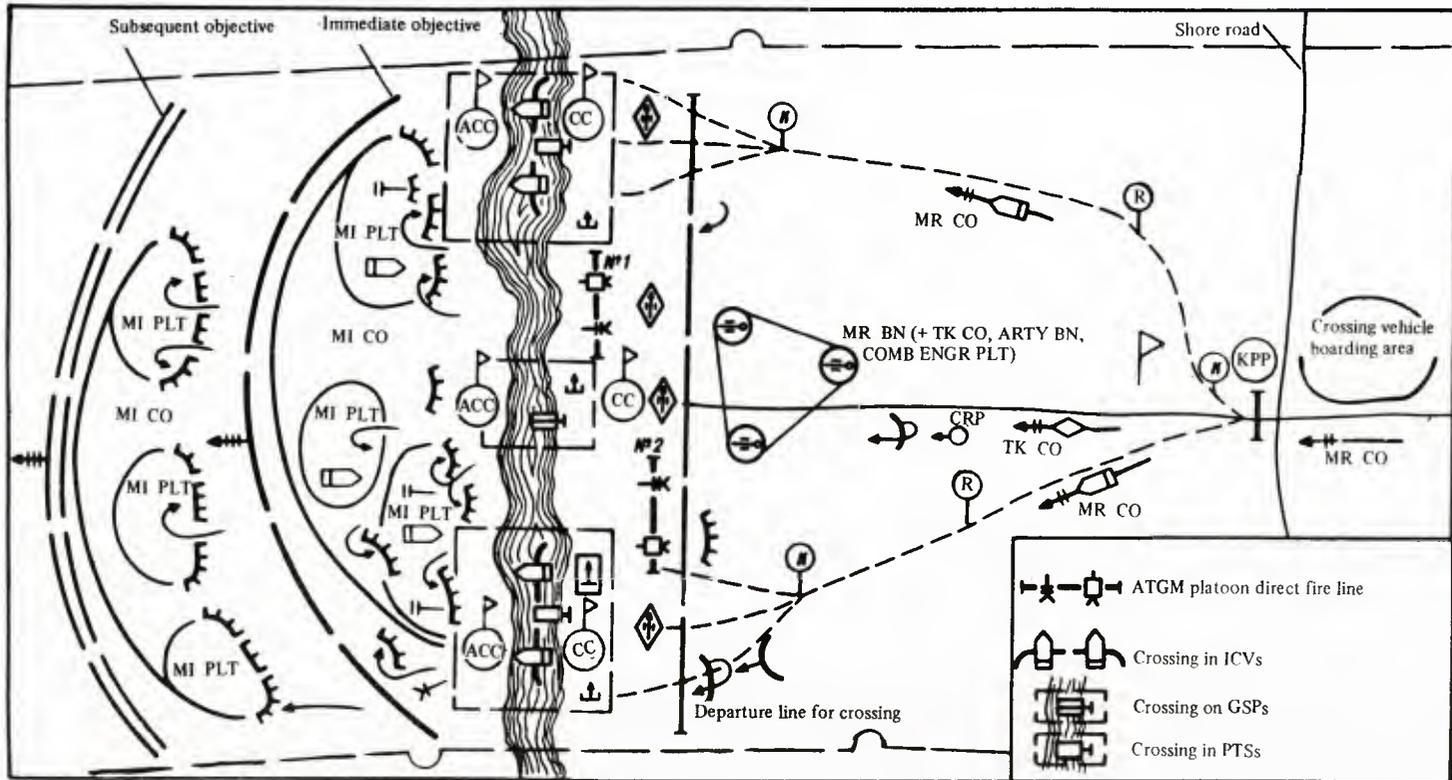


Figure 6. Forced Crossing of Water Obstacle From the March.

