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INFLUENCE OF ANTI-TANK TECHNOLOGY ON SOVIET OFFENSIVE TACTICS.(U)  
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**STUDENT RESEARCH REPORT**

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INFLUENCE OF ANTI-TANK TECHNOLOGY  
ON SOVIET OFFENSIVE TACTICS

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INFLUENCE OF ANTI-TANK TECHNOLOGY  
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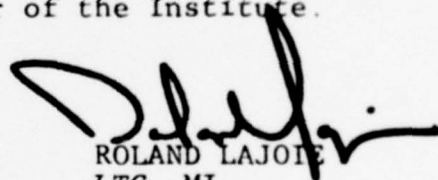
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FOREWORD

This research project represents fulfillment of a student requirement for successful completion of the overseas phase of training of the Department of the Army's Foreign Area Officer Program (Russian).

Only unclassified sources are used in producing the research paper. The opinions, value judgments and conclusions expressed are those of the author and in no way reflect official policy of the United States Government; Department of Defense; Department of the Army; Office of the Assistant Chief of Staff of Intelligence; or the United States Army Institute for Advanced Russian and East European Studies.

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#### SUMMARY

→ This paper examines changes in Soviet offensive tactics as discussed in the Soviet military press as a result of the increased technological capabilities of modern anti-tank weapons, especially the anti-tank guided missile (ATGM). The Soviet awareness of the complexity of the modern battlefield and the anti-tank threat to their combat effectiveness has resulted in an analysis of ways to maintain the tempo of the attack in their offense-oriented doctrine. This analysis has produced a series of available options to neutralize the anti-tank threat. These include reliance on the artillery, increased flexibility in maneuver formations (and possible acceptance of a new combat formation) and enumeration of a series of active and passive defense measures. As a result, the Soviet military seemingly has incorporated aspects of all options to produce a viable scheme of combined arms operations, capable of overcoming the anti-tank threat while maintaining the tempo of the attack. ↑

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INFLUENCE OF ANTI-TANK TECHNOLOGY  
ON SOVIET OFFENSIVE TACTICS

INTRODUCTION

The importance of the offense, and especially the role of armor in executing offensive operations, has long been a basic premise in Soviet military (tactical) theory. In Soviet theory, the offense is considered "the most effective means of combat action since only the offensive, conducted with decisive objectives, at high tempo and to deep depths, insures the complete destruction of the enemy."<sup>1</sup> The late Marshal of the Soviet Union, A. A. Grechko, in describing the evolution of tank warfare, stated that the massive introduction of tanks into the armed forces between the First and Second World Wars demanded serious changes in the organization of forces and in methods of conduct of military operations. The formation of tank divisions and armies during the Second World War transformed the character of tank operations into the "main striking force" of the ground forces.<sup>2</sup> From the Soviet point of view, this concept of tanks as the "main striking force" still exists. However, this concept is being scrutinized because of the impact of modern weapon technology.

Since 1945 Soviet military theory has undergone several periods of analysis with resultant changes. During the 1950's and 1960's, Soviet military theorists examined the impact of technology and scientific progress on the nature of modern war. This

affected not only the area of nuclear strategy (as exhibited by introduction of the Strategic Rocket Forces) but also the area of conventional warfare with resultant changes in military tactics and organization (as evidenced by introduction of the motorized rifle division in the early 1960's).

In discussing the influence of the scientific-technological progress on the combat power of the armed forces, Grechko realized that "new types of weapons and battlefield technology...inevitably result in changes in tactics, operational art, strategy and organization of forces."<sup>3</sup> He termed scientific-technological progress the catalyst of all transformation in the conduct of war. Included in the discussion of the influence of technology on modern warfare is the effect of technology on armored forces. Specifically, this recognized threat is the existence and continuous development of the anti-tank guided missile (ATGM). It should be noted that the Soviets do not ignore other anti-tank weapons, but the emphasis is on developing counter-measures to the anti-tank guided missile.

#### THE ATGM VS. THE TANK

The development of the ATGM opened a new era of battle with tanks and "necessitated a search for different means of operations," according to Marshal of Armored Forces A. N. Babadzhaniyan in writing on this topic in 1970. But he concluded, as did others of that time, that for every new weapon, no matter how threatening, there always exists a counteraction to minimize its effect and that tanks, for a long time, will be used on the fields of future conflict.<sup>4</sup>

