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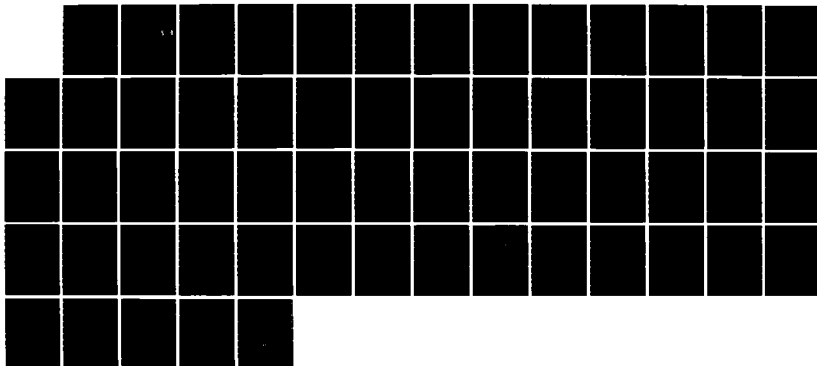
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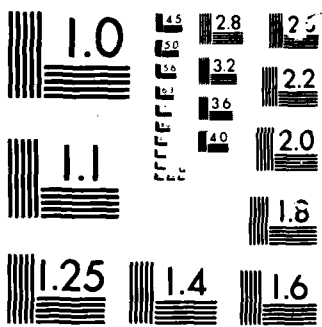
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ANTIARMOR COMPANY IN THE ARMOR BATTALION

Major James B. Gunlicks
Armor

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School of Advanced Military Studies
U. S. Army Command and General Staff College
Fort Leavenworth, Kansas

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ABSTRACT

This paper determines whether or not the antiarmor companies of M-2 equipped mechanized infantry battalions should be given to armor battalions that fight pure. Without attached mechanized infantry, the pure armor battalion has no long range direct fire antitank systems unless it uses the M-3s in the scout platoon. The scout platoon missions are reconnaissance, security and movement control.

The question of the best use of the antiarmor company was answered by testing armor and mechanized infantry battalions with and without antiarmor companies. The four force structures were evaluated on the ability to assist the withdrawal of the covering force and on defense of the main battle area. The research was conducted using the FIREFIGHT wargame on terrain boards duplicating conditions in the Federal Republic of Germany.

Based on the observations of the eight engagements wargamed, the capabilities of antiarmor companies are maximized when companies are taken from mechanized infantry battalions and given to armor battalions that would otherwise have to fight pure.

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INTRODUCTION

Current U.S. Army doctrine advocates the use of combined arms at task force level. The prescribed task force configurations are armor heavy, mechanized infantry heavy and balanced; however, several heavy divisions' task organizations for war include at least one pure armor battalion.¹ Pure armor battalions participate in numerous field training exercises and in REFORGER. In the Army of Excellence, the armored division retains six armor and only four mechanized infantry battalions. When the division commander wants to retain three or more mechanized infantry heavy task forces, at least one armor battalion will have to fight pure. Only when the mix is two mechanized infantry heavy, six armor heavy and two balanced task forces will all of the armor battalions fight with an attached mechanized infantry company.

One of the most significant disadvantages to fighting a pure armor battalion is the lack of sufficient antitank guided missiles (ATGMs) within the battalion to provide long range fires. The only long range direct fire systems in the armor battalion are the TOW IIs mounted on the M-3s in the scout platoon. Doctrinally, scout platoon missions include reconnaissance, security and movement control. Although the scout platoon "has an impressive antitank capability; it should not be employed as an antitank platoon; the scout platoon's primary mission is seeing the battlefield."² The armor battalion commander faces the dilemma of giving up his reconnaissance, security and movement control capability, his long range antitank capability, or forcing his scout platoon to attempt the traditional scout missions and simultaneously provide long range fires. Consequently, he risks failure in both missions.

This dilemma becomes significant upon examination of the current Soviet ATGM/AT capability. Not only do the Soviets exceed the U.S. in the number and variety of long range antitank systems, but they enjoy a significant standoff

advantage.³ This standoff advantage is exacerbated for the armor battalion commander when his tank companies are able to place effective direct fire out to a range of only 1500 meters, yet can expect to receive Soviet ATGM fire from ranges in excess of 4000 meters. Currently, this 2500+ meter disadvantage in direct fire standoff can only be offset somewhat by the scout platoon's TOW IIs.

In an army trying to create additional light infantry units within a limited personnel ceiling, it is doubtful that the armor battalions of the armored divisions will gain additional TOW II systems. The answer to this problem, however, may lie within the current force structure of the Army of Excellence. Upon implementation of the J-Series TO&E, mechanized infantry battalions were equipped with TOW II mounted M-2 IFVs in place of M113 APCs. Consequently, the number of TOW IIs increased from 18 to 66. Each of the four line companies now has 13 M-2s, the headquarters and headquarters company has two M-2s and the antiarmor company has 12 ITVs. If these antiarmor companies are attached, placed OFCON or assigned to the armor battalions, the mechanized infantry battalions will still have 300% more TOW systems than they did under the H-Series TO&E and the armor battalions will gain the missiles needed to engage the enemy at long ranges without giving up the reconnaissance, security and movement control capability of their scout platoons. The mechanized infantry battalions will lose some of their effectiveness when the antiarmor companies are gone; however, the key issue is whether or not these companies will be more effective in armor battalions than in mechanized infantry battalions.⁴

One way to make this determination is to test the combat effectiveness of armor and mechanized infantry battalions with and without antiarmor companies. The purpose of this paper is to determine whether or not armor battalions that fight pure should have antiarmor companies. If the antiarmor company is more effective in the pure armor battalion, the argument could be made that this company may be more effectively employed with an armor heavy task force as well.

This paper makes the initial attempt at answering the question by determining whether or not the M-1 equipped armor battalion defending in CENTAG should be reinforced with an antiarmor company taken from an M-2 equipped mechanized infantry battalion.⁵

It is important that this issue be addressed now. Implementation of the Army of Excellence force structure is underway, but still at the stage where it can be modified. The doctrine for this force structure is still under development.⁶ If this change is made soon, it will cause less turmoil than if it is done after the new doctrine is finalized. Pure armor battalions do not train at the National Training Center. The U.S. Army, therefore, has no current data with which to compare the performance of pure armor battalions as opposed to armor task forces. Consequently, the armor battalion commander in the next war will not have the advantage of studying the lessons learned from fighting pure at the National Training Center. Armor battalions do take part in the REFORGER exercises, but they do not face as well trained an OPFOR as they would at the National Training Center.

METHODOLOGY

This research was conducted using the School of Advanced Military Studies FIREFIGHT wargame rules. FIREFIGHT is a high resolution, manual battle effects trainer that focuses on individual weapons systems and tactical operations below brigade level. It is not a battle simulation and is designed primarily to facilitate command post exercises. The hit-kill probability tables resemble those used in Dunn-Kempf, AVPK and First Battle; however,

FIREFIGHT'S tables do not adhere to strictly analytical data derived from firing tables, etc. Instead, those analytical tables have been modified using actual unit performance data derived from "real world" training experiences, and to a certain extent some "gut feel", in the absence of good data to create hit-kill probability tables which more closely reflect actual, "believable" results.⁷

Components of the wargame include terrain boards that approximate actual

terrain on which U.S. forces could potentially fight, miniature Soviet and U.S. combat vehicles organic to the forces used in the scenario, equipment to measure acquisition and direct fire capability, movement rate tables, observation range tables, exposure rate tables, direct fire kill matrix tables, indirect fire kill matrix tables and systems degradation tables.

Although the FIREFIGHT wargame does not duplicate reality, it does approximate the dynamics of battle below brigade level closely enough to be a useful medium through which initially to examine the question of this paper. The evaluation of just one iteration of each of the four force structures that were wargamed does not provide a large enough sample from which to conclusively resolve the issue; however, this amount of research is sufficient to determine the utility of additional research using this and other wargames and simulations. If additional testing indicates that the conclusions reached in this paper are still valid, final testing should be conducted at the National Training Center and during REFORGER and other field training exercises.

Since the purpose of this paper is to determine whether or not armor battalions that fight pure should receive antiarmor companies, the selection of a battalion sized force is appropriate. Several other factors were considered in this determination. The FIREFIGHT wargame is ideally designed for Soviet regiment versus U.S. battalion resolution and the battalion is the most likely unit to receive the attachment/OPCON of an antiarmor company. The selection of a battalion sized force for evaluation also facilitates the option of placing the antiarmor company in general support of the entire battalion, a platoon in direct support of each of three line companies or a combination of both. The selection of a regimental sized enemy force is based on the need for the attacker to attain a favorable force ratio over the defender along the primary avenue of approach. It is also reasonable to expect a Soviet regiment to present a strong enough force to adequately stress any examined force composition.

Four force structures were evaluated. Initially, a pure armor battalion was observed and conclusions made as to its effectiveness. The engagement was then rethought under the same conditions; however, an antiarmor company was attached to the armor battalion. Conclusions drawn from the observations of this engagement focused on the added capability provided by this asset. Conclusions were then made based on a comparison of the armor battalion as opposed to the armor task force, although these conclusions were sufficient to determine the rather obvious outcome of whether the armor battalion was more effective with or without an antiarmor company, this evaluation could not be made in isolation. Under the present force structure, the antiarmor company would have been detached from a mechanized infantry battalion; therefore, the next engagement was conducted observing a mechanized infantry battalion minus its organic antiarmor company. After conclusions were made based on these observations, a mechanized infantry battalion with its antiarmor company was evaluated. The same observation-conclusion process was followed and then conclusions were made comparing the effectiveness of these two force structures. Finally, conclusions were made as to the most effective employment of the antiarmor company given the choice of using it with a mechanized infantry battalion or a pure armor battalion. This involved weighing the benefits to the gaining battalion against the degradation to the losing battalion.

The Soviet force was a BMP equipped motorized rifle regiment. The selection was based on the benefits of evaluating the force that presents the greater threat to U.S. battalions, BMP or BTR. The BMP regiment is more likely to appear in the second echelon of the motorized rifle regiment than is a BTR regiment. Testing the thesis with a second echelon regiment facilitated evaluating the four battalions on more than one mission and examining the effect the existence of an antiarmor unit has on employment of the scout platoon.

The covering force fought itself was not war-gamed. Each of the four battalions

evaluated could expect to be given the mission of assisting the covering force withdrawal. Consequently, the covering force battle handoff and the main battle area fight were both wargamed.

Selection of the terrain over which to conduct the wargame was based on a study of 1:50,000 scale maps of the terrain boards available at the School of Advanced Military Studies. The terrain was suitable for employment of armor and mechanized infantry units and contained two avenues of approach from which the Soviet forces could conduct both a main and a supporting attack. One zone was along a high speed avenue of approach which provided excellent long range TOW II shots while the terrain in the other zone was more restrictive.

TACTICAL SCENARIO

The tactical scenario for this research was developed with a Soviet motorized rifle division conducting a supporting attack beginning on the Inter-German border.⁴ The first echelon regiments attacked ten to twelve kilometers into the covering force area but were defeated before they reached the main battle area. The MRB equipped motorized rifle regiment of the second echelon was committed in a four to six kilometer zone of action and advanced toward the forward edge of the battle area (FEBA) with two reinforced motorized rifle battalions abreast followed by another reinforced motorized rifle battalion. The main effort of the second echelon motorized rifle regiment was in the east on the high speed avenue of approach along Highway 4. The mission of the first echelon regiments was to destroy the covering force and then locate and penetrate the forward company positions in the main battle area. The mission of the second echelon regiments was to defeat the U.S. forces in the main battle area and then secure crossing sites on the Main River. The second echelon motorized rifle regiment was at 100% strength and was not attrited by the covering force as it withdrew through the main battle area.