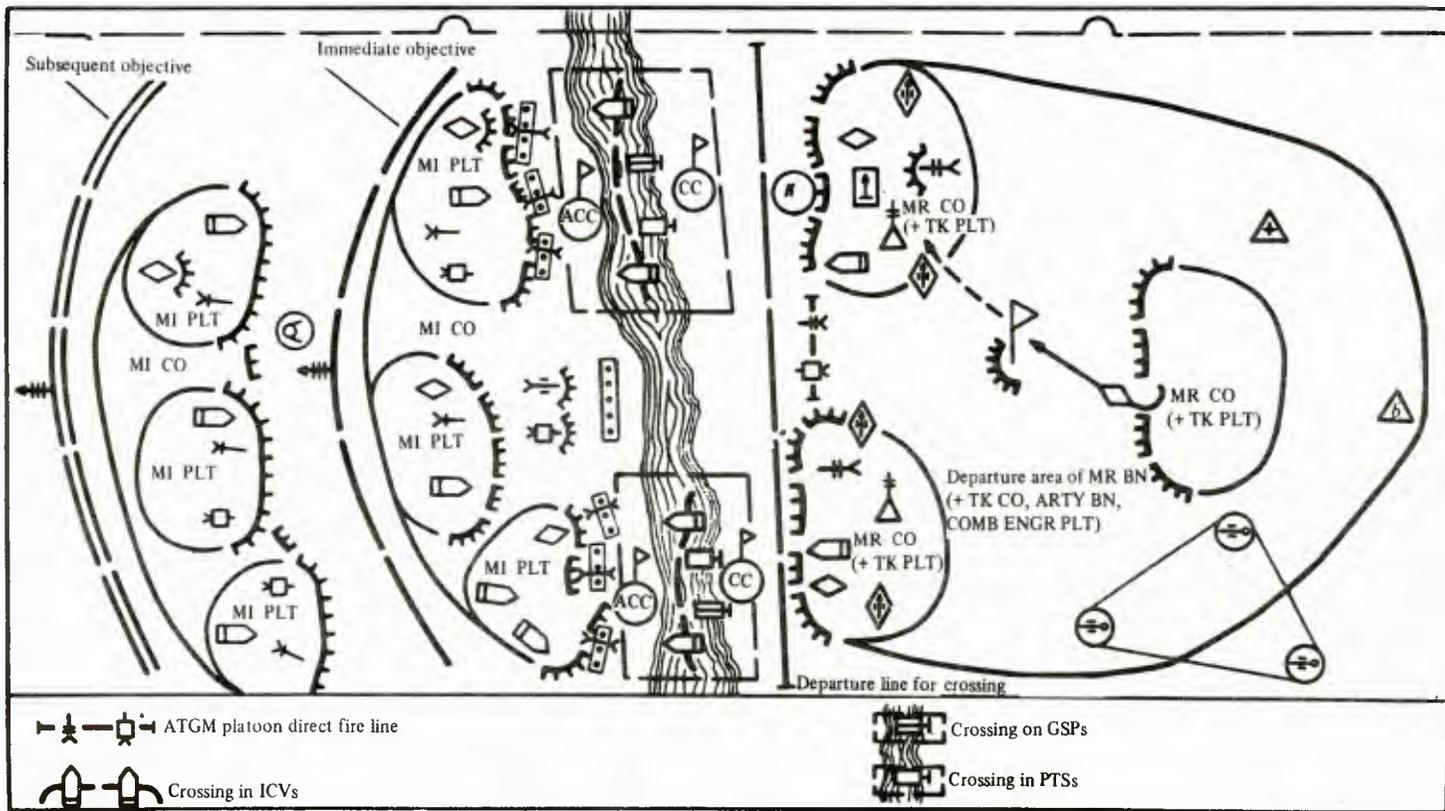


Figure 7. Forced Crossing With Deployment of Main Body at Water Obstacle.

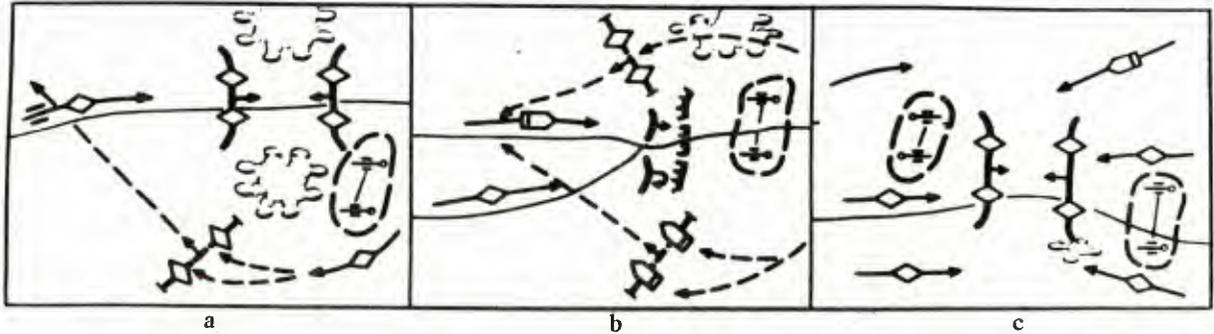


Figure 8. Methods for Defeating Enemy in Meeting Engagement:

a) flank attack, containing part of forces from front; b) attacking both flanks, containing part of forces from front; c) frontal attack

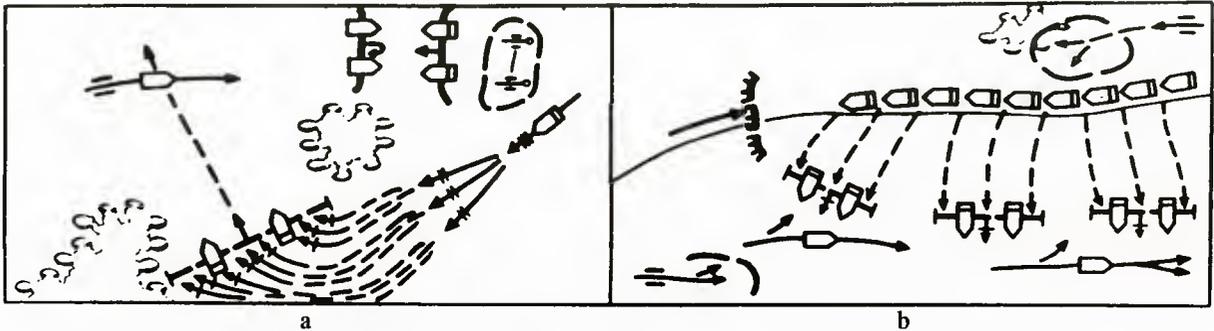


Figure 9. Deployment of Subunits for Meeting Engagement:

a) sequential; b) simultaneous.