Using the device of quoting "foreign military specialists," Soviet military writers also repetitively support the operations of tank forces "regardless of conditions" and reaffirm the importance of the tank as the main force and as the primary weapon against other tanks.<sup>5</sup> In the general dialogue on tank versus anti-tank weapons, Soviet authors reiterate that there is no objective basis to talk about the decline of tank forces or that the tank has outlived itself on the field of battle. They draw emphatic conclusions that "widely using group and individual means of defense against AGTM's and battle with ATGM's, tank forces can successfully operate on the fields of modern conflict and are one of the basic factors of achieving victory in nuclear war."<sup>6</sup>

While maintaining the supremacy of the tank, the Soviets do concede, however, that the search must continue for new, more modern means of delivering the attacking infantry to the forward defensive area and for more effective means of overcoming the long ranges of fire of AT weapons.<sup>7</sup> As will be discussed later, this search centers on ways of maintaining the tempo of the attack in an environment saturated with anti-tank weapons.

The Soviet concept that the armed forces of the Soviet Union must be prepared to fight in any type of war is reflected in the discussion of the anti-tank question. Many of the writings exclude conditions of nuclear war and concentrate strictly on conventional aspects. This is not a total exclusion, however, since many authors reiterate that "in modern conditions in connection with the appearance of nuclear weapons, the role of tanks has not only not decreased but

sharply grown--tanks are capable of conducting active offensive operations following nuclear strikes."<sup>8</sup> This is a simple extension of the basic principle of operation that "the primary method of attack will be the launching of nuclear strikes and the swift advance of tank and motorized rifle units into the depth of the enemy's defense through the breaches formed by nuclear weapons."<sup>9</sup>

#### INFLUENCE OF 1973 MIDDLE EAST WAR<sup>10</sup>

The current debate on the tank versus anti-tank weapons is not a new phenomenon in the Soviet military press but dates to the mid-1960's. In 1964, Khrushchev showed concern and surprise over the effectiveness of new anti-tank missiles after emphasis had been placed on the development of tank forces.<sup>11</sup> This debate continued as a routine topic of discussion in the Soviet military press until the October, 1973 Middle East War precipitated a vigorous, renewed discussion on the topic.

In discussing the Middle East War, Grechko addressed the broad relationship of the offensive and defensive operation of ground forces. In connection with the appearance of new weapons, he suggests "that the 'main striking force'--tanks-- has become more vulnerable, and the use of tanks on the battlefield has become more complicated. The continuing process of the perfection of anti-tank weapons places before science and technology serious tasks in the matter of raising the survivability of tank forces and the development of more effective means and methods of reliable suppression of anti-tank defenses."<sup>12</sup> He maintained that the battle between armor and anti-tank missiles has carried over into the research laboratory, onto the ranges and into

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industry. He also rejects the traditional method of increasing the survivability of tanks, by simply increasing their armor, as the best solution to the situation. He realizes the complexity of the problem in understanding that the development of ATGM's has practically only begun and that the answer (from the Soviet point of view) may be the development of anti-tank tube artillery.

From an operational point of view, Grechko suggests that experience of the 1973 Mid-East War can produce changes in methods of tactical operations of ground forces, particularly the role of engaging the enemy by fire at a considerable distance. Experience in this war showed that when infantry and tank forces were deprived of mutual support, heavy losses were incurred.

In general, the Soviets share the same concern for the future of tank warfare as has been discussed in Western military circles. This includes aspects of armored formations losing impetus without adequate air cover, successful employment of combined arms operations against anti-tank weapon concentrations and the concern over cost-effectiveness of the anti-tank missile versus the tank. Because of kill ratios and the realization that the present generation of tanks is far too vulnerable, the role of the tank in future warfare has been questioned in the Soviet military press as well as our own. But the question the Soviets are addressing is how to overcome this threat while maintaining the tempo of the attack in their armored and motorized-rifle doctrine.

## SOVIET PERCEPTIONS OF WESTERN ANTI-TANK TECHNOLOGY

To understand the Soviet response to this problem, it is necessary to understand their perception of Western capabilities in anti-tank weapon technology. That is, how do they perceive the capabilities, employment techniques and weak and strong points of NATO anti-tank weapons systems. Also, what do they consider the basic defensive measures against such weapons, i.e., fire, maneuver, changes in force structure, or a combination of all three?