The U.S. force defended with a strong covering force that defeated the first

echelon motorized rifle regiments prior to withdrawing through the main battle area. The battalion on which this research is based, defending at the FEBA, had the mission to assist the rearward passage of the covering force and then defeat the second echelon motorized rifle regiment in sector. This battalion began the engagement at 100% strength.

The U.S. brigade commander's intent was to defeat the Soviet motorized rifle division before it secured crossing sites on the Main River. He intended to counterattack the second echelon tank regiment with the brigade reserve consisting of an armor task force. It was essential to his plan that the second echelon motorized rifle regiment be defeated forward of the battalion rear boundary before it could influence the outcome of the brigade counterattack of the tank regiment. The battalion commander's intent, therefore, was to destroy the lead motorized rifle battalions forward of phase line CAMEL with three line companies and then defeat the second echelon motorized rifle battalion with the reserve line company.

In each engagement the battalion defended with three line companies abreast and one in reserve. The company on the east defended with two platoons forward and one in reserve occupying the center portion of a proposed company battle position. The two forward platoons were to eventually delay back to platoon battle positions on either side of the reserve platoon. The center company defended with two platoons forward and one platoon in depth astride the major enemy avenue of approach into the battalion sector. The company on the west defended with three platoons abreast. The reserve company occupied a blocking position to the rear of the center company along the high speed avenue of approach. This company could defend from this position or counterattack out of it into the enemy flank by using concealed and covered routes in the folds of the ground and behind farm buildings and small towns.

EVALUATION CRITERIA

The success or failure of each of the four force structures evaluated was based

on several criteria. For the battalion to be successful, it first had to accomplish the mission of assisting the withdrawal of the covering force in a manner that enabled it to accomplish the next mission of defeating the motorized rifle regiment. An objective evaluation of how well each battalion accomplished the covering force handoff could not be made using this wargame; however, conclusions concerning the subjective evaluation are included in the paper for consideration. Observations were made on the number of Soviet vehicles destroyed by the MBA battalion during the handoff compared to the number of friendly losses. The conclusions made from these observations are considered objective and valid within the scope of the FIREFIGHT wargame.⁹ Successful accomplishment of the mission to defeat the second echelon motorized rifle regiment in sector was based on achieving at least 70% destruction of enemy combat vehicles to include BMPs, T-64s, and BRDMs. Additionally, the U.S. battalion had to be at 40% strength or higher at the end of the engagement. In order to comply with the brigade commander's intent, the destruction of the motorized rifle regiment had to be so complete that it could not continue the attack past phase line CAMEL with any more than a two platoon sized force. Once the criteria described above were measured, the relative success of each force was based on a comparison of the percentage of Soviet losses, percentage of U.S. losses, and the depth of the Soviet penetration.

ARMOR BATTALION IN THE COVERING FORCE HANDOFF

The mission of the armor battalion included assisting the covering force as it withdrew into the main battle area. The Scout Platoon was initially to assist the withdrawal of the covering force through the battalion and then to screen the two secondary avenues of approach into the left flank of the battalion. The battle handoff was expected to occur under heavy enemy pressure. The covering force was to withdraw using predesignated routes and it was essential to maintain contact with the enemy during the handover of the battle. Once the covering force was through the battalion sector, the Scout Platoon was to screen the left flank of the

battalion and maintain contact with the adjacent task force and provide early warning of any potential enemy breakthrough into the battalion sector as a penetration there would defeat the counterattack.

The battle handoff occurred as expected with the covering force under fire as it crossed the handover line. The Scout Platoon was divided into three sections, one operating in front of each of the forward line companies along the withdrawal routes. The platoon leader and platoon sergeant, therefore, were unable to coordinate the actions of the entire platoon as well as they could have had the platoon been divided into two sections. It was necessary, however, to establish three routes for the covering force. The scout platoon leader faced the dilemma of whether he should maximize the long range potential of his TOW IIs by selecting good firing positions or whether he should position his vehicles where he could best assist the covering force in finding the correct routes in the smoke. He believed they would be buttoned up and it would be difficult for them to find the way. The scenario was wargamed both ways.

Initially, the Scout Platoon tried to position the vehicles where they could attain long range shots and simultaneously assist the covering force withdrawal. The section on the east engaged two Threat tanks at ranges of 2400 and 2800 meters and one BMP at a range of 2600 meters. The results were two T-64s and one BMP destroyed at a loss of one CFV. The CFV had remained in position, fired a second round at a T-64 and was hit by a SPANDREL fired from a BRDM. The scout section in the center could not acquire Threat targets at long range because there were no positions near the passage point conducive to long range TOW II shots. One CFV was lost to the direct fire of a T-64 that closed to within 1400 meters and fired two rounds prior to being hit by the other CFV in the scout section. The section in the west had excellent long range shots and destroyed three BMPs, with one CFV destroyed by a 3500 meter SAGGER shot. In this iteration, the Scout Platoon lost three of six CFVs and destroyed seven Threat vehicles.

In the second iteration, all three sections were positioned where they could best facilitate the covering force handoff as opposed to where they could get the best long range TOW II shots. From these positions they could conduct eye to eye coordination with the covering force elements and actually guide them to the passage points; however, both the covering force and the Scout Platoon took heavier losses. The Soviet vehicles fired at ranges of 2000 to 4000 meters with SAGGERS and SPANDRELS, yet the only effective return fire came from covering force elements as they withdrew. It was not until the motorized rifle battalions closed to within 1500 meters that they were engaged successfully by the tank platoons in the forward positions. The Threat was able to close rapidly and uniformly prior to coming within direct fire range of the battalion. This time the Scout Platoon lost five of six CFVs and inflicted only two kills on the enemy, each coming from chain guns.

Due to limitations of the FIREFIGHT wargame, the effectiveness of the Scout Platoon's handoff coordination cannot be evaluated; however, logical inferences can be made. In the first instance, the Scout Platoon attempted to find positions that would maximize the long range fires of the TOW II while simultaneously coordinating and assisting the passage of lines. The battalion commander accepted the risk of not being able to accomplish either task well because the Scout Platoon had the only systems capable of delivering long range fire into the Threat as it fought into the main battle area. Neither was he certain of the number of long range systems that would still be available from the covering force units as they withdrew.

In the second instance, he opted to maximize the handover coordination and accepted risk in allowing the Threat to enjoy the standoff advantage of their ATGMs. It is doubtful that the handover would have been successful in either case. The Scout Platoon came under such heavy fire from BMPs, BRDMs and then T-64s that the Scout Platoon would have had to either stay put and be destroyed, which they did, or abandon the handover mission to return fire prior to leaving the covering force area to begin the screen mission on the left flank of the battalion.

Because the battalion had no additional long range antitank systems, it was unable to return fire at long ranges to assist the covering force withdrawal effectively. Additionally, the Threat was able to close rapidly on the main battle area in attack formation. ATGM fire destroyed U.S. tanks and provided supporting fire to allow Threat tanks and BMPs to close. Consequently, the Soviet motorized rifle regiment began the main battle area fight with the initiative still in its favor.

ARMOR TASK FORCE IN THE COVERING FORCE HANDOFF

The scenario for the next engagement remained the same; however, the task organization changed. An antiarmor company was attached to the tank battalion.¹⁰ The battalion commander used the long range fires of this company to provide overwatch to the covering force as it withdrew and to disrupt the Threat formations before they reached the main battle area. As the covering force withdrew through the battalion, the Antiarmor Company assisted the main battle area defense by providing long range antitank fire from successive delay positions in depth. During the counterattack it was to fire into the flanks of the second echelon battalion and it had an on order mission to position one platoon along the enemy avenue of approach leading into the eastern flank of the battalion.

The Antiarmor Company, minus one platoon, was placed in general support (GS) of the battalion along the primary enemy avenue of approach. The remaining platoon was in direct support (DS) of the tank company defending in the west along the secondary enemy avenue of approach. The company commander in that sector integrated the ITV Platoon's fires into his own fire plan. This sector was somewhat isolated from the remainder of the battalion. By putting a platoon DS to the company in that sector, the Antiarmor Company commander could concentrate his effort on defending along the primary enemy avenue of approach with his other two platoons. He instructed his platoon leaders to direct their initial fires against threat ATGMs that could fire

into the main battle area positions and on Threat tanks that were within range of the delaying covering force elements. Because the ITV is at risk whenever tanks close to within 1500 meters, the ITVs delayed to positions in depth before the enemy tanks got within 1500 meters. The ITVs provided overwatch from mutually supporting positions. Since tank armor protection is best in the frontal glacis area, and since T-64 and BMP crews orient mostly to their front, ITV positions were selected that afforded the best possible flank shots. Another advantage to this technique was that the Threat vehicles presented larger targets to the ITV gunners.

Conduct of the covering force handoff significantly improved with the addition of an antiarmor company. In the Western sector, the DS platoon of four ITVs destroyed three tanks and two BMPs from its initial position, two tanks and one BRDM from the next position and four BMPs from the final position. The engagement ranges varied from 1800 to 3000 meters. Because of the good positions in this sector, the platoon engaged six tanks and destroyed five without receiving return direct fire. The platoon destroyed seven of nine ATGMs engaged. The engagement technique used was to fire one TOW II and then go back into the hide position. Because the tracking time of the TOW II is about half that of the SAGGER, the BMPs were unable to successfully return fire. This platoon lost no ITVs in this position. The only direct fire threat to the platoon was from the faster SPANDRELS mounted on BRDMs. Since the antitank missile battery was protecting a flank approach into the regiment it did not affect the battalion until later in the engagement.

The results were almost as significant along the primary enemy avenue of approach. The terrain in this sector was more conducive to long range ATGM shots. Again, the higher velocity of the TOW II over the SAGGER gave the Antiarmor Company a distinct advantage. The psychological effect on the enemy of massing the fires of eight ITVs could not be measured; however, the direct fire results alone took the initiative away from the Soviet commander of the lead motorized rifle battalion. Firing eight rounds from their initial positions, these platoons destroyed four BMPs

and three tanks. Four tanks and one BMP were destroyed from the next position, followed by four tanks and two BMPs from the third positions. To this point the two platoons had fired 24 rounds and attained 18 hits. Six BMPs and one T-64 were destroyed from the next two positions at an expenditure of 14 more rounds. The engagement ranges of this iteration were from 1400 to 3750 meters. The greater basic load stowage of the ITV over the Scout Platoon's CFVs was significant. Consideration of prestocking TOW II rounds in proposed battle positions might make up for some of the decreased capacity of the M-3.

The FIREFIGHT rules do not adequately account for the effect of artillery suppression on ITVs; therefore, none were lost during this iteration to artillery fire. One ITV was destroyed as it moved between positions and was engaged by a BRDM. The antiarmor company was limited in its ability to use smoke to cover its withdrawal as the battalion commander feared the smoke would make it more difficult for the covering force to withdraw into the main battle area. Had smoke been used throughout the delay, the ITVs could have fired more than one shot prior to assuming the hide position. The initial positions were placed well forward of the handover line to provide maximum long range fires prior to the enemy closing within direct fire tank range. These positions would have to be coordinated with the covering force units in advance of their withdrawal.