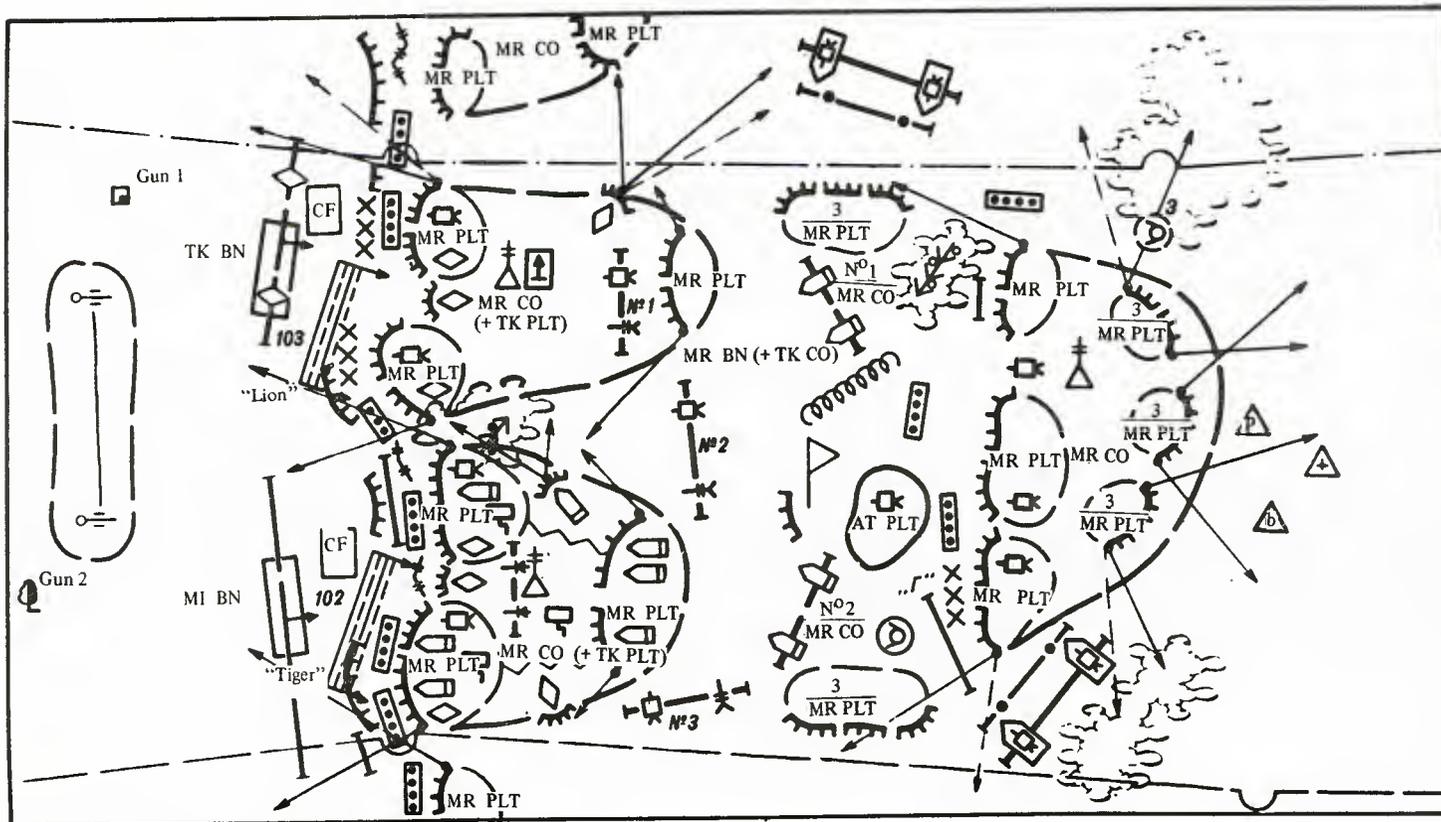


Figure 10. Motorized Rifle Battalion Defense Area.

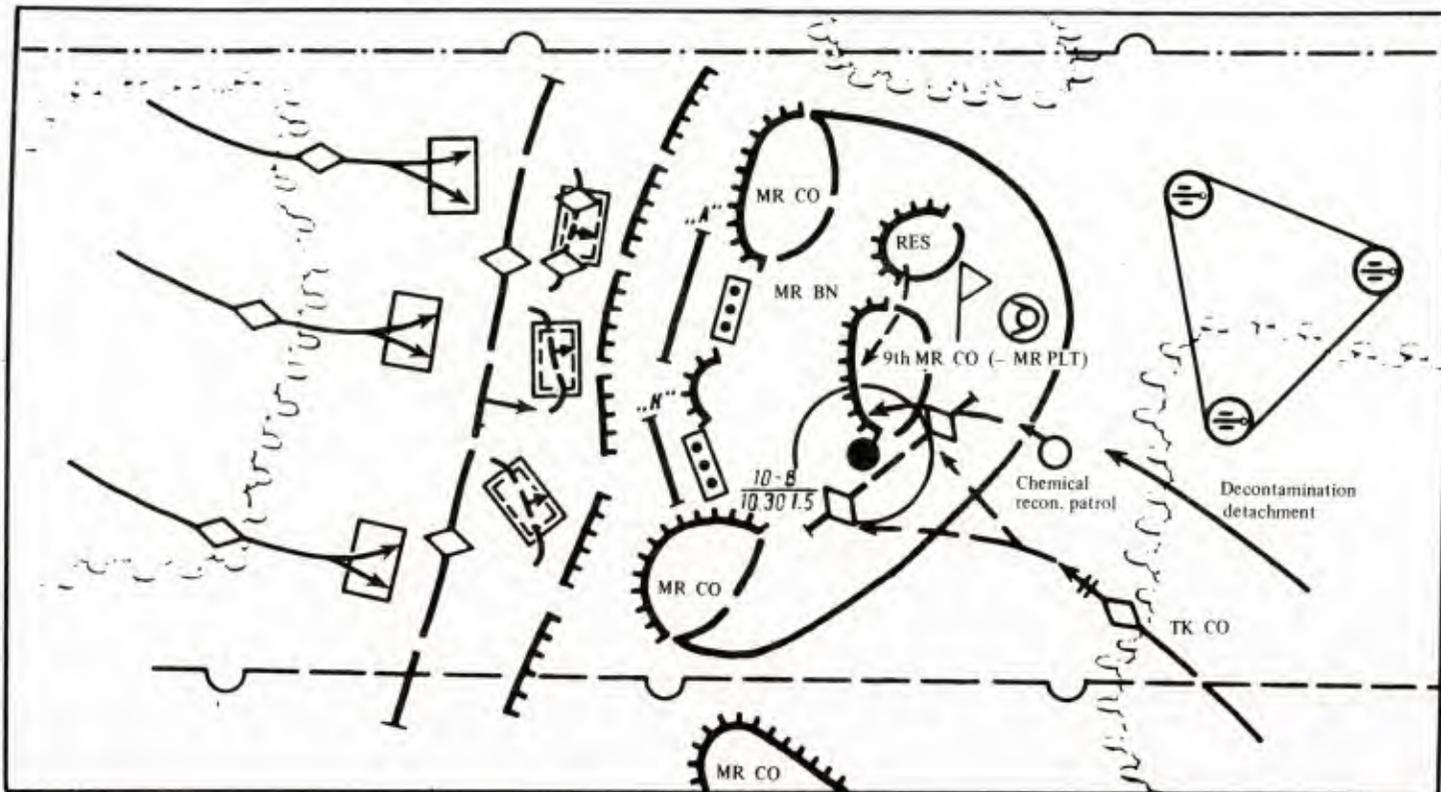


Figure 11. Maneuver of Fire and Resources to Close Breach After Enemy Nuclear Attack.