Before the events of October 1973 accentuated the vulnerability of tanks, the Soviet military press was quoting West German military theorists, who "assume that the modern defense is first the battle against tanks; therefore, it should first be organized as an anti-tank defense."<sup>13</sup> This was in connection with the increase in the proportion of tanks today compared with the period of World War II: that is, there are more tanks in the modern (Soviet) motorized rifle division than in the (Soviet) tank corps of the period of the last war.<sup>14</sup>

Soviet militarists perceive contemporary western anti-tank defense as being based on the creation of a system of "echelons" and "coordination" of anti-tank fire with all means of fire, with a high density of AT weapons in addition to a system of mine-fields and obstacles. They are thus aware of the "capitalist countries'" attentive development of ATGM's: not only their tactical-technical capability improvement but also the perfection of the principles of their combat employment.<sup>15</sup>

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The Soviets note that the number of anti-tank weapons per kilometer of defense has outstripped the quantitative growth in tanks attacking per kilometer of frontage. They consider that the motorized rifle battalion of the probable enemy (NATO) has approximately 50 weapons, each capable of destroying several armored targets.<sup>16</sup> In one example, they cite that up to 30-32 anti-tank "units" (weapon devices) will be located in a company defensive position. If the company is at less than full strength (75% as this Soviet author assumed), then the company will still possess approximately 23-24 AT "units." Even considering a 25% casualty rate from artillery preparation prior to the attack, there will still remain 17-18 AT weapons along a front of 1500 meters. Those remaining weapons are capable of destroying 24-26 tanks, if those tanks are travelling at a speed of 12 kilometers per hour.<sup>17</sup> The if in this case is used in arguing for a higher speed of attack to minimize the effect of anti-tank weapons. However, as will be discussed later, a contradiction arises between this desire for a high rate of advance and the nature of their combined arms operations

In addition, the Soviets also impress on the individual soldiers and crews their part in defeating the anti-tank threat. For organization of successful combat with ATGM's, they teach the strong and weak points of ATGM's.<sup>18</sup>

In 1974 Soviet authors considered the strong points of ATGM's as being: range, up to 3-6 kilometers; hit capability, requiring only

1 or 2 ATGM's to hit the target; armor penetration of up to 400-600 millimeters; and mobility of launchers/weapons systems.

In contrast, they consider the following as weak points of ATGM's: dead space at 300-500 meters from the launch point (where the operator does not have the chance to guide the missile); operator capability or the time required for the operator to guide the ATGM under battlefield conditions; terrain limitations; time of day and weather conditions (visibility); rate of fire and the "signature" of the launcher position at the moment of firing.

Given these advantages and disadvantages of ATGM's, they consider that the most important factor in determining tactics for battling ATGM's is the knowledge of the systems of controlling or directing the missile to the target. In addition they list several active and passive defensive measures against ATGM's. Active measures include destruction of the ATGM in flight, destruction of the missile or its launcher in position during the fire preparation (artillery option--as described below) and the creation of active obstacles to control of the missile (creation of false targets). Passive measures include the use of smoke screens, employment of screens or extra armor on tanks and even thermal masking of engine heat.<sup>19</sup>

In addition, special significance is given to attack of tanks through shrubbery and broken wooded areas to passively defend against ATGM's. Crews are also taught evasive techniques. For example, if an ATGM is fired at a tank at a range of 2000 meters and the speed of the missile is 130 meters per second, then flight time required is

15-16 seconds. In that time, a "well-trained" crew can detect the launch point of the ATGM, fire one or two shots and move behind a fold in terrain, or change course.<sup>20</sup>

The Soviets are also concerned about the employment of ATGM-carrying helicopters and recognize helicopters as dangerous AT weapons, possessing sufficient numbers of ATGM's and practically unlimited maneuver capability. As the transformation of the helicopter into an armored combat vehicle has substantial impact on conduct of combined arms combat, it has also influenced Soviet views on tactics. There has appeared in Soviet military journals a general discussion of western doctrine on use of helicopters in AT warfare, their organization and trends for the future. They quote the command of the Bundeswehr as believing that the helicopter will become the main means of AT warfare in the next decade and have noted U. S. proposals to include helicopters in the organization of armored units.<sup>21</sup>

Citing experience in the Middle East War of 1973, they give the following example of helicopter tactics in anti-tank warfare. Several helicopters with ATGM's are situated on likely armor avenues of approach: as tanks approach, they rise to an altitude of 20-100 meters and engage the tanks at a distance of up to 3000 meters.<sup>22</sup> They view this tactic of helicopter operations as being widely practiced in the armies of NATO and suggest that the probable range of engagement will be at a range of 2500-3000 meters. This, combined with the ratio of losses of tanks to helicopters in the range of 12:1 to 19:1

portends increased Soviet interest in helicopters as tank killers and of future development trends in this direction.<sup>23</sup>

In defending against ATGM-carrying helicopters, the Soviet press emphasizes that the commander must thoroughly study the terrain and locale to determine likely directions of concealed approach of helicopters and maintain constant surveillance. When spotted, helicopters will be engaged with small-arms fire and with machine-gun fire from tanks and BMP's.<sup>24</sup>

#### "ARTILLERY OPTION"

The awareness of the implications of the 1973 Middle East War and the anti-tank capabilities of Western (NATO) armies demonstrates an awareness of the threat on the modern battlefield. As Karber points out, the primary point being debated in the Soviet press is how to overcome the challenge of anti-tank weapons and retain a high rate of advance against a strengthened NATO defensive capability. From the conventional point of view, the options available to the Soviet Army in overcoming the anti-tank threat can be categorized as the "artillery option" and the "maneuver option."

