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THE ROLE AND PLACE OF TANKS IN CONTEMPORARY MILITARY CONFLICTS AND WARS

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The appearance of tanks is caused by objective changes in forms and ways of conducting combat operations during World War I. With the concentration of a great quantity of automatic small arms at the defense of the enemy, it became practically impossible for the advancing troops to overcome the defense and combat operations grew into position fighting. It was necessary to create new, well-protected, autonomous mobile means of destruction, capable of overcoming such a defense.

The main idea of employing such means in combat was to destroy the enemy machine guns which survived the artillery preparation, to lead the way for the attacking infantry through the engineer obstacles, to create conditions to develop the success. To put the idea into practice it became necessary to make a weapon combining firepower, protection and mobility.

So the new conditions for conducting combat operations at the battlefield during World War I resulted in creating a new combat means, which was called “tank.” A number of scientific and technical prerequisites determined its creation.

Early in the 1930s the first instructions on combat employment of tank and armored vehicle troops were worked out. This period is characterized by the development

of the Soviet theory of armor troops employment on a new material and technical basis. The main terms of the theory were introduced in the instructions (1932, 1937) and field manuals (1936, 1939). These regulations envisaged the employment of the armor troops in close tactical cooperation with infantry or cavalry as their close support units and in operational cooperation with large units of armed forces as independent mechanized and armor units. There were clear definitions of principles of tank organizational concentration and armor large units formation.

Unfortunately, the level of the scientific and research basis, material and technical supply and tank production status were not sufficient for manufacturing tanks of our own design completely. To create T-26 and BT, which made up the majority of the tank population, experience of the tank building in the USA and Great Britain was used.

Taking into consideration the experience of tanks employment in Spain, at the lake of Hasan and at the river of Khalkin-Gol, the Kharkov Design Bureau, headed by M.I. Koshkin and his deputies A.A. Morozov and N.A. Kucherenko, produced the T-34 middle tank in 1939. It became a masterpiece of the world tank building. Being unprecedented for middle tanks, it got a 76,2-mm long-barrel tank canon, a diesel engine, wide tracks and differential antishell armor protection. The T-34 tank had so many advantages over the T-III and T-IV of the fascist Germany, as well as over tanks of Great Britain and the USA, that it fought nearly the whole of the Great Patriotic War without being seriously modernized. It was recognized that the T-34 was the best tank of World War II. Only in January 1944 its armament was improved by installation of a 85-mm canon, and the width of the front armor of a new turret grew up to 90-mm.

Simultaneously with the T-34, the KV-1 heavy tank entered the service. The appearance of German T-V “Panther” and T-VIÍ “Tiger” boosted an intensive work over a new type of a heavy tank. The main attention was paid to further enforcement of the protection and especially to increase of firepower . The first task was to be done in order to achieve the sufficient level of protection against the T-V 75-mm tank canon and the T-VIH 88-mm tank canon, and the second task was to be done because of the rapid growth of the front armor thickness that reached 100-mm in the head part of the hull. It was important to provide a possibility to destroy German tanks at long distances of fire combat. The whole of the above-mentioned tasks caused the creation of a completely new design of a heavy tank, which was labeled IS (the following modifications were IS-2, IS-3). The IS-2 tank was one of the most powerful heavy tanks of the war. It surpassed the German T-VIH and was able to fight with the T-VIB, which appeared in the summer of 1944.

During the war our tank building industry achieved great success in implementing new equipment and technologies. In peacetime this process would have taken 10-15 years. In wartime it took only a few months to create new species of materiel. During the first six months of 1941 the industry manufactured 1,800 tanks, during the second six months—4,867 tanks and in the first six months of 1942—up to 11,177 tanks. It demonstrates the constant search of new technical decisions and improvement of ways of employing tanks and vehicles on their basis in combat.

From July 1, 1941 till September 1, 1945 the USSR tank building plants manufactured 106,500 tanks and self-propelled guns. During the same period of time Germany produced only 40,380 tanks and self-propelled guns.