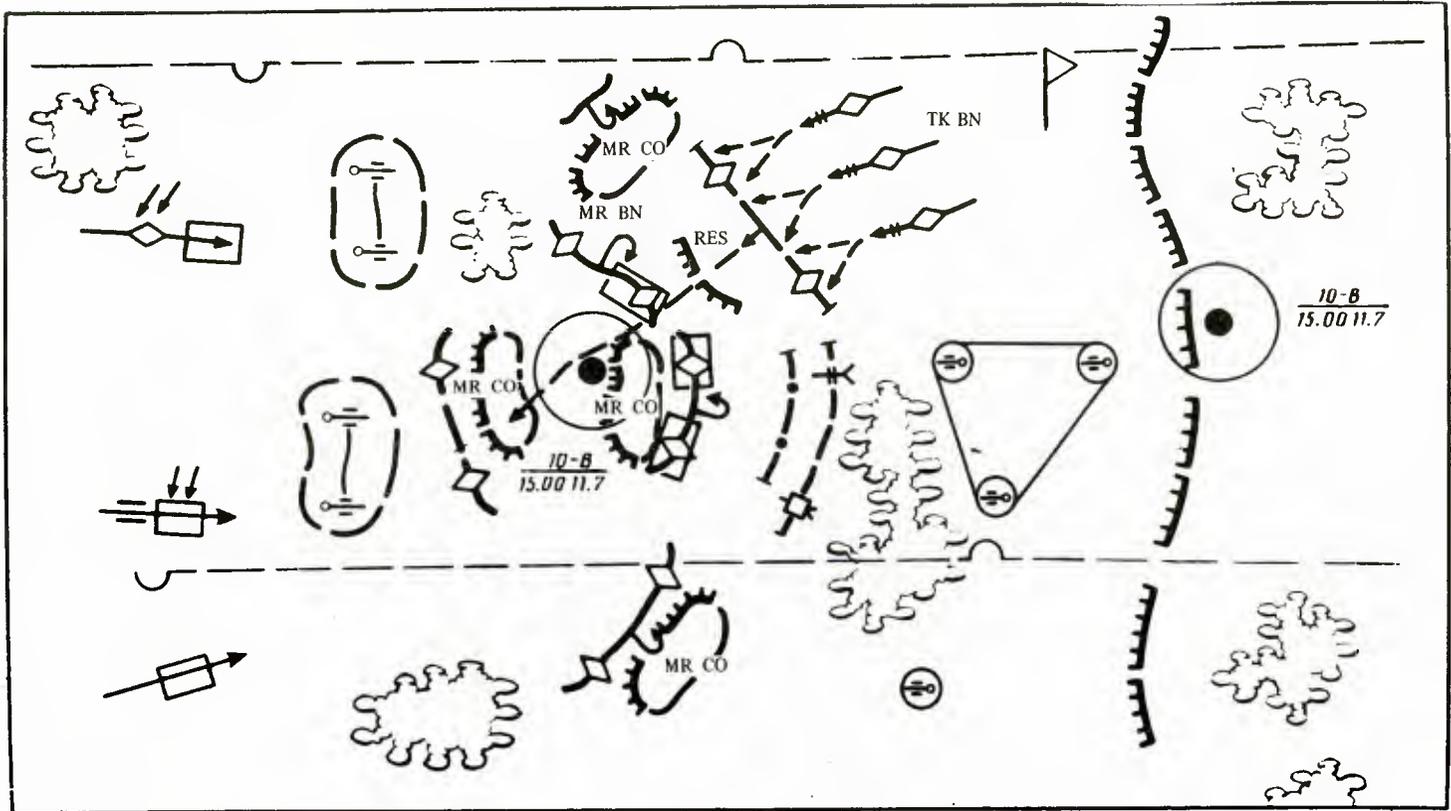


Figure 12. Tank battalion Counterattack to Eliminate Enemy That Has Broken Into Defense Position.