In countering anti-tank weapons, particular importance is attached to the role of the artillery. This includes reconnaissance, coordination of fire, and concentration of fire. Many Soviet authors (from the artillery branch) argue that artillery can effectively suppress anti-tank weapons. According to some analysts this role

is cherished by the artillery for two reasons: that within the Soviet Army, supervision of ATGM falls under the artillery branch; and that this is a major opportunity for artillery to regain its pre-Khrushchev influence and command over resources.<sup>25</sup>

Artillery officers writing in Soviet military journals emphasize that the suppression of the enemy's anti-tank defenses "is the most important task of the artillery" and that "without the use of weapons of mass destruction (nuclear weapons), such a task (of destroying AT means) almost completely falls to the artillery."<sup>26</sup> Realizing this, they argue that the artillery must suppress anti-tank weapons at all depths and to accomplish this they emphasize integrated reconnaissance of AT targets. By using all modern means of reconnaissance and intelligence gathering, it is possible to unmask (pinpoint) AT targets before they open fire or change positions. Observation, coordinated between observation points, artillery positions, general force, and engineer sub-units is emphasized as the basic form of reconnaissance. Realizing that the small size of ATGM's makes it difficult for ground observation (or to distinguish ATGM's from their "mother vehicle") the commanders of Soviet tank units are taught to use information from higher commanders, adjoining units and sub-units located in direct contact with the enemy. In other words, comprehensive combat intelligence is emphasized, including knowledge of enemy order of battle, employment techniques and organization of AT units.<sup>27</sup>

Constantly stressed in the discussion of the "artillery option" is the need for continuous coordination of all fire, from the beginning of reconnaissance to the attainment of fire superiority. During planning, first priority targets for the artillery are platoon strong points (where they believe most AT weapons will be located) of the first echelon of defense and in the rear areas of the defensive zone. Any AT weapons located outside the strong points will be engaged as pinpoint targets.<sup>28</sup>

One scheme of fire in the attack called for the artillery to fire on ATGM's already detected and to be prepared to shift to newly detected ATGM targets. In addition, with the motorized rifle troops mounted, fire of tanks and BMP's were used to suppress weapons dangerous for armored vehicles, i.e., anti-tank weapon systems. With the troops dismounted, fire would be concentrated on enemy weapons dangerous to troops, i.e., primarily small unit and individual weapons. And within a range of 300-500 meters of the forward defensive position, small arms fire would be used to suppress and destroy anti-tank weapons.<sup>29</sup> This seems to be a logical countermeasure against the concentration of anti-tank weapons based on lessons learned in the October 1973 Middle-East War. That is, in addition to engagement at long distance, the fire of anti-tank weapons increased until, at a range of 500 meters, all anti-tank weapon systems (unit and individual) would be employed.<sup>30</sup>

Concentration of artillery fire on the immediate defensive zone as the attacking forces approach is a basic premise of artillery employment. The Soviets recently cited the following example. As the attacking forces are 2-3 kilometers from the defensive line, the artillery will engage approximately 5 targets per kilometer of frontage. This increased to 10-12 targets per kilometer with the attacking force at a distance of 500 meters to 2 kilometers from the FEBA and to a rate of 15-16 targets per kilometer when the attacking forces are within 500 meters of the enemy's defensive position.<sup>31</sup>

Thus, through concerted reconnaissance of anti-tank targets, coordination of all types of fire and the concentration of that fire on the immediate defensive positions along the FEBA, the Soviet artillery believes it can successfully defeat the anti-tank threat.

#### "MANEUVER OPTION"

The "maneuver option" includes aspects of speed of operation, flexibility in changing combat formations and debate on the use of BMP's with tanks in the attack.

Mobility of forces is one of the basic principles of Soviet operational art and tactics and is considered a necessary condition for achieving success in battle. In particular for tank forces, "the decisive meaning of mobility for success in battle is explained in that the basic nature of these forces is speed and maneuverability."<sup>32</sup>

One Soviet general argued in 1973 that the tempo of the attack should be conducted at the maximum speed which modern tanks will allow. He argues that if attack on the modern battlefield was conducted at the same speed of attack (12-15 kilometers per hour) as was used in World War II, and given the concentration of AT weapons per kilometer of frontage, then the attack will fail. Why, he questions, artificially restrain the tempo of the attack?<sup>33</sup> Others refute this argument by questioning the feasibility of firing on the move at speeds of 25-30 kilometers per hour.