Tank troops and units played an extremely important role in repulsing the first strikes of the fascist forces during the hardest conditions at the beginning of the war. The experience of the offensive operations of 1941 and 1942 proved the importance and necessity of inflicting long range strikes in order to cut and encircle the enemy forces, to conduct offensive to a long depth at a high speed. It caused the need to form not only separate armor units, but also large armor (mechanized) formations acting as part of the success exploiting echelon of advancing armies and fronts. The Corps were to conduct flexible maneuvering in order to move into the flank and the rear of the enemy units, to deliver fast and deep strikes which will make the advance of the Soviet troops very decisive.

The Kursk battle was a most important stage in winning the victory over the fascist invaders. Both belligerent parties emphasized the role of armor units, which were used at such a large scale for the first time. The Soviet forces used all the five armor armies, 14 armor and mechanized Corps and a great number of separate brigades and regiments. Germany employed 20 armor and motorized divisions.[1] The victory of the Red Army at the battle of Kursk vividly demonstrated the fact that massive employment of tanks enabled the troops to exploit fast offensive in the operational depth. Large formations of the Soviet tank forces took part in the liberation of Poland, Czechoslovakia, Hungary, Romania, Bulgaria and Yugoslavia. The tanks played a decisive role in the complete defeat of the fascist forces and conquering Berlin.

The war results convinced us that the Soviet theory was right in developing the main regulations of tank forces combat employment. World War II turned the armor forces into independent and most important component of the Army, its main striking and maneuvering power. The war also confirmed the appropriateness of the general directions of development of the Soviet tank building industry, which had been adopted before the war on the basis of the successful scientific research carried out. First of all it concerns the concept of tank design, namely: definition of tank type, selection of the tank main armament, power plant and main layout decisions. The war laid the basis for the modern system of technical support of armor and mechanized units and formations. The experience of combat employment and design of tanks and self-propelled guns, as well as the organization of their production during the Great Patriotic War was a major ground for further development of the Soviet tank building industry.

Since World War II the local conflicts have demonstrated the leading role of tanks in combined arms formations, as well as the role of the main fighting force in close combat. This fact is also proved by the tendency of growing number of tanks within the combined arms task forces. For instance, 3,000 tanks participated in the Arab-Israeli war of 1967, and 6,700 tanks, in the Arab-Israeli war of 1973; more than 4,000 tanks in the war between Iran and Iraq in 1980-1988; more than 9,000 tanks in the zone of the Persian Gulf during the Operation Desert Storm carried out by multinational forces. The present day employment of tanks in local conflicts again sticks to the fundamental principle of tank massive concentration for accomplishing the key missions at the main directions both in offensive and in defense.

Besides, tanks were employed at divorced directions and in separate regions according to the focal principle. It helped divisions, brigades, and especially battalions and sometimes even armor companies to operate autonomously without close fire cooperation with the neighbors. In this case tanks either fought independently or provided

close support for the infantry as part of battalion (company) tactical task force. Such conditions caused urgent necessity of supporting tanks by combat helicopters, assault aircraft, artillery, as well as air defense means.

High precision weapons and other new armaments employed by belligerent parties promote the increase of combat transience. It is becoming more urgent to take the lead over the enemy. All belligerent parties acquire equal possibilities of firing at tanks. Fast and frequent transition from one kind of actions to another is becoming a typical feature of combat operations because of their high maneuverability. Besides, combat operations of Army formations are acquiring a 3-D air-and-land nature. All these factors have greatly influenced tank improvement.

With the revolution in science and technology new technical prospects for developing tanks have emerged. This revolution has already caused the creation of nuclear and other kinds of weapons, including high precision weapons, which have radically changed the possible character of armed struggle, goals and principles of Armed Forces (troops) organization. Though tanks have kept their versatile nature, the more complicated conditions for their employment at a battlefield have led to creation of a number of armored vehicles closely cooperating with tanks. Among them there are infantry fighting vehicles, self-propelled guns, tank killers, engineer vehicles and so on. The T-54, T-54A, T-54B, T-55, T-55A, T-62 tanks made up the first family of tanks in the USSR after the war. These species realized new technical ideas by mounting automatic fire-fighting equipment and a heater, which provided a quick start of the engine in winter, a system of two-plane canon stabilization, night-vision devices, underwater crossing equipment, automatic radiation protection system, tracks with a rubber-metal hinge.