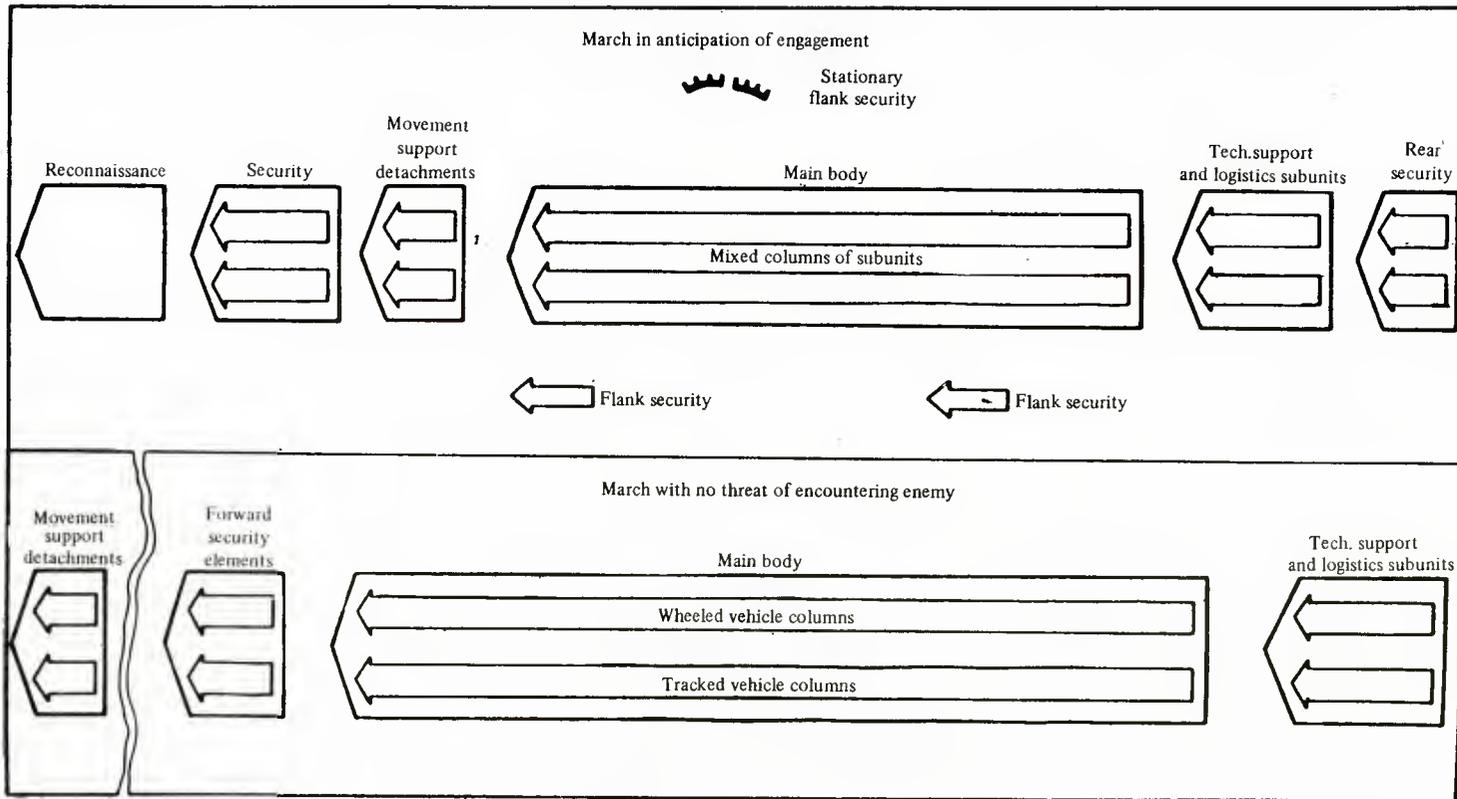


Figure 13. Troop March Formation.