Closely connected to the concept of high tempo of the attack is the flexibility in combat formations during an attack. For example, during one training exercise the commander changed from a frontal attack to a flanking action in order to minimize the effect of anti-tank emplacement.<sup>34</sup> This, in turn, is closely related to the Soviet doctrine of exploiting gaps in the defensive line, especially in modern defensive deployments where a continuous front will probably not exist.

In the last two years, a series of articles has appeared in the military journal, Voennyi Vestnik, on the employment of BMP's in the attack. The initial article argued that in a non-nuclear environment, a motorized rifle battalion, as a rule, breaks through the enemy's defenses dismounted.<sup>35</sup> This is forced by the saturation of the defenses by large quantity of AT systems and engineer obstacles. They also called for the dismount to be as close to the

forward defensive line as possible and for the BMP's to support by fire from a position behind the tanks and dismounted infantry. These authors contend, however, that it would be possible to attack while mounted in the BMP's in a nuclear environment since most of the AT systems would have been neutralized.

Subsequent articles addressed the question of "when to dismount." One author suggested that the BMP units should move up toward the tanks as quickly as possible and quickly dismount at a distance of 400-500 meters from the forward defensive line. At any greater distance, they lag too far behind the tanks for a coordinated attack.<sup>36</sup>

An interesting article in this series was written by LTC A. Bondarenko<sup>37</sup> who suggested that perfection of weapons technology demands changes in tactics. Interestingly, he mentioned that in the employment of sub-units (podrazdelenie) equipped with BMP's, it is necessary to remember that such forces are intended for bold raids in the depth of the enemy's defenses for the purpose of by-passing the enemy's strong points. He then offers more options on the location of the line for dismounting from BMP's and suggests that maybe such a pre-determined line is not needed at all.

In a similar vein, a subsequent author states that it is more advisable to break through the enemy's defenses with personnel mounted and that "raid tactics" are the concept of the future for units equipped with BMP's.<sup>38</sup>

In continuing this discussion, COL GEN V. Merimskii, Deputy Chief of the Main Directorate for Combat Training of the Ground Forces,

warns against establishing set lines at certain distances for dismounting. He supports the idea of flexibility and contends that the line for dismounting depends on the nature of the enemy's defenses, particularly the deployment of his AT weapons.<sup>39</sup>

From this discussion of combined arms operations arises a basic contradiction. The methods of employing motorized-rifle troops with tank units and the necessity to dismount to minimize the effect of anti-tank weapons, by its nature, will reduce the speed of the attack. This contradicts with Soviet dedication to the principle of "attack at high speed." As mentioned earlier, some authors were arguing for a speed attack of 25-30 kilometers per hour, but this would be impossible in combined arms operations with motorized-rifle troops when such troops are forced to dismount. Logically, these are two aspects of the same argument (overcoming the anti-tank threat), but as of yet, it is still unresolved as to which aspect will have precedence in Soviet tactical planning. Part of the solution to this problem may be development of the concept of "bold raids" or raid tactics" for units equipped with BMP's as a means of by-passing prepared defenses and exploiting gaps in the defensive line

In discussing concentration of forces in the attack, one author states that at battalion level, the density of attacking tanks may reach 30 per kilometer. This provides sufficient force for the initial strike, suppresses AT weapons, and creates conditions for successful penetration of the defensive line.<sup>40</sup>

Recent debate has centered on the merits of a new combat formation of "attack in two or three lines."<sup>41</sup> In describing the role of the BMP and tank on the battlefield saturated with anti-tank weapons, many authors argued for the advance of combined arms units in a formation of "lines," with tanks comprising the first "line," and BMP's and other supporting weapons in the second and subsequent "lines." Early in 1976 this idea of "lines" within a combat formation was criticized because "lines" were not an element of combat formations.<sup>42</sup> This is more of an argument of terminology since "echelons" are an element of existing formations and there is a combat formation called "in line" (v liniu). The thrust of the argument was against creating "echelons" in a formation at company level or placing firing systems in reserve, since this would weaken the initial blow. The reasoning behind the concept of "attack in two or three lines" is to decrease the distance between supporting elements in order to minimize the threat to leading tanks by anti-tank weapons. Although this argument is not concluded, as late as December 1976, the idea of organizing combat formations in several lines seemed to be on the verge of general acceptance.<sup>43</sup> This is a direct result of the anti-tank threat and could have significance in developing an effective anti-tank defense.