The success of the covering force handoff in this iteration was enhanced because the terrain provided long range shots into the two enemy avenues of approach, especially along Highway 4. Had the terrain been more restrictive, the ITVs would not have been as successful; however, neither would the Threat ATGMs. Addition of the antiarmor company provided a significant advantage to the tank battalion. Thirty seven Threat vehicles were destroyed or became firepower losses prior to coming into tank direct fire range. The Scout Platoon was able to concentrate on assisting the passage of the covering force without worrying about engaging the enemy with long range fires. Upon completion of the handover mission,

the Scout Platoon was able to begin the screen mission with an almost complete basic load and all but one CFV. The tank platoons were able to stay in hide positions and hold their fire until the Threat vehicles got to within a close enough range that the tanks could achieve a high probability of hit and conserve their ammunition. By the time the ITVs reached their final positions, the Threat was within 1200 to 1500 meters of the FEBA. Of the 37 Threat vehicles hit, 16 were tanks. Doctrinally, the Soviets lead their attack with tanks, thus tanks were the first targets to be acquired by the ITV gunners. The two lead motorized rifle battalions each had one company of tanks in support; therefore, the first echelon of the motorized rifle regiment was stripped of 60% of its high volume firepower prior to arriving at the FEBA. On the primary avenue of approach, 11 out of 13 tanks in support of the first echelon were destroyed. Because the threat had to contend with ATGM fire, they were forced to spend more time acquiring ITV targets and less time engaging the covering force units as they withdrew.

Although the FIREFIGHT wargame rules and the data from this engagement cannot evaluate human factors, one can infer from the number of vehicles lost by the Soviets at this stage of the battle that the initiative could clearly pass to the U.S. battalion task force commander even prior to the fight in the main battle area. The addition of the antiarmor company allowed the battalion commander to begin the main battle area fight with a combat effective Scout Platoon, his tank platoons intact and full of ammunition, the enemy stripped of a high percentage of tanks and the enemy attack formation disrupted.

It was difficult to determine whether the last volley of kills should be categorized as occurring prior to or after the covering force handover mission. The important consideration was to not count these kills twice. They were credited as covering force handover mission kills and are not included in the main battle area defense data.

MECHANIZED INFANTRY BATTALION(--) IN THE COVERING FORCE HANDOFF

The scenario for the mechanized infantry battalion in the covering force handoff mission did not change. The Scout Platoon assisted the covering force units through the passage points forward of the FEBA. D Company provided long range 10W II and chain gun fire in support of the withdrawal. Once these missions were accomplished, the Scout Platoon was to screen the left flank of the battalion and D Company was to become the battalion reserve and return to BPs 11 and 16 to continue the preparation of fighting positions. Some infantrymen, along with the company executive officer and first sergeant, had been sent to prepare those battle positions.

D Company concentrated two platoons on the primary avenue of approach along Highway 4 and kept one platoon overlooking the secondary avenue of approach. The M2s fired first at the T-64s that led the attack, then at the BMPs and BRDMs. Several flank shots hit the Threat vehicles as they turned to bypass obstacles. Six T-64s and five BMPs were destroyed from the initial positions and four T-64s and five BMPs from the alternate positions. The ranges varied from 1600 to 3500 meters. The 10W IIs fired at maximum range in the sector in the west. The engagement techniques were the same as before; the M2s fired once and then returned to hide positions to avoid Soviet ATGM fire. Mutually supporting positions facilitated platoon overwatch. In the east, the terrain was more conducive to section overwatch. The platoon in this sector remained in the same general location while the platoons in the west delayed to new positions. Two more enemy tanks and six BMPs were destroyed along the primary avenue of approach and two T-64s were destroyed in front of C Company. The M2s continued to fire out to their maximum range and did not allow the enemy to get within 1600 meters of their positions. Eight more BMPs were destroyed before the company finished this mission and returned to BPs 11 and 16. At no time were enemy tanks able to get close enough to engage the M2s.

The only significant disadvantage the mechanized infantry company faced was the fewer number of TOW IIs carried on the IFVs. Class V had to be prepositioned in the subsequent firing positions. This created additional delays while the missiles were loaded. Although not indicated by the FIREFIGHT wargame rules, the M-2s would have been less vulnerable to artillery fire than would the ITVs in the antiarmor company. The M-2s moved rapidly between positions. On balance, the only major disadvantage of using D Company in place of the antiarmor company was the potential degradation of the company's ability to prepare fighting positions while simultaneously conducting this mission. The companies in battle positions along the FEBM did not have to provide long range fires in support of this mission, thereby allowing the enemy to acquire their positions. These companies were, however, able to initiate the main battle area fight sooner than the tank companies.

MECHANIZED INFANTRY BATTALION IN THE COVERING FORCE HANDOFF

The mechanized infantry battalion was wargamed with its organic antiarmor company. The scenario, deployment and mission for the company were the same as for the armor task force. The ITV engagement techniques did not differ either. Along the primary avenue of approach, three tanks and four BMPs were destroyed in the initial fight. The ITVs took alternate positions in the same battle positions and killed four tanks and two BMPs. The platoon in DS of C Company destroyed five tanks and one BMP before it was taken under fire by BRDMs. The two platoons in the west delayed by section to new firing positions, killing ten BMPs and one T-64. The platoon in the east finished the covering force handoff mission in that sector with the destruction of six more BMPs. The first two sections to move into the second battle positions in the west fired at six BMPs and hit four of them prior to the beginning of the main battle area fight. The engagement ranges for this iteration were from 1400 to 3750 meters and the U.S. force once again enjoyed the advantages of the faster TOW II over the SAGGER. The company fired 63 missiles and destroyed 40 Soviet vehicles.¹¹

Because the antiarmor company provided the long range fires in support of the covering force handoff, the Scout Platoon was able to concentrate on its mission and D Company did not have to split its effort. The other conclusions made from observing this engagement are identical to those made in the wargaming of the armor task force in the covering force handoff.

OVERALL CONCLUSIONS-COVERING FORCE HANDOFF MISSION

The most significant conclusion made from observing each of the battalions assist the covering force in its withdrawal was that the pure tank battalion failed the mission while the other three battalions were all successful. There was no appreciable difference in the degree of success of the armor task force, mechanized infantry battalion(-) or the mechanized infantry battalion. The armor battalion destroyed only nine enemy vehicles and lost eight of its own, the armor task force destroyed 37 Threat vehicles and lost one ITV, the mechanized infantry battalion(-) destroyed 36 Soviet vehicles while not losing any of its own and the mechanized infantry battalion killed 40 enemy vehicles and lost one ITV. While the Soviet commander clearly retained the initiative against the armor battalion, he lost it in the other three engagements. In the latter cases, the Threat formations were disrupted, their tanks stripped away and their first echelon battalions all but defeated before crossing the FEBA. When the antiarmor company was added to the armor battalion, the task force accomplished the mission, destroyed over 300% more vehicles, took 12% fewer losses and took the initiative away from the Soviet commander. When the antiarmor company was taken away from the mechanized infantry battalion, the battalion still accomplished its mission, destroyed only 9% fewer enemy vehicles and lost no vehicles of its own. The high kill rates of the TDW II were due to the one round engagement technique, the excellent fields of fire into the Soviet zone of attack, and the limitations of the FIREFIGHT wargame to adequately account for friction.¹² It is clear that in the covering force handoff

mission, the antiarmor company should be taken away from the mechanized infantry battalion and given to the armor battalion where it is needed most.

ARMOR BATTALION IN THE MAIN BATTLE AREA DEFENSE

The scenario initiated in the covering force handoff continued to the main battle area defense mission. In this engagement the tank battalion fought pure. The Scout Platoon; however, had been virtually destroyed during the covering force handoff. The forward tank platoons had taken long range shots at Threat BMPs and T-64s that were engaging the covering force as it withdrew. Consequently, these tanks began the main battle area defense with their positions known to the enemy and with their basic load of ammunition depleted by several rounds per vehicle. The results of firing at ranges in excess of 1500 meters were not encouraging. The only condition under which Threat vehicles were hit at ranges in excess of 1500 meters was when the firing tanks were not suppressed and used APDS ammunition. The probability of destroying a T-64 at this range with APDS did not justify the risks of remaining exposed long enough to get the three or four rounds off that would be required to destroy a tank. The effect of engaging the motorized rifle battalions at long ranges with tanks was weighed against the disadvantage of allowing the enemy to identify firing positions, the vulnerability to adjusted indirect fire and, most of all, being acquired and engaged by SAGGERS and SPANDRELS which enjoyed significant standoff advantages over the tanks. An analysis of these tradeoffs resulted in the forward tank platoons ceasing to fire at ranges in excess of 1500 meters.

Because of the inability of the tank battalion to significantly disrupt the threat attack forward of the handover line, the battalion began the main battle area fight with the enemy still attacking in a unified formation. Both the first echelon motorized rifle battalions led in attack formation with two reinforced motorized rifle companies abreast and a reinforced motorized rifle company in the second echelon of the battalion. The second echelon motorized rifle battalion, reinforced

with a tank company, was three kilometers behind the first echelon battalions and was still in prebattle formation with companies deployed on line with their platoons in march column.

On the primary avenue of approach along Highway 4 the lead motorized rifle battalion closed to within 1400 meters before it was fired upon in the predetermined kill zone. A Company, in the east, distributed the fires of the First and Second Platoons on BP2 into the western half of the kill zone which was separated by the highway. Enemy losses were seven T-64s while friendly losses were three of eight M-1 tanks. The Third Platoon of A Company, in reserve on BP8, could not range to the threat vehicles. The M-1s were destroyed by T-64 return fire and by SAGGERS which were out of range of the tanks.

Company B directed its fires into the eastern half of the same kill zone. The crossfire technique of these two companies assisted in target acquisition and provided flank shots at the enemy. The First Platoon, firing from BP3A destroyed two T-64s and two BMPs at a loss of three M-1s. The M-1s were destroyed as the platoon attempted to vacate the battle position prior to the BMPs getting close enough to present a dismounted infantry threat. The Second Platoon, on BP4, destroyed two T-64s and one BMP at a loss of one M-1. The M-1 was lost to SAGGER fire as a result of overwatching the First Platoon delay out of BP3A. The Third Platoon, in reserve in BP9, was unable to engage Threat elements as the range was too great.

Company C, in the west, was able to engage with tank fire from all three platoons firing out of BPs 5, 6 and 7. Threat losses were four T-64s and eight BMPs. This company was defending the secondary avenue of approach which initially provided more concealment and allowed the motorized rifle battalion in that zone to get within 1600 meters of the U.S. positions before being acquired. U.S. platoons were forced to remain exposed for longer periods of time in order to fire enough

rounds from those tanks that acquired targets to get enough hits to keep the Threat from closing in on the defensive positions too quickly. Friendly losses, therefore, were four M-1s evenly distributed among the platoons.

Cumulative losses during the first direct fire exchange were 26 Threat vehicles and ten U.S. vehicles. Fifteen of the threat vehicles destroyed were tanks. The four lead motorized rifle companies each led with a tank platoon and 15 of the 16 first echelon tanks were destroyed. This was a result of tanks being the first vehicles to come within direct fire range of the M-1s. The dilemma for the A and B Company commanders was that when their platoons fired more than two rounds at a time they were exposed long enough to be hit by SAGGERS and SPANDRELS that were invulnerable to U.S. direct fire because they were out of range of the M-1s. The terrain in the A and B sectors provided good positions for TOW II shots into and beyond the engagement area; however, the only Tow IIs available were in the Scout Platoon which was destroyed in the first variation of the covering force handoff or, if they had not been destroyed, would have been screening the potential enemy avenue of approach into the left flank of the battalion. The dilemma for the C Company commander, on the more restrictive sector, was that he suddenly found himself in a target rich environment where he did not have enough tanks available to destroy the force that outnumbered him. He had to wait until the enemy was within sight before he could fire. There were good TOW II positions behind BP7; however, there were no TOW II systems available.