These tanks had a lot of advantages over the US family of tanks created after the war (M46, M47, M48) and different modifications of the Centurion tank in Great Britain.

There were many changes in the tank development in the period of time from mid 60s till early 90s of the 20th century. Tanks of the second post-war generation entered the service with the Soviet Army and the NATO armies. Medium and heavy tanks merged into one type of main battle tanks. The first species of the infantry fighting vehicles were constructed. Transition to armored chassis of armaments began in artillery and air defense.

Tanks of the second post-war generation, which constitute the backbone of modern armies' armaments, were created at the time when their role of a massive, highly effective tool of conducting active combat operations under conditions of nuclear and conventional wars was fully recognized. New requirements to tanks were based on scientific progress and its technical achievements in the spheres of electronics, automatics, hydraulics, new materials, etc., which made it possible to significantly improve their combat characteristics. Besides, it was very important to provide scientific ground for optimal combination of combat characteristics and general requirements basing on the analysis of combat, military and economic effectiveness of tanks and terms of their combat functioning.

After the war rapid development of scientific and technological progress boosted the transition to a new concept of tank design. The need to develop new theoretical concepts of fire power, mobility and protection caused the creation of specialized institutions: All-Union Scientific Research Institute of Heavy Mechanical Engineering,

All-Union Science and Research Institute of Steel, Scientific Research Institute of Engines.

The T-64A, T-72 and T-80 tanks of the second post-war generation comprised the latest achievements in science and technology. They got the following: a 125-mm smooth-bore gun installed on them; subcaliber and hollow-charge ammunition with partly destroyable cartridges; optical and then laser range-finder, two-plane stabilizer with electro-hydraulic drives, automatic loading system (mechanism); combined three-layer armor (principally new solution innovated in the Soviet Union).

These tanks provided the combat effectiveness superiority (1.5-1.6-fold) over M60A1, Leopard 1, Chieftain. AMX30—the NATO tanks of the second post-war generation.

The following modifications (T-64B, T-72B, T-80B, T-80U, T-80UM1) were greatly improved by introducing the following systems: guided weapons—guns-and-missiles; semiautomatic, command, laser beam guiding system; ammunitions with ready to kill elements activated when on the trajectory; absolutely new fire control complex based on laser range-finder and electronic ballistic calculator with automatic firing corrections introduction, commander's back-up fire control system, dynamic protection, electronic-and-optical suppression complex and active protection.

All these improvements enabled our tanks of the second post-war generation not only to increase the gap between the NATO tanks of the second generation (M60A1 in the USA, Leopard 1 in the Federal Republic of Germany, Chieftain in Britain, AMX30 in France) in spite of their modernization, but at the same time to be somewhat equal to the NATO tanks of the third generation (M1A1, Leopard 2, Challenger), which entered the service in early 1980s. Some of our tanks' characteristics are superior (guided weapons, automatic loading).

In the early 1990s, a T-90 missile-gun tank was designed and put to serial production. Practically every component and system of the T-90 has a new quality. First of all these are the following: an automatic fire control complex, guided weapons complex, electronic-and-optical suppression complex, automatic system of all-round surveillance, detection and protection against antitank projectiles with laser homing warheads, in-built dynamic protection, 1,000 hp diesel engine, automatic NBC protection system, quick-response fire-fighting system, communication means of a new generation. The tank design comprises a complex of construction and technological improvements, which increased its mine survivability and decreased the probability of detection and destruction.

At present a new generation of armor is being developed both in this country and abroad. It has a number of common characteristics based on applying the achievements in technology, especially in the sphere of microelectronics, robotization, communications and information technologies in the tank construction. The new generation of armor has the following differences from their predecessors, namely: presence of an automated combat cooperation system, integration of on-board electronic devices into the united complex, new technologies of weapons control (external target designation, automatic tracking of targets, remote activation of ammunition), remote control of movement and fire, integration of target detection means (thermal imager, radar, optical devices, etc.).

It is worth mentioning that the introduction of the nuclear and guided weapons had a significant influence on the development of the tank building industry. It is evident

that tanks are being substituted with systems of armor weapons. The tank chassis now is used to construct artillery, air defense and missile mounts, armored personnel carriers, engineer vehicles and combat, rear and technical support vehicles.