#### SOVIET RESPONSE TO TACTICAL PROBLEMS

In discussing tactics, the Soviets often make use of previous war experience, especially that of the "Great Patriotic War." However,

no matter how repetitive and boring this becomes in their press, they are beginning to realize that this method of analysis and comparison is not as useful and appropriate as it has been in the past. Within their own process of criticism/self-criticism, military theorists and tacticians are being criticized for short-sightedness and superficiality of writing.

For example, in 1973 there appeared a critique of new tactical books. The major complaint was that too much reliance was being placed on World War II experience without noting changes inherent in modern warfare. This particular author noted that the treatment of tactics was not comprehensive enough or inclusive enough, given the level of modern technological development.<sup>44</sup>

As noted earlier, the Soviet military has made an extensive study of experiences of the October 1973 Middle East War, including the Israelis' successes in defeating AT weapons systems. In that War, the Israeli Defense Forces' (IDF) concept that "tanks are everything" disintegrated early as IDF tanks were defeated by well-integrated and controlled combined arms teams, plentifully supplied with anti-tank weapons. The Israeli offensive often was halted because of strong anti-tank defenses, and usually as a result of a combination of anti-tank weapons in the hands of competent soldiers and integrated into a proper AT formation. To counter the effectiveness of AT weapons and especially the SAGGER AT-3 ATGM, the IDF used elements of the mechanized infantry company organic to every tank battalion.

Whenever an ATGM was spotted in flight, machine gun and small arms fire was directed to the likely "gunner" position and effectively disrupted the aim of SAGGER AT-3 "gunners." The Israeli conclusion was that the SAGGER ATGM did not make the tank obsolete since a well-coordinated combined arms team could successfully operate and that ATGM's are best countered by more APC's with multiple machine guns, fighting alongside tanks.<sup>45</sup>

This account of Israeli success is offered for comparison to the Soviet concepts as discussed earlier. However, it should be emphasized that the Israeli techniques were not new innovations in tactically organizing units for combat. In fact, the Israeli response could more correctly be termed an adaptation to previously developed concepts, including Soviet concepts, of combined arms operations. Soviet interest in this area was centered on analysis of actual war-time experience rather than observance of any new technique or concept of employing motorized-rifle units with tank units.

#### CONCLUSIONS

From the Soviet discussion, it is apparent that they perceive the anti-tank guided-missile as the most severe threat to their ground combat effectiveness in the near future. To minimize this threat, the Soviet tacticians have examined available methods and measures of counteraction, and from this, the following conclusions can be reached.

First, any tactic or method countering the effectiveness of anti-tank weapons will incorporate elements and aspects of all options described above, i.e., increased intelligence gathering to determine location and employment of AT systems, concentration of all fire means, attack at high speed, flexibility in combat formations and a coordinated combined arms attack of integrated motorized rifle and tank units. It would be inconceivable to place total reliance on either the artillery or on the mobility of maneuver elements to minimize the anti-tank threat, when a combination of these with other countermeasures would prove more advantageous and could easily be incorporated into their tactical procedures. Categorization of options into "artillery," "maneuver," etc., provides a useful tool of analysis but the eventual Soviet response will not follow such clearly defined lines.

Secondly, the anti-tank threat to combat success seems to portend a shift in priority of targets designated for the Soviet artillery. If before the primary target and mission of artillery could be considered destruction of nuclear delivery systems, counter-battery fire and destruction of enemy resources in turn, then the emphasis placed on anti-tank weapons targets could indicate a shift in priorities. This, however, is probably more of an emphasis by the advocates of the "artillery option" rather than a widely accepted change in tactics. It does indicate, though, the important role of artillery in Soviet offensive doctrine.

Thirdly, the anti-tank threat has resulted in an increased emphasis on the development of combined arms tactics, especially coordinated action of tanks and BMP's. As noted above, the concluding thrust of the discussion seemed to center around the close support of tanks by BMP's. This effective use of motorized infantry to minimize the threat against tanks is the direction of future development in combined arms tactics.<sup>46</sup> Also, the increased threat to the survivability of the tank has resulted in an increase in the ratio of BMP's to tanks in the Soviet ground forces. This change is reflected in the ratio of tank to motorized rifle divisions. In the early 1960's, this ratio was 1 to 1.8. By 1974, the Soviet Army had increased by 20 divisions - all motorized rifle - decreasing the ratio to 1 to 2.2.<sup>47</sup>

Ironically, the Soviets realize the higher vulnerability of the BMP to the anti-tank missile in comparison with the tank. Consequently, they have logically placed the less-vulnerable tank in the forefront of the attacking formations but with the BMP's supporting by fire and moving at a close distance (200-400 meters) behind.