It now became necessary for the tank platoons to delay to positions in depth to avoid being overrun by dismounted infantry with RPGs. The M-1s were able to rapidly displace on previously reconnoitered routes. First the First Platoon of B Company moved from BP3A to BP 3. A Company and Second Platoon of B Company provided overwatch and the move was concealed by the buildings behind BP3A. The platoon lost no vehicles during the move, although the Second Platoon of B Company lost its remaining three M-1s in overwatch. It was able to destroy two T-64s before it was

overrun by dismounted infantry from BMPs that closed on the flank of BP4. Had ITVs been available to overwatch from the good positions 1600 meters to the rear of BP3A, the Second Platoon could have withdrawn prior to being overrun.

The next moves came from the C Company sector. The First Platoon moved from BP1 to BP10 while the Second Platoon provided overwatch. This again proved to be costly as the two remaining M-1s from the overwatching platoon were lost to flanking fire that came from the antitank missile battery located 3800 meters away and out of range of most U.S. direct fire weapons. The B Company tanks in BP4 could have fired; however, by this time they were being assaulted by dismounted infantry, BMPs and the remaining T-64 out of the lead motorized rifle company. The antitank missile battery could have been engaged by ITVs had they been available for positioning to the rear of A or B Company.

All three platoons of C Company had covered or concealed routes of withdrawal out of their initial battle positions and into company BP14. It was necessary, however, to leave two platoons in contact to insure that A and B companies were not outflanked as they defended and withdrew along the enemy's primary avenue of approach. The First Platoon, in BP5, and the Third Platoon, in BP7, remained in contact while the Second Platoon withdrew to BP14. The First Platoon destroyed two T-64s to the loss of two M-1s in tank versus tank combat. The Third Platoon destroyed two T-64s and one BMP while losing one M-1 to SAGGER fire.

At this phase of the engagement the tank battalion had suffered primarily from long range HIM fire in the A and B Company sectors and from tank fire in the C Company sector. Its strength was in a disadvantage of the long range shots available along the main axis of approach. Cumulative totals were now 36 threat vehicles destroyed and 100 tanks destroyed. The strength of the first echelon authorized to be committed to the main effort was now 10 tanks but the BMPs were rapidly closing and the HIMs were still in the main effort. The second echelon motorized rifle battalion was still committed to the main effort and was following the main effort. Along the

primary avenue of approach, Threat BMPs destroyed two M-1s from the First Platoon of A Company as it moved over high ground just before entering BP10. The remaining First Platoon tank was unable to return fire because the BMPs were out of range. There were no tanks left in Second Platoon and the Third Platoon, in BP8, was still waiting for the enemy to come within range before it could fire.

The Second Platoon of B Company was destroyed and the First Platoon was moving to BP3. The Soviet force was closing quickly and since Third Platoon could not overwatch the First Platoon's move, the First Platoon had to bypass BP3 and move directly into BP12 with the two remaining tanks. During this phase of the engagement no threat vehicles were engaged by either A or B Company. The BMP array provided lucrative targets had any IT's overwatched the withdrawal of the lead platoons in that sector.

In the C Company sector the First Platoon's remaining tank withdrew out of BP5 and headed for BP14 to link up with the two remaining tanks out of the Second Platoon which had just pulled into BP14. The Third Platoon remained in position on BP7 and lost its two remaining tanks while destroying three Threat vehicles. There were too many Threat vehicles in this sector for C Company to effectively engage without succumbing to SAGGERS, SPANDRELS and RPGs.

The tank battalion now defended just forward of PL CAMEL. The commander's intent was still for the three forward line companies to defeat the two lead motorized rifle battalions forward of PL CAMEL which would enable the reserve company to counterattack to defeat the second echelon motorized rifle battalion. The counterattack force was still intact; however, the battalion had lost 50% of the M-1s in the three forward companies. The battalion was at 62% overall combat strength with 36 tanks remaining. The Soviets had lost 32% of the combat vehicles in the first echelon to include 85% of the tanks, but the regiment was at 80% strength. The Soviets still retained the initiative and the tank battalion

commander faced the possibility of being forced to commit his counterattack force against the lead motorized rifle battalions leaving him no means with which to defeat the second echelon. The A, B and C commanders knew the importance of destroying the lead motorized rifle battalions forward of PL CAMEL; therefore they prepared to defend in place and delay no further. A Company, with seven tanks, defended from the western portion of BP10, all of BP8 and the eastern portion of BP11. They waited until the enemy BMPs came within 1500 meters and then engaged. If the tanks limited their fire to the two rounds that could be safely fired before going back into hide positions and then reappeared to fire out of alternate positions, they would not have maintained the volume of fire required to keep the BMPs from overtaking the position by sheer weight of numbers. This forced A Company to remain exposed in firing positions longer than desired. They destroyed ten BMPs and one T-64; however, they lost five M-1s to SAGGER fire at ranges of from 1400-1900 meters. Six BMPs were out of range of the M-1s. As before, there were ITV positions behind PL CAMEL from which the BMPs could have been engaged. The battle in the A Company sector was now lost and the two remaining tanks withdrew to join D Company in reserve. Had they stayed to fight, they could have been in range of SAGGERS that enjoyed a standoff advantage and would have been destroyed, unable to return direct fire.

B Company now defended with the two First Platoon tanks on BP12 and the four tanks from Third Platoon, along with the company headquarters tanks, on BP9. The tanks in BP12 were not to engage until they got flank shots as the enemy continued down the Highway 4 approach. The tanks on BP9 destroyed one T-64 and five BMPs before the position was overrun by infantry from BMPs attacking the unprotected flank exposed from the A Company sector. Four M-1s were destroyed and the others withdrew to join the remaining tanks on BP12. This company was now down to four tanks, all in position to place flanking fire into the kill zone along Highway 4 but also vulnerable to a flank attack from Threat forces moving through BPs 9 and 11. ITVs positioned behind PL CAMEL could have supported B Company in its defense of

BPV. None were available.

C Company continued to defend with five tanks in BP14. These tanks destroyed five BMPs to a loss of three M-1s. As the M-1s moved to BP15 they were hit with flanking SAGGER fire from B Company's sector. The two remaining C Company tanks moved to BP15. It was clear to the battalion commander that he could not counterattack by fire and maneuver because the Soviet forces controlled the woods along the counterattack route. He was forced to keep D Company in position on BP16 to fight the remaining first echelon elements as they continued down the Highway 4 approach. It was not yet clear whether or not he had enough combat power left to disrupt enough of the second echelon motorized rifle battalion to keep it from interfering with the brigade counterattack of the second echelon tank regiment. The battalion had destroyed 50 Threat vehicles at a loss of 34 M-1s. The battalion was at 40% combat strength. D Company was still intact, eight of the remaining tanks from the other companies were consolidated on BP12, two were in BP15 and two were trying to join D Company. The Soviet first echelon motorized rifle battalions were at 60%, the second echelon motorized rifle battalion was almost at full strength, the antitank missile battery was at full strength, placing the regiment at 74% strength overall.

The motorized rifle regiment commander realized that he would have to reduce the strongpoint at BP16 if he was going to pass his second echelon through unencumbered. His plan was to assault the position from the east while placing ATGM fire from the front and flank, out of effective range of the M-1s. Nine BMPs eventually maneuvered into position to the flank and rear of BP16. D Company destroyed a T-64 and 22 BMPs that attacked frontally and three BMPs that fired from the flank. The attacking elements destroyed eight M-1s while the flanking elements destroyed six M-1s.

The U.S. battalion was now defeated. It lost 52 out of 58 tanks. The Soviet

motorized rifle regiment lost 80 out of 177 combat vehicles. Its second echelon motorized rifle battalion was uncommitted and the remaining elements of the lead battalions could either continue to advance or pass the second echelon through and then consolidate. The U.S. battalion failed its mission and the brigade commander now had to contend with a reinforced motorized rifle battalion, antitank missile battery, regimental artillery and the rest of the Soviet regiment, in addition to the second echelon tank regiment.

Because the tank battalion fought pure it was at a disadvantage throughout the engagement. The M-1s were unable to take advantage of their high rate of fire without remaining exposed to long range ATGM fire. The Threat was able to deliver this fire without receiving any direct return fire because of the standoff advantage. The Threat was also able to maneuver into better positions without receiving direct fire. The M-1 platoons were forced to remain in battle positions to provide overwatch to other tank platoons, which resulted in the overwatching platoon either being overrun by dismounted infantry or taking long range fire from SMOGGLERS and SPANDRELS. The M-1s could not withdraw any earlier as there were no IIVs to provide overwatch. Because the tank battalion had no long range direct fire available they could not cover obstacles with direct fire beyond 1500 meters. This meant that obstacles placed in depth were not covered by fire and were quickly cleared. With IIVs, the battalion could have covered obstacles out to a range of 2750 meters. The evidence provided so far indicated that the pure tank battalion was unable to accomplish this mission.

ARMOR TASK FORCE IN THE MAIN BATTLE AREA DEFENSE

As a result of the successful handoff of the covering force, the armor task force had depleted the first echelon Soviet motorized rifle battalions to 70% of their combat strength. The second echelon companies of the first echelon battalions were committed prior to reaching the ICB. The Soviet regimental commander waited to commit his second echelon battalion as he was still unsure of the disposition of

the U.S. force. The task force was positioned with A Company occupying BPs 1, 2 and 8; B Company in BPs 3A, 4 and 9; C Company in BPs 5, 6 and 7; and D Company preparing a company strong point at BP16. The Antiarmor Company commander selected battle positions from which his IIVs could provide overwatch to the tank platoons and take advantage of the long range fields of fire. One antiarmor platoon was kept in DS to C Company in the west while the rest of the company was GS to the battalion. The Scout Platoon screened the battalion left flank.

The tank platoons continued to hold their fire until the enemy vehicles came within 1500 meters while the IIVs took advantage of their long range shots. In the first exchange of the main battle area fight the First Platoon of the Antiarmor Company engaged one T-64 and three BMPs, killing all but one of the BMPs. The Second Platoon destroyed three of four BMPs engaged and the Third Platoon, with three IIVs remaining, destroyed one T-64 and one BMP.

A Company continued to hold its fire while two platoons from B Company began their first engagements. The First Platoon, on BP3A destroyed seven BMPs at the loss of one M-1 to SPANDREL fire. The Second platoon, on BP4, lost two M-1s to SPANDREL fire out of the C Company sector but destroyed two T-64s after reorienting their turrets. The Third platoon was in reserve and out of range on BP9.

The first platoon of C Company, on BP5, destroyed two tanks and two BMPs at the loss of one M-1 while the Second Platoon killed one tank and two BMPs at the loss of one M-1. The Third Platoon held its fire.

The antiarmor company enjoyed a target rich environment as its First Platoon destroyed two of four BMPs engaged from BP1. The Second Platoon had similar success on BP4 and the Third Platoon, firing out of BP21 destroyed one T-64 and two BMPs.

Because most of the enemy tanks were stripped away during the covering force battle, the M-1s could destroy the BMPs before they got within the 800 meter

motorized rifle regiment lost 80 out of 177 combat vehicles. Its second echelon motorized rifle battalion was uncommitted and the remaining elements of the lead battalions could either continue to advance or pass the second echelon through and then consolidate. The U.S. battalion failed its mission and the brigade commander now had to contend with a reinforced motorized rifle battalion, antitank missile battery, regimental artillery and the rest of the Soviet regiment, in addition to the second echelon tank regiment.

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The tank platoons continued to hold their fire until the enemy vehicles came within 1500 meters while the ITVs took advantage of their long range shot-. In the first exchange of the main battle area fight the First Platoon of the Antiarmor Company engaged one T-64 and three BMPs, killing all but one of the BMPs. The Second Platoon destroyed three of four BMPs engaged and the Third Platoon, with three ITVs remaining, destroyed one T-64 and one BMP.