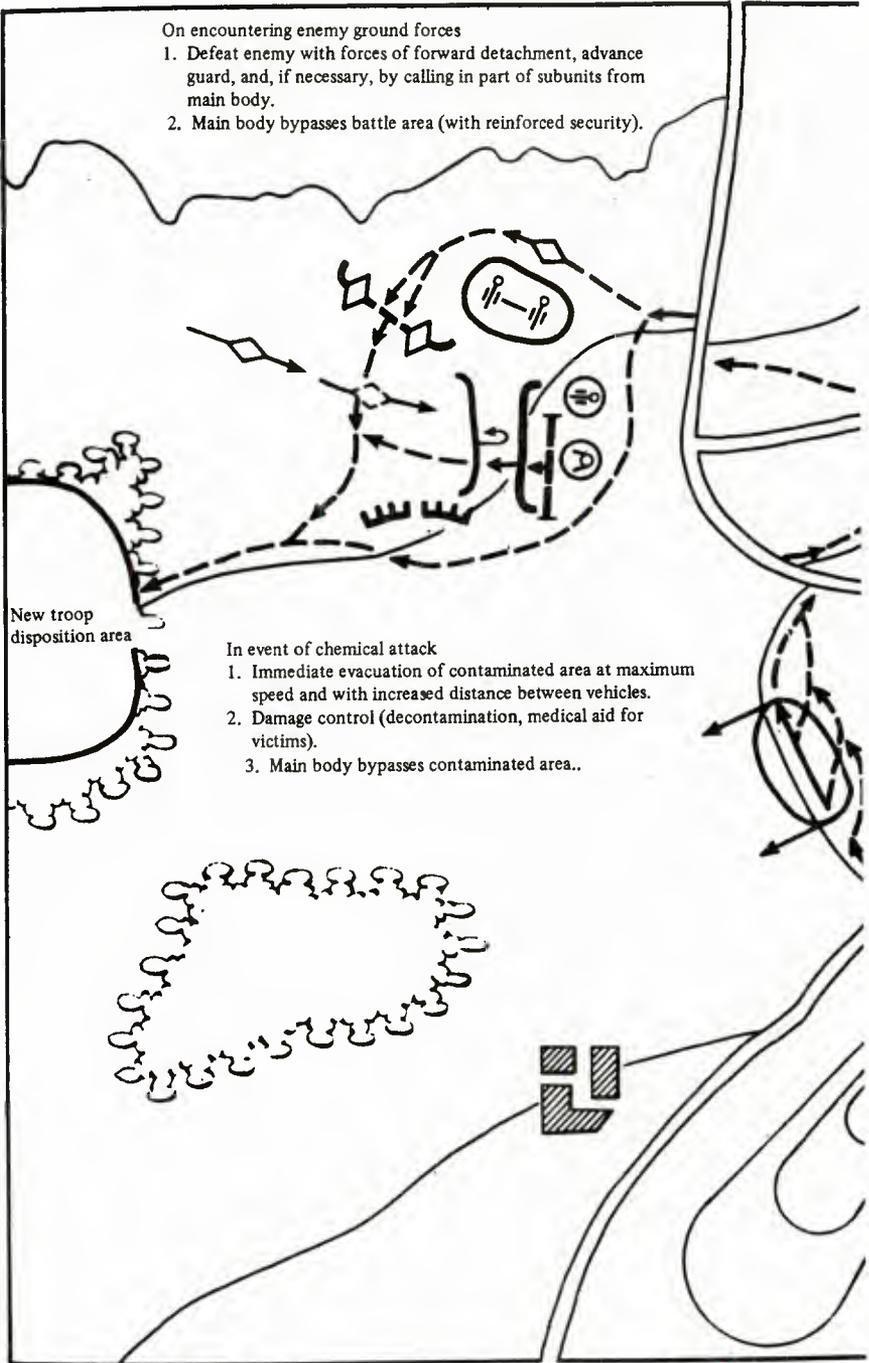
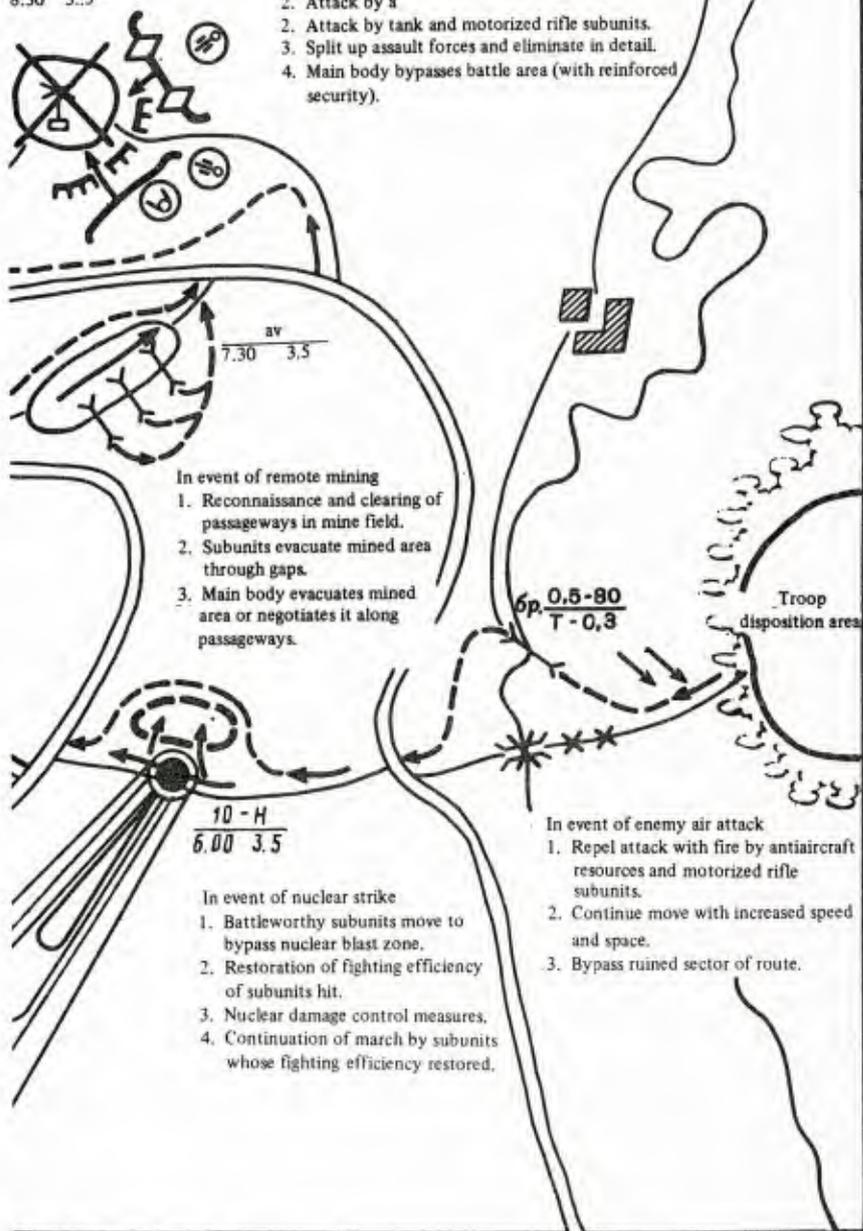


Figure 14. Troop actions during march.

to MI BN
8.30 3..5

Countering airborne assault

1. Fire strike against forces that have landed.
2. Attack by a
2. Attack by tank and motorized rifle subunits.
3. Split up assault forces and eliminate in detail.
4. Main body bypasses battle area (with reinforced security).



In event of remote mining

1. Reconnaissance and clearing of passageways in mine field.
2. Subunits evacuate mined area through gaps.
3. Main body evacuates mined area or negotiates it along passageways.

In event of nuclear strike

1. Battleworthy subunits move to bypass nuclear blast zone.
2. Restoration of fighting efficiency of subunits hit.
3. Nuclear damage control measures.
4. Continuation of march by subunits whose fighting efficiency restored.

In event of enemy air attack

1. Repel attack with fire by anti-aircraft resources and motorized rifle subunits.
2. Continue move with increased speed and space.
3. Bypass ruined sector of route.

* [Note: The formula in the far right center of the map indicates a river ford with depth 0.5 meters, length 80 meters, a hard surface, and current speed 0.3 meters per second—U.S. Ed.]