This leads to a fourth conclusion, that is, the evolution of a new combat formation of "attack in two or three lines." This would be an entirely new concept if employed at company level. At battalion level, however, (as a variance from current formations) it would only result in a shortening of the distances between lead tanks (in the first "line" or "echelon") and supporting BMP's and

other weapons (in subsequent "lines" or "echelons"). This is forced by the saturation of the battlefield with anti-tank weapons but by itself has no great significance. Only within the context of the overall Soviet response does it show the perceived Soviet concern for their combat success against ATGM's.

It can also be concluded that an increased emphasis on development of "bold raid" tactics for units with BMP's can be expected. This will allow the Soviet forces to maintain their adherence to the principle of "attack at high speed" and to eliminate the contradiction inherent in operations against prepared defenses, where motorized troops are forced to dismount. This concept of "bold raids" would also correspond to their concept of exploiting gaps in defensive lines, especially under conditions where a continuous defensive front or line would not be feasible.

And lastly, it can be concluded that the Soviet military still considers the tank as the "main striking force" in offensive operations. However, they realize that the day of large-scale independent tank operations has ended. Henceforth, the success of the tank on the battlefield will depend on the effectiveness of supporting mechanized infantry and fire support and the overall cohesiveness of the combined arms team. But, to maintain the tempo of the offensive, they will be forced to examine out-moded tactical concepts and search for new and more effective methods of countering the anti-tank threat. As the technological level of anti-tank weaponry increases, future changes in Soviet tactical procedures will occur.

FOOTNOTES

<sup>1</sup>COL V.Savkin, "Cherti sovremennogo boia," Voennyi Vestnik, No. 3 (1974), p. 25.

<sup>2</sup>Marsahl A.A.Grechko, Vooruzhennye Sily Sovietskogo Gosudarstva, (Moskva: Voennoe Izdatel'stva, 1975), p. 175.

<sup>3</sup>Ibid.

<sup>4</sup>Marshal N.Babadzhaniana, Tanki i Tankovoye Voiska (Moskva: Voennoe Izdatel'stvo, 1970), p. 216.

<sup>5</sup>LTG V.Koritchuk, "Bor'ba s protivotankovimi sredstvami v nastuplenii," Voennyi Vestnik, No. 6 (1975), p. 67; COL D. Shapovalov, "Obuchenie ekipazhei s tankami, SAU i PTURSI," Voennyi Vestnik, No. 6 (1975), p. 64.

<sup>6</sup>Babadzhaniana, p. 222.

<sup>7</sup>MG I Skorodumov, "Atake -- vysokuiu skorost' ", Voennyi Vestnik, No. 3 (1975), p. 48.

<sup>8</sup>COL A Tonkikh, "Ogon' protiv broni," Voennyi Vestnik, No. 2 (1975), p. 125.

<sup>9</sup>A.A.Siderenko, The Offensive (A Soviet View), trans. by U.S. Air Force in "Soviet Military Thought" Series, (Washington: Government Printing Office, 1974), p. 46.

<sup>10</sup>For general discussion of this war, see: Unclassified Version of Armed Services Committee Report, "The Middle East War," Armed Forces Journal International, VOL III, No. 35, (Jan 1974), pp. 33-38; "Egypt Assesses Lessons of October War," Aviation Week & Space Technology, Vol 99, No. 25 (December 17, 1973), pp. 14-17; Dennis Chaplin, "The Middle East War: An Assessment," Journal of the Royal United Services Institute for Defense Studies (RUSI), Vol 119, No. 1 (March 1974) pp. 30-34; Jac Weller, "Middle East Tank Killers," RUSI, Vol 119, No. 4 (December 1974), pp. 28-35.

<sup>11</sup> Philip Karber, "The Soviet Anti-Tank Debate," Survival, XVIII, No. 3 (May/June 1976), p. 106.

<sup>12</sup> Grechko, p. 197.

<sup>13</sup> Siderenko, p. 53.

<sup>14</sup> Ibid., p. 45.

<sup>15</sup> COL A. Rodin, "Bor'ba artillerii s protivotankovimi sredstvami," Voennyi Vestnik, No. 5 (1974), p. 70; Col N. Ezhov, "Odin na odin s PTURS," Voennyi Vestnik, No. 3 (1974), p. 86.

<sup>16</sup> COL V. Zvonov, "Porazhenie sredstv protivotankovoi oboroni," Voennyi Vestnik, No. 11 (1975), p. 86.

<sup>17</sup> Skorodumov, "Atake--vysokuiu skorost'", ibid.