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The Antiarmor Company enjoyed a target rich environment as its First Platoon destroyed two of four BMPs engaged from BP1. The Second Platoon had similar success on BP4 and the Third Platoon, firing out of BP21 destroyed one T-64 and two BMPs.

Because most of the enemy tanks were stripped away during the covering force maneuver, the M-1s could destroy the BMPs before they got within the 800 meter

effective range of their 73mm guns. The M1s remained in firing positions long enough to fire two rounds before the SAGGERS hit them. If the T-64s had not been destroyed in the covering force handoff battle, the M-1s would have had to contend with high velocity, high volume tank fire.

Because C Company continued to hold its fire, the threat forces were unsure of the location of each of the U.S. companies. The First Platoon of B Company moved to BP3 and the Second Platoon was forced to move to BP40 to avoid being flanked by enemy vehicles in the C Company sector. These moves were accomplished with the ITVs in overwatch.

Three BMPs were destroyed by the First Platoon of C Company with one M1 hit by a SAGGER. The Second Platoon moved to BP14 to avoid the closure of dismounted infantry exiting the BMPs in that sector. The Third Platoon continued to hold its fire and was still undetected. All of these moves were covered by the antiarmor platoon overwatching from BP21. The ITVs in BP1 displaced to alternate positions as they had taken fire from BMPs and were afraid the BRDMs could hit them if they remained in the same positions. The second platoon moved two ITVs back to BP22 while the other ITVs provided overwatch. The antitank missile battery, previously protecting the flank of the regiment along a potential U.S. counterattack route, was brought forward to counter the devastating fires of the Antiarmor Company. This battery occupied the high ground north of BP3A.

Cumulative threat losses, to include those during the covering force handover, totaled 26 T-64s and 74 BMPs. The forward momentum of the regiment was all but stopped. The second echelon motorized rifle battalion was now committed along the Highway 4 zone of attack and the one remaining motorized rifle company in the C Company sector continued its attack. The task force had lost six M-1s and one ITV and a company had not yet fired a round. The ITVs continued to fire one round and then go back into hide positions. The Soviet indirect fire, however, made them move or risk being suppressed.

A and B Company now held their fire awaiting better shots, but one M-1 on BP3 was hit by a SPANDREL from the antitank missile battery. The First and Second Platoons of C Company moved to BP14. The Third Platoon destroyed three BMPs while overwatching the other platoons, but lost one M-1 in the process.

The First Platoon of the Antiarmor Company moved from PB1, placing one section in BP 8 and the other in BP11. After covering the move of the First Platoon, the Second Platoon moved its remaining IIVs to BP22A. The Third platoon continued to support the C Company moves.

The tanks disengaged before they faced any dismounted infantry threat because the antiarmor company provided overwatch. The defense to this point had been so successful that the battalion commander considered using A Company as the counterattack force to defeat the second echelon motorized rifle battalion if it continued past BP3A towards BP3.

As the enemy continued along the primary avenue of approach, A Company was now able to fire into the engagement area. From BP1, the First Platoon destroyed six BMPs and two T-64s at a loss of two M-1s. The Second Platoon held its fire and the Third Platoon remained in reserve. The First Platoon of B Company fired into its portion of the same engagement area and destroyed two BMPs at a loss of one U.S. tank.

The First Antiarmor Platoon began to take heavy artillery fire so two IIVs displaced to BP8 and then covered the movement of the other IIVs to BP11. As the IIVs moved into their positions in depth, they were resupplied with Class V. The antiarmor company has its own executive officer, first sergeant and supply sergeant; therefore, its resupply is easier to coordinate than that of the scout platoon which is part of an extremely large headquarters company.

While the First Platoon of A Company moved to BP10, the Second Platoon

destroyed four BMPs. B Company, now down to two platoons, destroyed three BMPs and lost another M-1. C Company, consolidated on BP14, destroyed six BMPs. Its DS antiarmor platoon killed two BMPs, but then moved to BP16 to get out from under the artillery barrage. The Scout Platoon was sent to screen farther to the north to report enemy activity in the C Company sector. By this time the Soviets had no remaining combat power in their secondary zone of attack, but C Company was not able to verify this without coming out of their current battle position.

As the Threat continued the attack, the Second Platoon of A Company destroyed two T-64s and five BMPs while losing one M-1. The B Company platoon on BP40 lost another M-1 but destroyed five BMPs. The antiarmor platoon on BP11 hit two BRDMs as did the platoon on BP22A.

The task force commander now knew he could defeat the remainder of the regiment by counterattacking with A Company into the enemy flank while B Company and the Antiarmor Company(-) provided an anvil. The motorized rifle regiment was certainly beyond its culminating point and may have taken up defensive positions by now. However, the engagement was continued to test further the need for the antiarmor company. The Threat sensed that BP9 was now the strongpoint of the task force defense and knew it had to be eliminated. Two platoons attempted to flank the position from the east while another platoon, supported by the remaining tank platoon, assaulted from the front. A Company destroyed eight BMPs with its counterattack and B Company killed five T-64s and two BMPs. Fourteen S-1 guns were destroyed as they were brought up to place direct fire on the position. The Antiarmor Company destroyed three BMPs from BPs 8 and 11 and two BMPs each from BPs 22 and 22A. The company lost one ITV on BP9 because the T-64s were allowed to close within 1200 meters of the position before the platoon withdrew. The final Threat assault destroyed a total of five M-1s.

Numerous conclusions can be made based on the observations of this armor task

force engagement. The antiarmor company significantly enhanced the combat power of the task force and enabled it to maximize defense in depth by providing overwatching long range fires to the tank platoons, especially as they withdrew. The tank platoons were able to withdraw sooner, when necessary, because they did not have to provide overwatch for each other as often as they would have if their had been no ITV support. Consequently, the tank platoons were not overrun by dismounted infantry. The ITV long range fires enabled the tanks to hold their fire until the enemy vehicles were within range so that they could be successfully engaged. These fires also allowed the tanks to fire a maximum of two rounds and then return to hide positions prior to being hit by ATGMs. The enemy ATGM gunners were uncertain as to how long the tanks would remain exposed; therefore they fired on them. However, the tanks went back into defilade before the round hit. As a result, numerous enemy ATGMs were wasted, which is significant considering the small number of BAGGERS carried on each BMP. The ability of the task force to place long range fires on the enemy with ITVs instead of tanks, which are less accurate at long ranges, prevented the Threat from determining the location of the tank platoons early in the fight. Another advantage of having the antiarmor company with the task force was that obstacles could be covered with direct fire out to ranges of 3750 meters instead of just 1500 meters. This slowed the enemy advance, caused him to break up his formations and resulted in the task force facing less enemy combat power once they came within direct fire range of the tanks.

MECHANIZED INFANTRY BATTALION(-) IN THE MAIN BATTLE AREA DEFENSE

Upon completion of the covering force handoff battle, the mechanized infantry battalion, minus its antiarmor company, began the fight in the main battle area with no vehicle losses compared to the loss of twelve T-64s and twenty four BMPs for the Soviets. The U.S. battalion commander had positioned D Company forward of the other three line companies during the covering force handoff to provide the long range ATGM fires that his antiarmor company would have provided had they been

available. Upon completion of the passage of lines, D Company moved to BPs 1b and 11a, resupplied their basic load, and linked up with the infantrymen who had been left there, under the supervision of the executive officer and first sergeant, to prepare fighting positions. Because D Company was used this way, the forward platoon positions of the other companies were not detected by the Threat force prior to the main battle area fight. The tradeoff was that the fighting positions on BPs 1b and 11a were not prepared as well as they could have been had the entire company been there.

The main battle area fight went well from the start. The First Platoon of A Company destroyed two BMPs with TOW II fire from BP1. The Second Platoon, on BP2, and the Third Platoon, on BP8, held their fire. The First Platoon of B Company, on BP3a, destroyed six BMPs with 25mm fire, but lost three M-2s. The Second Platoon traded two M-2s for two BMPs in a 25mm versus 73mm duel around BP4. The Third Platoon was out of range on BP9. C Company defended the more restrictive avenue of approach in the west. The First Platoon, on BP5, killed three BMPs at a loss of two M-2s. On BP6, the Second Platoon initiated a fight with two T-64s and three BMPs that attacked out of the woodline. One tank and three BMPs were destroyed at a loss of two M-2s. The Third Platoon held its fire at BP7. D Company, enroute to BPs 1b and 11a, was now the battalion reserve. The Scout Platoon, which concentrated on assisting the covering force during the handoff, was intact and now enroute to its screen mission on the left flank of the battalion.

The engagement continued as the First Platoon of A Company fired at BRDMs from the anti-tank missile company at a range of 2600 meters and received SAGGER fire from BMPs at 1000 meters. Three BRDMs were destroyed at a loss of two M-2s. An interesting dilemma developed for the platoon leader when he lost his M-2s to RPGM fire. His dismounted infantry were still capable of fighting from their dug in positions, but he knew he would lose his remaining M-2 if he left it in place to support, so he left his infantry in place and moved the M-2 to a position where it

could support with 25mm and TOW II fire yet be out of range of the Soviet 73mm guns and RPGs. The Second Platoon engaged and destroyed three T-64s that came out of the town. The firing technique was to fire one TOW II and then return to hide positions. This made it difficult for the BMPs to return fire. This technique worked well as long as the tanks were not close enough to get first or second round hits.

The First Platoon of B Company left infantry dug in on BF3A and moved to BF3. The infantry destroyed two BMPs that moved through the town while the Second Platoon destroyed two more at a loss of two M-2s. C Company's First Platoon continued to fight in the woods and lost one M-2 while destroying one BMP. The one remaining M-2 from the Second Platoon moved to BF14 under cover of the Third Platoon, which killed eight BMPs. The remainder of this motorized rifle company moved across the high ground in front of BF6. The U.S. gunners could either engage T-64s with their TOW IIs or BMPs with their 25mm chain guns. In this instance they engaged the BMPs. Use of this technique destroyed the highest number of targets due to the high volume of fire and increased velocity of the chain gun. The consequence was the loss of two M-2s to T-64 fire.

The second echelon motorized rifle company of the lead motorized rifle battalion in the east moved through the town to the right of BF3A and bypassed the infantry dug in at 3A, but continued to take heavy ATGM fire along this avenue of approach. The motorized rifle regiment commander realized that the momentum of his attack was lost and committed his second echelon battalion on the secondary avenue of approach.

The First Platoon of A Company began what turned out to be its last fight. It engaged T-64s and a BRDM with TOW II fire and BMPs with chain guns. It received return fire from T-64 main gun rounds, BMP 73mm guns, BRDM SPANDREL fire and indirect suppressive fire. Seven BMPs were destroyed as well as the two remaining M-2s. The Second Platoon successfully engaged two T-64s at a range of 2000 meters.

The first Platoon of B Company destroyed two BMPs with chain guns before it was destroyed by T-64s that moved within 1200 meters of the battle position.

The First Platoon of C Company moved to BP14 and joined the one M-2 left from the Second Platoon. The Third Platoon covered the move and remained in BP7 to engage the second echelon that came over the hilltop. The dismounted infantry left in BP6 destroyed three T-64s and one BMP with DRAGONS and a LAW.

By this time the Threat first echelon battalions were virtually destroyed. The regiment was almost down to 50% overall combat strength. The mechanized infantry battalion (1) was at 77% with the reserve uncommitted. The Threat main effort was now in the west which meant that the U.S. commander had to reorient the defense towards that zone if he wanted to take advantage of the opportunity to defeat the regiment earlier than previously planned. The infantry squads left in dug in positions to engage the second echelon were now behind the advancing enemy and could not be repositioned until the ground was retaken. Had the antiarmor company been available, it could have engaged the second echelon from positions overlooking the high ground in front of C Company. The battalion commander could not risk using D Company for this because he needed a counterattack force that could defeat the second echelon on either avenue of approach.