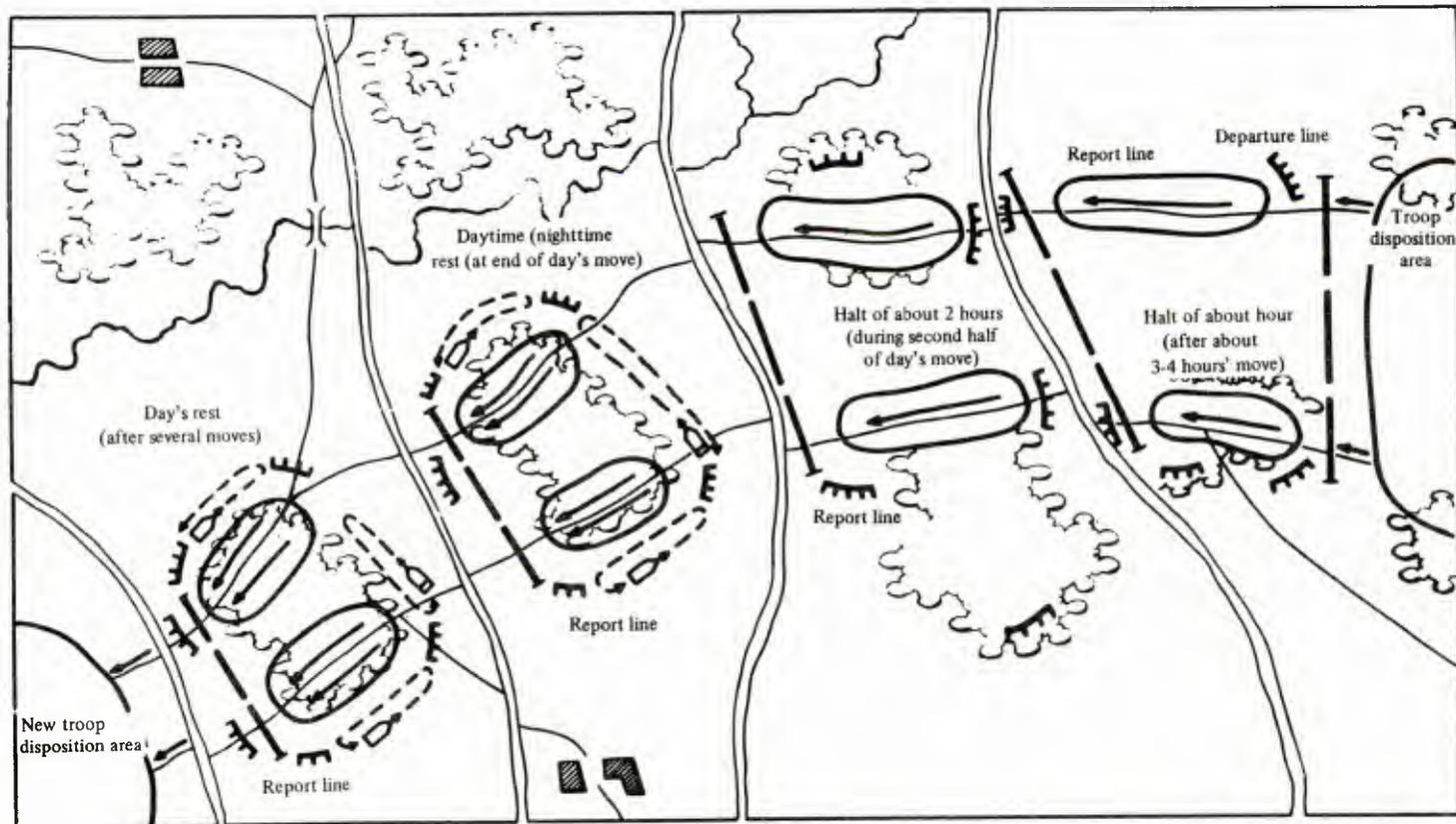


Figure 15. Lines, Locations of Halt and Rest in Course of March.