<sup>18</sup> Ezhov, pp. 86-89; COL. A. Latukhin, "Oruzhie protiv tankov", Krasnaia Zvezda, (3-part series), 22 October, 12 November, 4 December 1975.

<sup>19</sup> Babadzhaniana, pp. 215-222.

<sup>20</sup> Ezhov, p. 87.

<sup>21</sup> COL M. Belov, "Vertoleti v bor'be s tankami," Voennyi Vestnik, No. 2 (1974), p. 125; GEN-LT V. Reznichenko, "Taktika-napravlenie razvitiia," Krasnaia Zvezda, October 5, 1976, p. 3.

<sup>22</sup> COL N. Nikitin, "S uchetom opyta voiny," Znamenosets, No. 4 (1976), p. 38.

<sup>23</sup> Reznichenko, ibid.

<sup>24</sup> COL A. Tonkikh, "Vzlom protivotankovoi oborony protivnika," Voennyi Vestnik, No. 3 (1973), p. 9; Koritchuk, p. 70.

<sup>25</sup> Karber, p. 108.

<sup>26</sup> Marshal G. Peredel'skii, "Osnovnie napravlenie v podgotovke raketnikov i artilleristov," Voennyi Vestnik, No. 2 (1974), pp. 63-68; Rodin, p. 71.

<sup>27</sup> Ezhov, pp. 86-89;  
Peredel'skii, p. 64;  
COL I. Likhoday, p. 64; "Razvedka i podavlenie protivotankovoi oborony," Voennyi Vestnik, No. 12 (1973), pp. 69-71.

<sup>28</sup> Rodin, ibid.

<sup>29</sup> CPT V. Mikhal'chik, "Batariia unichtozhaet PTURS," Voennyi Vestnik, No. 8 (1974), pp. 36-40; Tonkikh, "Vzлом protivotankovoi oborony protivnika," p. 10.

<sup>30</sup> Tvonov, ibid.

<sup>31</sup> Koritchuk, p. 69.

<sup>32</sup> COL V. E. Savkin, Osnovnye printsipy operativnogo iskusstva i taktiki, (Moskva: Voennoe Izdatel'stvo, 1972), p. 229.

<sup>33</sup> MG I. Skorodumov, "Vstremitel'nost' deistvii - Zalog uspeha v boiu," Voennyi Vestnik, No. 5 (1973), pp. 11-15.

<sup>34</sup> COL B. Simoninkov, "Ispol'zovanie mestnosti v boiu," Voennyi Vestnik, No. 4 (1973), p. 51.

<sup>35</sup> LTC V. Pishakov and MAJ L. Kirpach, "Boevie machini pekhoti v boiu," Voennyi Vestnik, No. 6 (1975), p. 43.

<sup>36</sup> COL. L. Kaminskii, "O primenenii BMP v boiu," Voennyi Vestnik, No. 8 (1975), p. 50.

<sup>37</sup> LTG A. Bondarenko, "O primenenii BMP v boiu," Voennyi Vestnik, No. 10 (1975), p. 57.

<sup>38</sup> LTG V. Bukharenko and LTC A. Molozov, "O primenenii BMP v boiu," Voennyi Vestnik, No. 11 (1975), pp. 60-62.

<sup>39</sup> COL GEN V. Merinskii, "BMP v boiu," Voennyi Vestnik, No. 3 (1976), p. 20.

<sup>40</sup>COL V.Vinnikov, "Ataka v dve i tri boevie linii," Voennyi Vestnik, No. 12 (1976), p. 53.

<sup>41</sup>Current combat formations at company level are: "v liniu" (in line) and "ustupom v pravo/v levo"(echelon right/left). This new concept of "attack in two or three lines" may also be included in battalion formations. In that case, the major difference between "attack in two or three lines" and a battalion in an echelon combat formation would be in distances between elements of the battalion.

<sup>42</sup>Merinskii, p. 20.

<sup>43</sup>MG U.Kazarnovskii and COL P.Rubtsov, "O postroenii boevogo poriadka podrazdelenii," Voennyi Vestnik, No. 12 (1976), p. 65-69.

<sup>44</sup>COL A.Buliatov and LTC U.Kariakin, "Problemi taktiki razvivat tvorcheski," Voennyi Vestnik, No. 7 (1973), pp. 124-126.

<sup>45</sup>Weller, ibid.

<sup>46</sup>For a discussion of specific changes in organizations, see John Erickson, "Trends in the Soviet Combined-Arms Concepts", Strategic Review, Vol, V, No. 1 (Winter 1977); pp. 38-52.

<sup>47</sup>Karber, p. 133.

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