The battalion commander repositioned those forces essential to reorient the defense to defeat the second echelon. A Company, now in an economy of force role, placed an observation post on BP2, moved its Second platoon to BPs 8 and 10 and moved the Third Platoon to BP12 with a warning order to be prepared for attachment to B Company. B Company consolidated on BP9 while the First and Second Platoons of C Company occupied BP14. The Third Platoon selected new firing positions from the town just east of BP14. The Scout Platoon was ordered to screen forward of C Company to verify the commitment of the second echelon in that sector. The Third Platoons of both A and C Companies fired TOW IIs into the C Company sector and

destroyed one T-64 and five BMPs. The antitank missile company destroyed two M-2s with flanking fire but lost two BRDMs in the process. C Company destroyed two T-64s and three BMPs and lost two M-2s to tank fire. Fighting in restrictive terrain, C Company did not have sufficient tracking time to engage with the TOW II and the 25mm chain gun could not destroy the T-64s. The FIREFIGHT wargame tables show the DRAGON to be effective against T-64s out to 1000 meters. Consequently, some enemy tanks were destroyed by the dug in infantry. The second echelon motorized rifle battalion came close to overwhelming the C Company defense, especially those positions which had not been prepared as well as the ones along the FEBA.

As the Threat continued its attack in the C Company sector, the Third platoon of A Company destroyed one T-64 and two BMPs. With its 25mm guns, C Company destroyed seven BMPs and lost five M-2s to tank fire. At this stage of the engagement, the Soviets had lost 123 vehicles to 29 for the mechanized infantry battalion. The battalion commander realized that if the Threat continued the attack, it could be defeated with D Company firing out of its current positions while the platoon in BP9 counterattacked into the rear of the Threat formation. Of the 29 remaining M-2s, 15 were in position to fire from fighting positions while four conducted a counterattack.

The Soviet attack continued along the secondary avenue of approach. The Third Platoon of A Company fired out of BF12 and destroyed four T-64s, went back into hide positions and then killed two T-64s and two BMPs from alternate firing positions. Two M-2s were destroyed by T-64s in this exchange. The Third Platoon of B Company saw the previous exchange and destroyed three BRDMs that fired into BF12. D Company lost three M-2s in the final Soviet assault. The Threat forces were now either destroyed or spread over the battlefield in an unorganized array with less than 10% of their combat power remaining. It is doubtful that they would have even attempted the final assault, but the wargame was continued in order to meet the established evaluation criteria. The U.S. force was at 40%, the mission accomplished and the

brigade could now conduct its counterattack without concern over this regiment.

Several conclusions can be made from the observations of this engagement. The II Platoon can provide overwatch and long range ATGM fire in the absence of the antiarmor company. A mechanized infantry company equipped with M-2s can assist the covering force handoff of the battle as effectively as an antiarmor company. However the mechanized infantry company cannot prepare fighting positions in one place and simultaneously accomplish the handoff mission. The battalion was able to cover obstacles out to ranges of 3750 meters. By using D Company in the handoff mission, the forward platoons could hold their fire and keep the Threat units from discovering their location early in the fight. Because the M-2 is faster than the IIIV, D Company was able to move rapidly between firing positions. This was true whether the routes between positions were over roads or cross country. Although this was not apparent in the FIREFIGHT wargame, another advantage of the M-2 is its increased protection against indirect fire. At the conclusion of the covering force handoff, the M-2s were low on TOW II rounds and had to be resupplied on BPs 11A and 16. With its increased basic load, the IIIV would not have had this problem. Even without an antiarmor company, the Scout Platoon was able to perform its initial mission without having to simultaneously provide long range TOW II fire.

MECHANIZED INFANTRY BATTALION IN THE MAIN BATTLE AREA DEFENSE

Even though the mechanized infantry battalion(-) was successful in the defense mission, it was still necessary to observe the battalion with its organic antiarmor company in order to evaluate the relative effect the company had on each of the force structures. The scenario and mission were unchanged and the deployment, engagement techniques and disposition of line companies remained the same. Since the Threat regiment lost 40 vehicles during the covering force handoff, it began this engagement at an overall strength of 76%. The bulk of the tank power, especially in the east, was destroyed and the lead motorized rifle battalions had already committed their second echelon companies prior to reaching the FEBR.

A Company's First Platoon began the engagement by destroying two BMPs with long range TOW II shots from BP1. The Second Platoon held its fire as the enemy was beyond range. The First Platoon of B Company, on BP3A, destroyed one BMP with a TOW II and another with the chain gun. The Second platoon fired three TOW IIs and hit two BMPs. The First Platoon of C Company held its fire while the Second Platoon destroyed two BMPs. Because this sector was on more restrictive terrain, T-64s got within range of the M-2s and destroyed one. The Third Platoon saw this happen and fired into the Second Platoon sector, killing two enemy tanks. The Antiarmor Company, still in position after the covering force handoff mission, destroyed five BMPs and one tank in the main zone of attack. The Third platoon, in DS to C Company, hit one T-64 and two BMPs. D Company was in position on BP16 and the Scout Platoon screened the left flank of the battalion.

The engagement continued as A Company destroyed two tanks and two BMPs from BP1. Second Platoon of B Company destroyed a tank and a BMP at the loss of one M-2. C Company lost two M-2s to tank fire but destroyed one BMP and a tank. The Second Platoon lost another M-2 and then destroyed two BMPs with the chain gun. The Third Platoon killed a T-64 with a TOW II and two BMPs with chain gun fire. The first Platoon of the antiarmor company destroyed two T-64s and 1 BMP with long range shots out of BP1, the Second Platoon destroyed two BMPs and the Third Platoon killed a tank and two BMPs.

The Soviet force finally penetrated the forward platoon positions in the C Company sector, but by now had lost 78 vehicles to five losses for the U.S. battalion. The regiment could not continue to take such heavy losses along the primary avenue of approach and shifted the main attack to the C Company sector. The key to the mechanized infantry battalion's success so far was the damage done to the enemy during the handoff, the effectiveness of the TOW IIs, and the high velocity of the chain gun, especially when used outside the 800 meter range of the Soviet 73mm

gun. Where the T-64s were stripped away before they came within range to destroy the M-2s, the fight was going well for the battalion. In the C Company sector, however, enough T-64s made it close enough to range the M-2s. In the latter case, the T-64s always won the exchange unless M-2s could fire at the tanks from positions in another sector to the flank.

The battalion commander was quick to pick up the shift in the Soviet attack. The Third Platoon of A Company moved to BP14 and was attached to C Company. The First Platoon remained in BP1 and destroyed another BMP. B Company remained in its previous battle positions and the Threat forces still on that avenue of approach bypassed to the west of BP3A. The Second Platoon, consequently, received flanking fire from two directions and lost two M-2s. The platoon did destroy four BMPs at ranges of from 900 to 1300 meters. As the attack gained momentum in the west, The First Platoon of C Company destroyed one BMP but lost an M-2. The Second Platoon fought it out with four BMPs and a T-64, destroying two BMPs and 1 tank while losing an M-2. The Third Platoon supported the Second platoon and destroyed two more T-64s. The First Antiarmor Platoon, now under artillery fire, destroyed one BMP and moved one section to another position. The Second Platoon moved by section to BP11. The Third Platoon also received heavy artillery fire and moved one section to BP 21. The remaining section destroyed a BMP.

As the Third Platoon of A Company completed its movement, the Second and Third Platoons destroyed five BRDMs that were brought up to support the attack in the west. The First Platoon of B Company moved to BP3, after deciding not to leave the dismounted infantry in their dug in positions. One M-2 was lost attempting to retrieve the infantry. After this move, the Second Platoon moved to BP40 under the overwatch of the First Antiarmor platoon. The First Platoon of C Company lost its third M 2 in an assault by four T-64s and nine BMPs, one of which was killed. The ten remaining BMPs in the second echelon company of the lead motorized rifle battalion in the west and the lead company of the second echelon battalion assaulted

the Second Platoon position. The company commander joined the remaining M-2. Both were destroyed after killing five BMPs at ranges of 800 to 1000 meters. The Third Platoon hit two T-64s and another BMP. As B Company elements withdrew from BP3, the two unsuppressed ITVs in the First Antiarmor Platoon destroyed two BRDMs that fired at the M2s. The Third Platoon destroyed two T-64s that attacked C Company.

The battalion commander left C Company in BPs 5, 6 and 7 to stop as much of the second echelon as possible. This company was down to four of its organic M-2s, but still had infantrymen in dug in positions. It was also important for the battalion to stay tied in with the task force on the left flank, adjacent to C Company.

The First and Third Platoons of A Company remained in position while the Second Platoon provided overwatching fires for B Company. One BMP was destroyed. The First Platoon of B Company moved to BP22A and the Second platoon engaged the enemy at ranges of from 500 to 800 meters. They destroyed four BMPs and lost two M-2s to the other two BMPs and tank. The infantry duo in on BP5 destroyed two T-64s and two BMPs as they attacked through the woodline. The infantry on BP6 destroyed two BMPs with DRAGONS and the Third Platoon destroyed two T-64s with TOW IIs and three BMPs with chain guns. The First Antiarmor Platoon destroyed one T-64 as it overran BP40 and the Second Platoon hit two BMPs in the same vicinity. The Third Platoon then moved to BP21A.

By now the Threat was down to a reinforced motorized rifle company. The 122SPs were brought up to provide direct fire in an assault of BP14. The Soviet commander wanted to bypass the main U.S. strength and get back on the primary avenue of approach. The battalion had formed a pocket into which the Threat had to enter. If they attempted the bypass, they would be flanked by A Company(-) and the Third Platoon of B Company. The battalion reserve was still uncommitted.

The Third Platoon of A Company destroyed three more BMPs while the First Platoon of B Company lost one IFV and destroyed two BMPs. The Third Platoon

destroyed another BMP and the Second Antiarmor Platoon destroyed two T-64s.

In the final action of this engagement, the remaining Soviet force faced the short range direct fire of three platoons and the long range fires of two antiarmor platoons plus two M-2 platoons. The A Company platoon attached to C Company destroyed four BMPs and lost two M-2s to T-64s. This platoon was not fighting out of prepared positions and allowed the Threat force to get within 400 meters. The Soviets dismounted their infantry and engaged with RPGs under the support of machine gun, 73mm and tank fire. The First Platoon of B Company destroyed two BMPs against the loss of one IFV, the Second Antiarmor Platoon destroyed another BMP and the Third Platoon killed two BMPs and a T-64.

The mechanized infantry battalion accomplished its mission without committing the reserve. The Soviets lost 138 vehicles versus 19 for the U.S. The brigade commander's intent was exceeded and the battalion had sufficient combat power remaining to fight again.