This country considers the perspective of developing a system of armaments of the combat echelon of the army tactical formations, mounted on the armored chassis. This system can comprise armor weapons, rocket-and artillery weapons, air defense weapons, armored command post vehicles and command-and-control vehicles, EC facilities, armored vehicles of Engineers, armored multi-purpose military vehicles.

As usual the Army is designated mainly to hold a territory or to seize it at the land war theatres in cooperation with other arms of the armed forces. To accomplish both operational and tactical missions Army formations and weapons of all arms of the armed forces are employed. They operate as a united system of weapons and armaments, which is aimed at achieving the final goal of the operation (combat).

A whole system of modern requirements not only to single species of the armor, but to a complex of arms and armaments which form the tactical unit, has been worked out. The following requirements can be mentioned as the new ones:

- the ability to act autonomously as part of limited tactical task forces day and night under any climate and weather conditions;
- the operational and tactical mobility, including aircraft transportability with possible limits of the total weight of objects without reducing protection parameters;
- the parallelism of weapons and automatic guidance of different means of destruction;
- the ability to exercise remote control both of a single model and unit;
- the ability to provide integration of armor models into a united system of destruction;
- the ability to form rational duration of life cycles of the models;
- unification of the vehicles' families with the basic chassis within the framework of a united system of weapons at the continental war theatres;
- the ability to commission simultaneously the whole spectrum of both combat vehicles and combat, technical and rear support vehicles.

The main peculiarity of the present day employment of the armor is determined by the fact that to win the victory it is necessary to organize control and cooperation of the troops, units and combat means and to provide informational superiority over the enemy during the combat preparation and taking the advantageous positions when the situation changes rapidly.

Taking into consideration the above-mentioned facts, at present there is the necessity of developing a new systematic feature—the commander controllability along with traditional combat characteristics of the armor system (fire power, mobility and protection). This problem can be solved only by complex automatization of control processes of both a single model and a unit as a whole. To realize command controllability it is necessary for all types of the armor to possess on board an information-and-control system on the basis of highly productive computers, improved systems of technical sight, electronic security equipment, communication systems,

navigation equipment and other means for collecting, processing and transmitting information and commands.

New technical and technological improvements are evident to be the ground for fundamental development of combat and technical characteristics of armor objects. Today many developed countries pay much attention to the promotion of key technologies and creation of the scientific and technical basis for further improvement of the armor.

To meet the new demands for the armor as a component the system of weapons and armaments is to lay the ground for not only improving their traditional combat characteristics, but also for creating new weapons, modifying the forms and methods of conducting the armed struggle.

A tank combat support vehicle, which is being constructed nowadays, represents a family of new weapons and armaments, which are designated mainly to operate in one combat line with tanks and to destroy massive antitank means. In order to increase tank firepower, new complexes of weapons and armaments are being developed to take advantage of both non-traditional ways of throwing shells and new types of weapons using “fire-and-forget” principle. With the same aim automatic target detection and tracking systems are being mounted, multi-channel and panoramic sights are being used.

To increase protection, a complex of collective protection measures is being undertaken in the tactical units, as well as a complex of measures is being carried out to provide security for a single armor vehicle against detection, hit and at the moment of hitting. To accomplish these tasks it is necessary to combine dynamic and active forms of protection with a system of optical-and-electronic suppression; to mount an electromagnetic protection system and an obscurity increase complex; to employ modular combined armor.

To increase mobility, engines with specific power more than 30 hp are to be used for tanks and infantry fighting vehicles. Pneumatic suspension controlled by on-board computer, electrical power plants and electromechanical transmissions, gunner and commander control systems are to be introduced.

It is worth pointing out that lately there have been a number of publications, which depreciate the role of tanks in all kinds of combat operations. They doubt the necessity of further developing and manufacturing tanks. Less money has been invested into scientific research and experimental design works. These factors can lead to the situation when we will have to borrow technical improvements and new technologies from foreign tank construction industry in the five-year time.

NOTE:

1. Sovetskie tankovye voiska 1941-1945, Voenizdat Publishers, Moscow, 1973, p. 143.