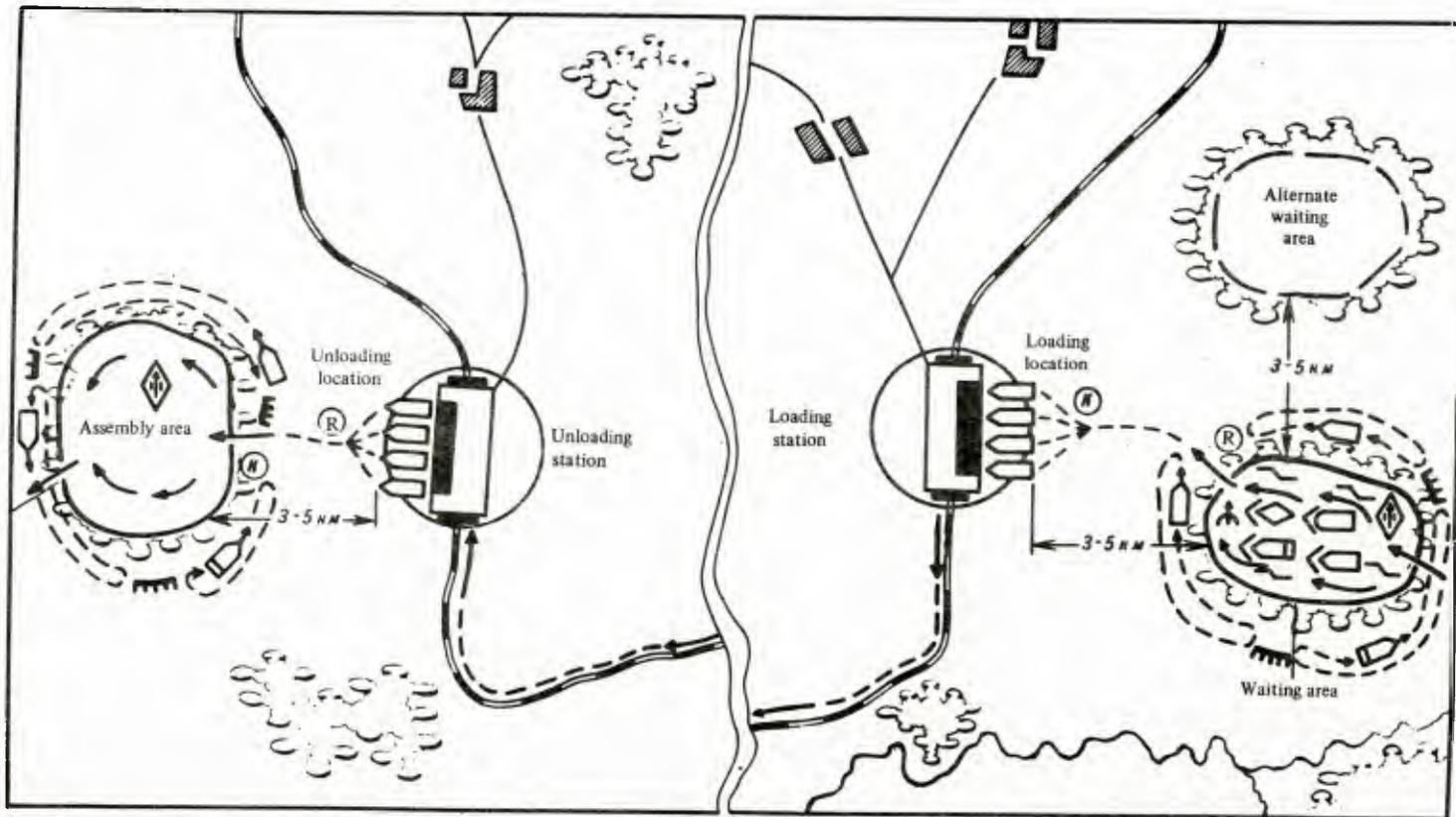


Figure 16. Troop Movement by Rail.

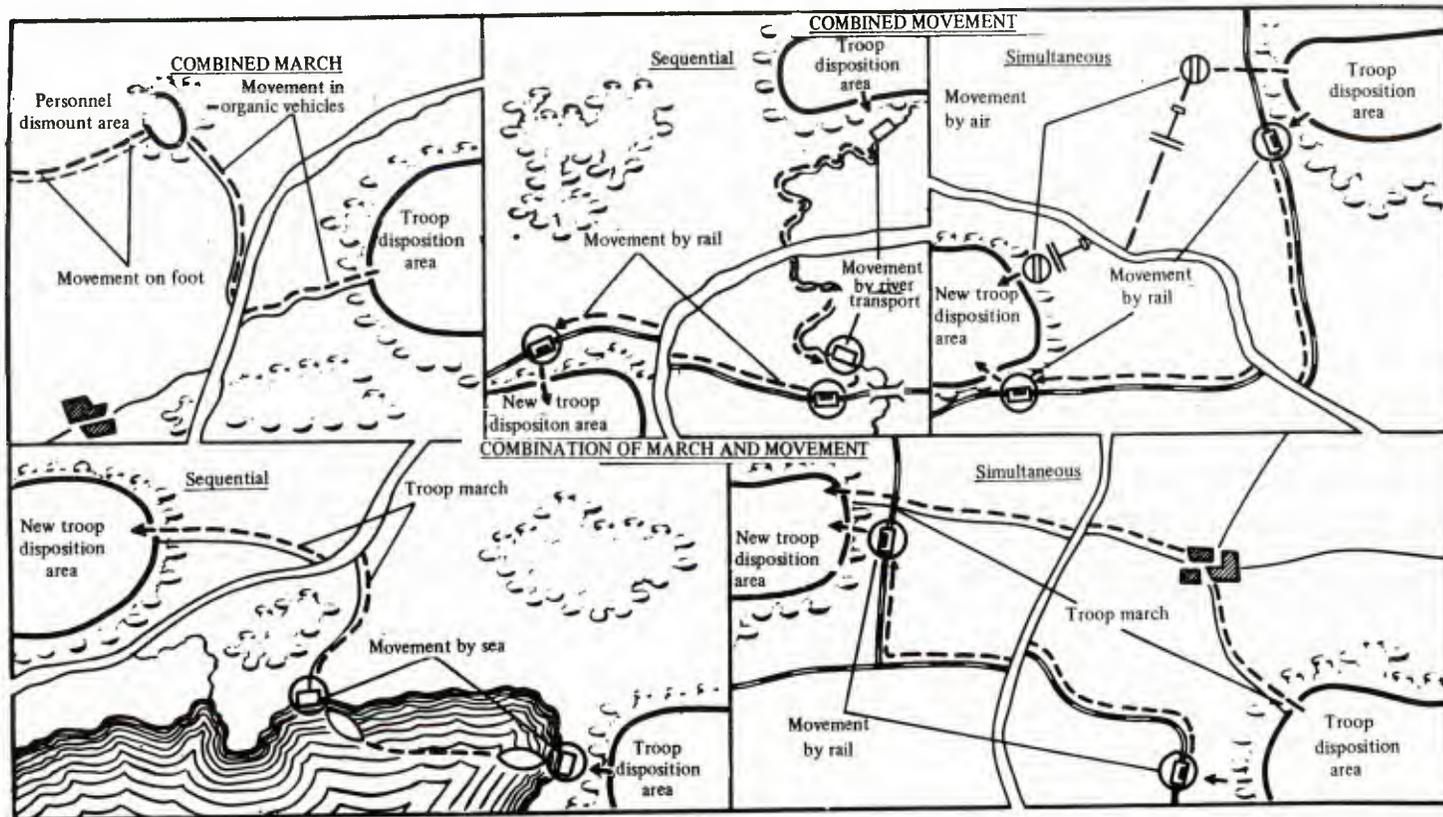
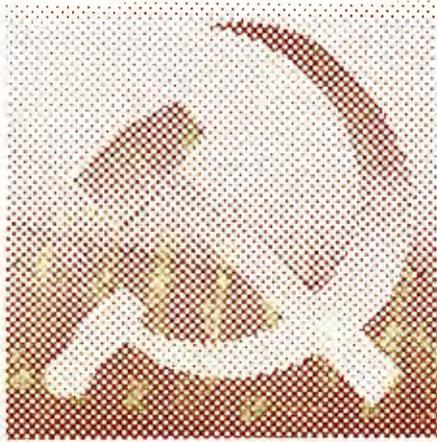


Figure 17. Combined Troop Movement.

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