OVERALL CONCLUSIONS-MAIN BATTLE AREA DEFENSE

The pure tank battalion failed to accomplish its mission because it did not have sufficient long range antiarmor systems. The armor battalion was successful only when reinforced with an antiarmor company. The mechanized infantry battalion accomplished its mission even when its organic antiarmor company was detached. The difference in the degree of success of the armor task force, mechanized infantry battalion and mechanized infantry battalion(-) was insignificant. The armor battalion destroyed 80 enemy vehicles and lost 52 of its own, the armor task force destroyed 136 threat vehicles and lost 20, the mechanized infantry battalion(-) destroyed 136 enemy vehicles and lost 32 and the mechanized infantry battalion killed 138 enemy vehicles at a loss of 19. The Soviet commander retained the initiative against the armor battalion but never regained it from the other three. When the antiarmor company was added to the armor battalion, the task force destroyed 70% more enemy vehicles and

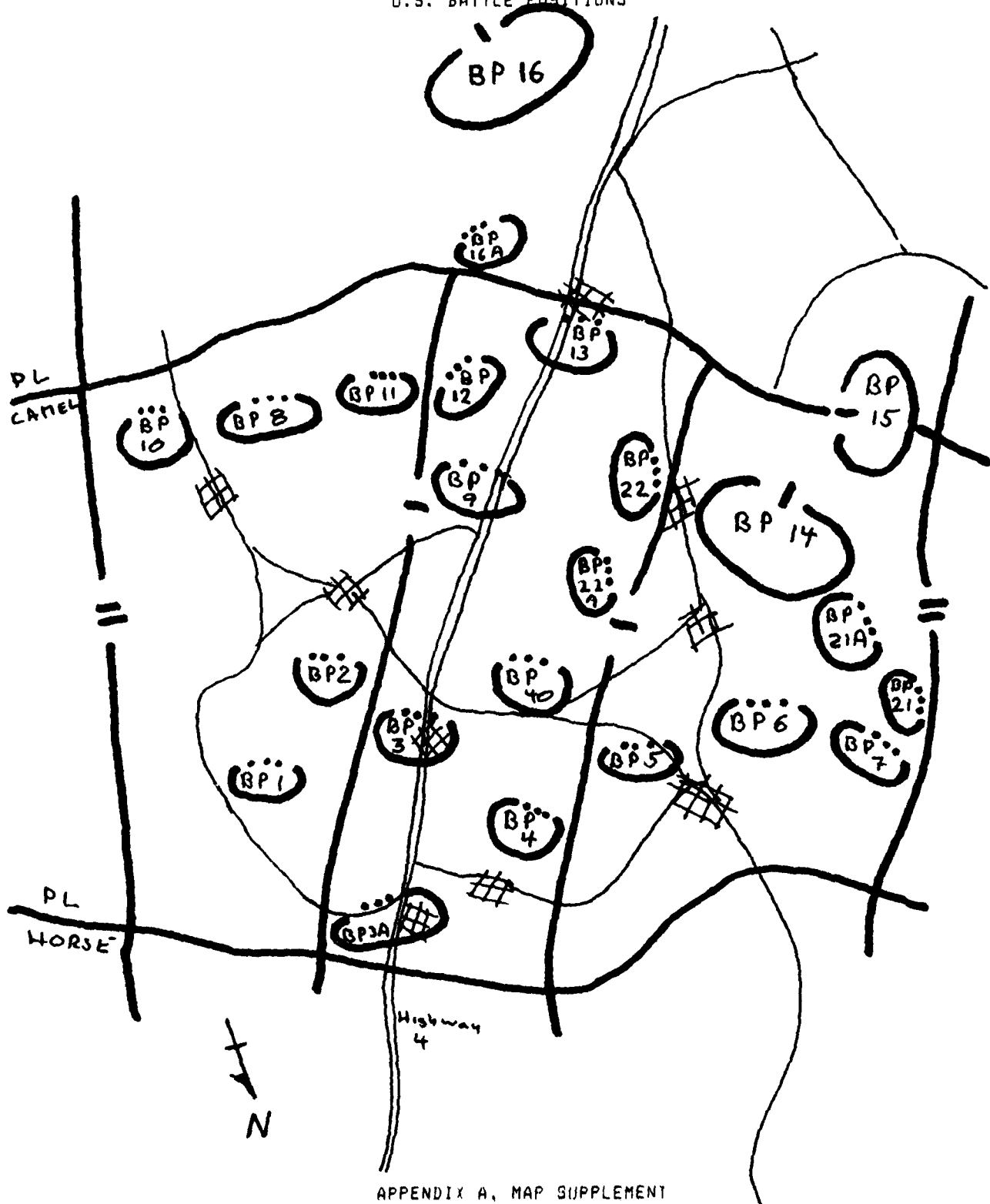
lost 55% fewer of its own vehicles. The mechanized infantry battalion destroyed .01% more vehicles and lost 27% fewer with its organic antiarmor company. The loss of the antiarmor company did not prevent the mechanized infantry battalion from meeting the brigade commander's intent, yet the armor battalion was unable to do so without this company. The best use for the antiarmor company was clearly in support of the armor battalion.

OVERALL CONCLUSIONS-ANTIARMOR COMPANY

To a large degree the success or failure of the battalions was due to their ability to engage the enemy with long range direct fire. This took the initiative away from the Soviet commander and slowed the momentum of the attack. Without this capability for the armor battalion, the Soviets took advantage of the standoff capability of their ATGMs and dominated the battlefield where they found long range shots. The volume of fire and velocity of the M-1 main gun was wasted when the tanks could not remain exposed for more than two rounds. This was the case when the Soviet BMPs and BRDMs fired at ranges in excess of 1500 meters with no U.S. ATGM threat. Under this condition, the Threat maneuvered into better firing positions without risk of U.S. long range fire. With ITVs in overwatch, the tanks disengaged and moved to subsequent positions without staying in position to overwatch the movement of other tanks. When the tanks were forced to remain in position too long, the enemy infantry closed in on the positions and destroyed the tanks with RPGs. When the ITVs engaged at long ranges, the tanks held their fire until the enemy was closer. The result was a higher probability of kill, less wasted ammunition and firing positions that remained unknown to the enemy for a longer time.

Based on the observations of the eight engagements wargamed, the capabilities of antiarmor companies are maximized when companies are taken from mechanized infantry battalions and given to armor battalions that would otherwise have to fight pure.

U.S. BATTLE POSITIONS



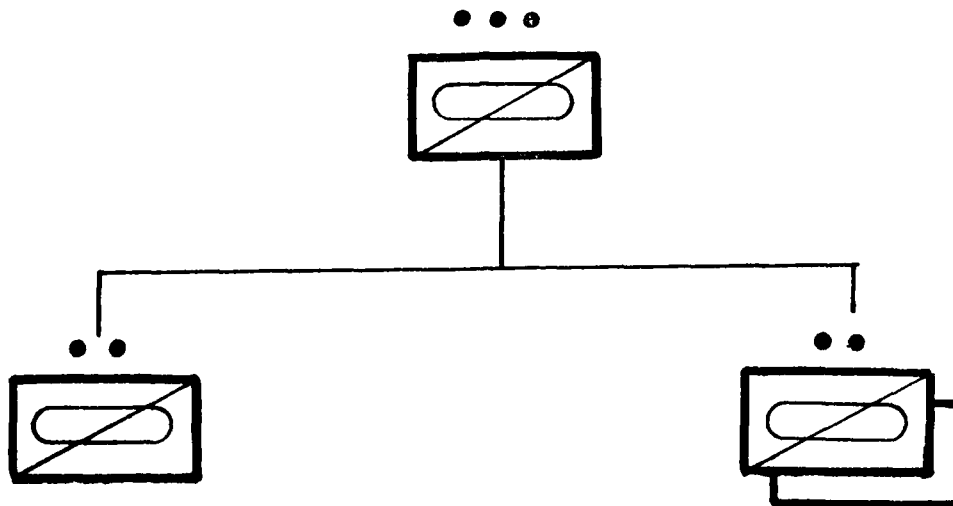
APPENDIX A, MAP SUPPLEMENT

VEHICLE LOSSES

MISSION TYPE UNIT	COVERING FORCE HANDOFF		MAIN BATTLE AREA DEFENSE		TOTALS	
	#ENEMY VEHICLES DESTROYED	#U.S. VEHICLES DESTROYED	#ENEMY VEHICLES DESTROYED	#U.S. VEHICLES DESTROYED	# ENEMY VEHICLES DESTROYED	# U.S. VEHICLES DESTROYED
ARMOR BN	9	8	80	52	89	60
ARMOR TF	37	1	136	20	173	21
MECH BN(-)	36	0	136	32	172	32
MECH BN	40	1	138	19	178	20

APPENDIX B. VEHICLE LOSSES

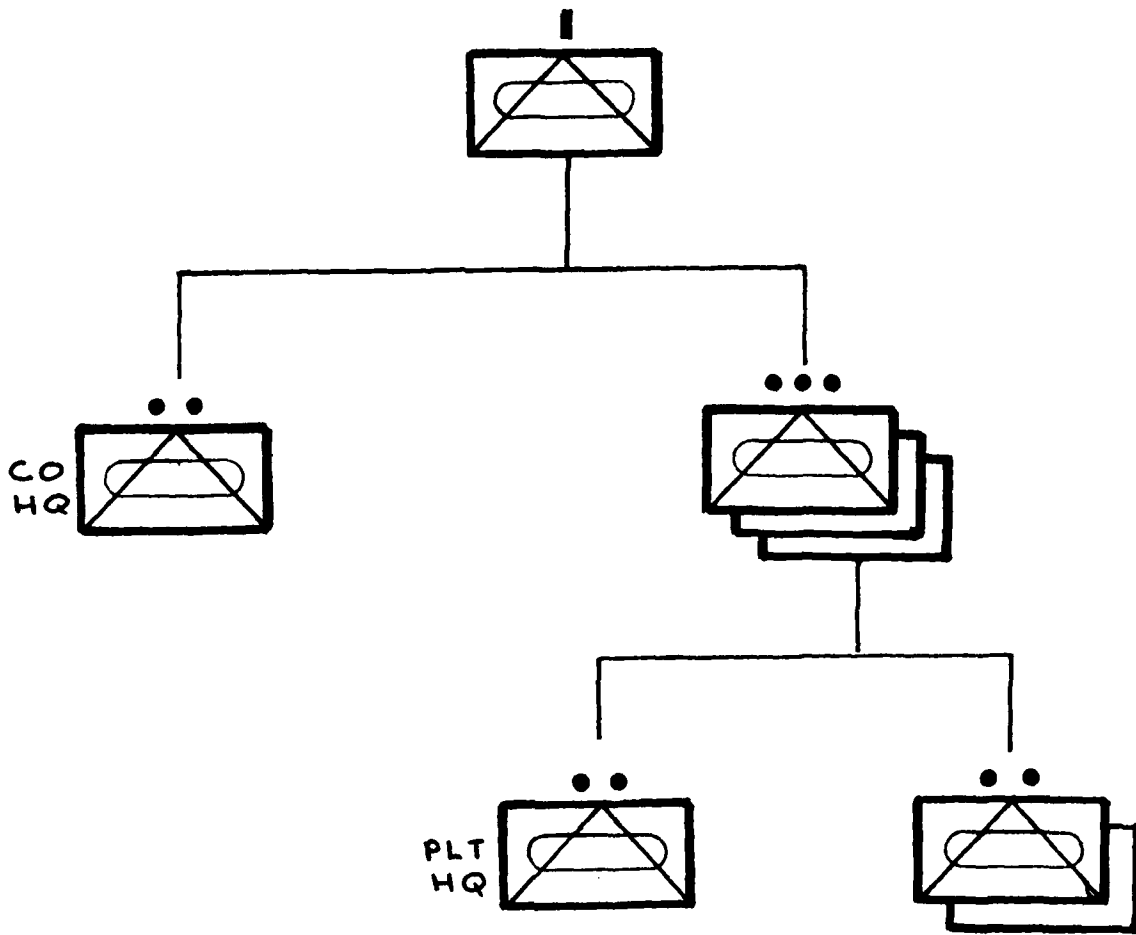
SCOUT PLATOON



The scout platoon in both the armor and mechanized infantry battalions consists of one officer and 29 scouts, organized in a platoon headquarters and two scout sections. The platoon has six M3 CFVs. It can organize into three sections, but loses some effectiveness in command and control.

APPENDIX C. SCOUT PLATOON ORGANIZATION

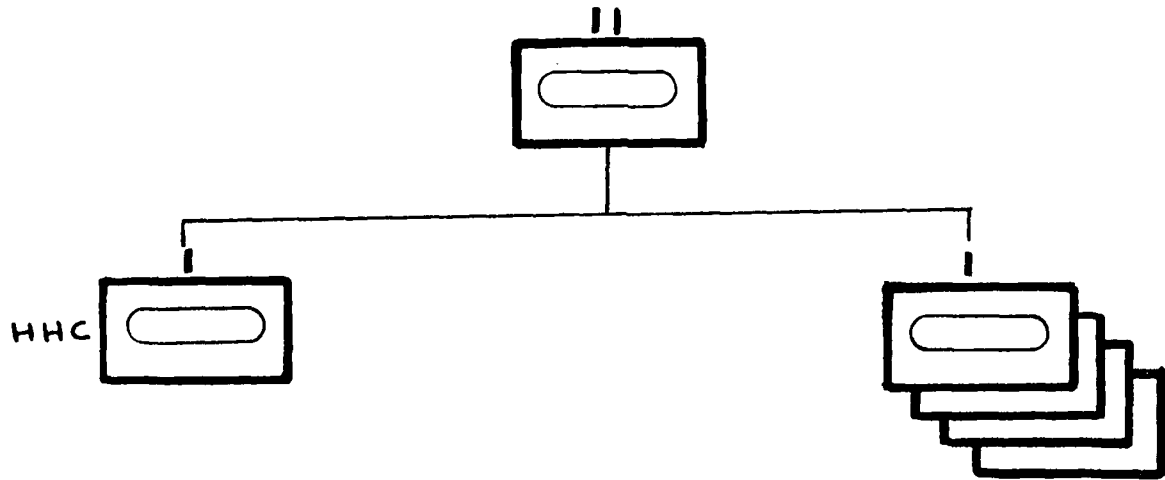
ANTIARMOR COMPANY



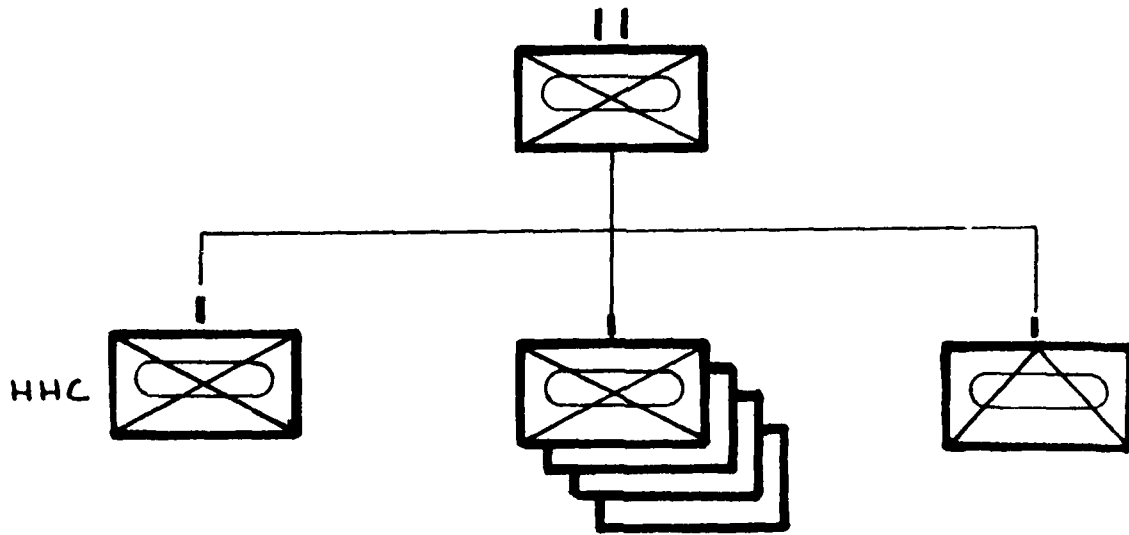
The antiarmor company consists of a headquarters section and three platoons, each equipped with four M901 ITVs. Each platoon has a headquarters section and two antiarmor sections, for a total of 12 ITVs in the company.

APPENDIX D, ANTIARMOR COMPANY ORGANIZATION

ARMOR BATTALION

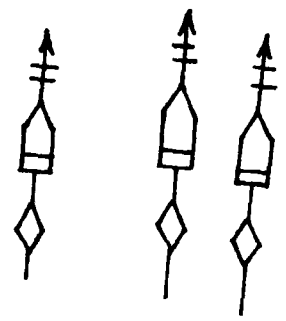
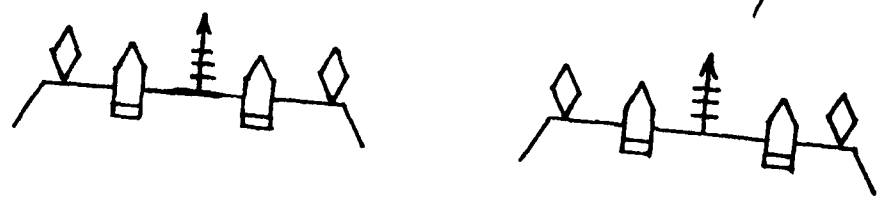
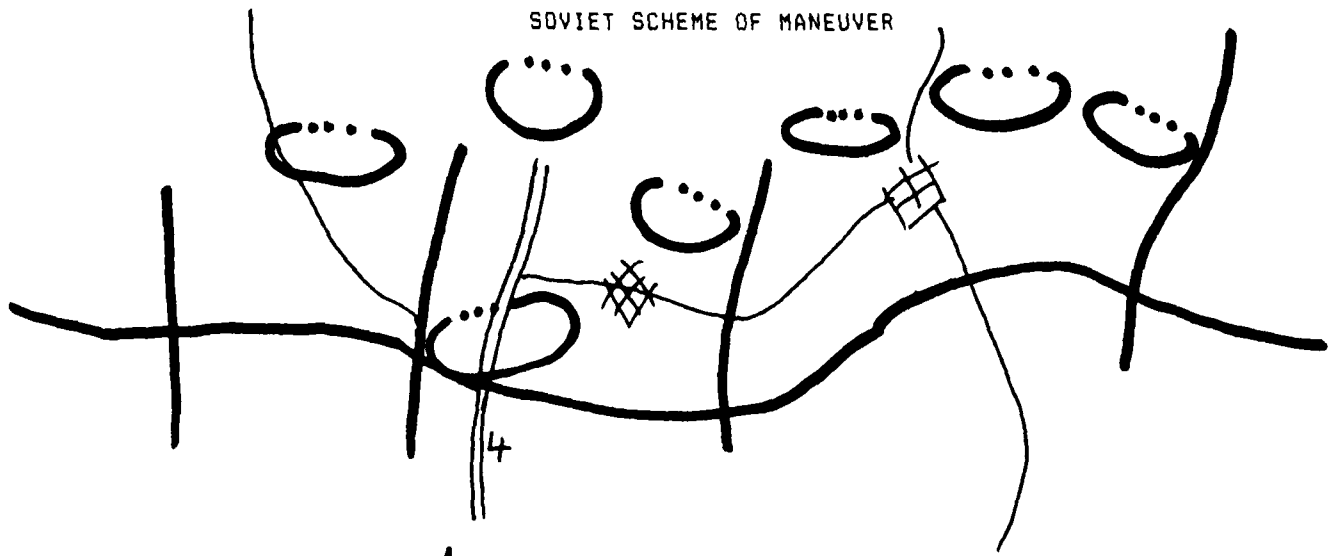


MECHANIZED INFANTRY BATTALION



APPENDIX E, BATTALION FORCE STRUCTURES

SOVIET SCHEME OF MANEUVER



APPENDIX F, SOVIET SCHEME OF MANEUVER

ENDNOTES

1. Current task organizations for war are classified when identified with specific units; therefore, this paper does not cite actual cases. Units with which the author has experience have now reorganized with one less mechanized infantry battalion in their force structures.

2. Field Manual 71-2J (Coordinating Draft), The Tank and Mechanized Infantry Battalion Task Force, p. L-3. This manual does state, however, that the scout platoon can provide ATGM fire to support disengagement.

3. The ranges of Soviet and U.S. long range ATGMs, in meters, are as follows:

Soviet		U.S.	
AT 2 SWATTER	3000	TOW	3000
AT 3 SAGGER	3000	TOW II	3750
AT 4 SPIGOT	2000		
AT 5 SPANDREL	4000		
AT 6 SPIRAL	5-8000		

4. It is assumed that the command and control of a headquarters company, four line companies and an antiarmor company would not be more difficult for an armor battalion commander than for a mechanized infantry battalion commander. It is also assumed that the mobility differential of the M901 ITV compared to the M2 BFV is the same as compared to the M1 tank.

5. This paper does not consider the requirement for antiarmor units in the offense, the effect antiarmor units have on battalion task forces, the effect of an antiarmor platoon versus a company, nor the effect a BTR equipped threat force would have on the thesis. Each of these variations needs to be addressed in future simulations, wargames and exercises before the force structure is changed to make the antiarmor company organic to the tank battalion.

6. The following manuals are not yet finished:

- a. FM 71-1J (Draft), The Tank and Mechanized Infantry Team, April 1985.
- b. FM 71-2J (Coordinating Draft), The Tank and Mechanized Infantry Battalion Task Force, December 1985.
- c. FC 71-100, Armored and Mechanized Division and Brigade Operations, May 1985.

7. School of Advanced Military Studies, FIREFIGHT and Wargame Rules, Course Special, Dynamics of Small Unit Actions, U.S. Command and General Staff College, p. 1.

8. See Appendix A, Map Supplement and Appendix F, Soviet Scheme of Maneuver.

9. During the conduct of the engagements, it appeared as though some of the FIREFIGHT rules produced unrealistic results in several areas. Consequently, sensitivity analyses were conducted on those aspects of the battle that appeared to be misleading. The effects of artillery suppression and destruction, particularly on ITVs, resulted in minimal losses. The sensitivity analysis indicated that the results of increased effectiveness of

artillery were constant for the armor and mechanized infantry battalions. These battalions would have lost more ITVs and, therefore, the ultimate destruction of the Soviet force would have taken more time and space. The final outcome, however, would have been virtually the same. The success of the TOW II seemed unrealistic in light of training experience. More restrictive variations of the line of sight and tracking time rules were tested, and the outcome was that as the success rate for the TOW II decreased, it also took more time and space for the Soviet force to be destroyed. The variation that had the most effect on the outcome of the wargame was changing the ATGM on the BMPs from SAGGERS to SPANDRELS. The increased range and velocity resulted in significantly higher U.S. losses. Again, however, the evaluation of the antiarmor company's relative effectiveness did not change. The validity of the conclusions did not change as a result of the sensitivity analyses.

10. The antiarmor company could be attached, OPCON, or made organic to the armor battalion. It is not within the scope of this paper to determine which of these options is the best.

11. As indicated in endnote 9, above, the success rate of the TOW II appeared to be unusually high. The FIREFIGHT wargame rules presume a probability of hit of .666 for an active component unit. A TOW II was credited with a kill if it hit: an exposed, moving tank at 2500 meters or less; an exposed, static tank 3500 meters or less; and a BMP or BRDM out to 3750 meters. Firepower kills, which are considered destroyed vehicles in this paper, were achieved on exposed, moving tanks out to 3500 meters and on exposed, static tanks out to 3750 meters. Even though these results seem high, they were uniform throughout the engagements.

12. See endnote 9 above.

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