II. TRADOC YEARS

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HEADQUARTERS
UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
OFFICE OF THE COMMANDING GENERAL
FORT MONROE, VIRGINIA 23651

ATCG 14 January 1974

Dear General Abrams,

You asked TRADOC to analyze the Arab-Israeli War from the standpoint of the interests of the United States Army. There are three major areas of interest. The first, and the one on which we are well embarked, has to do with lessons learned as they affect tactics, techniques, organization, training and equipment performance. The second has to do with information which may affect our decisions on weapons systems acquisition because of new data regarding our own or Soviet weapons systems effectiveness or vulnerability. Some of this information suggests modification of U.S. Army systems now under development. Third, there are lessons to be learned by the engineers and scientists regarding systems technology or production by examination of captured Soviet equipment. As you would expect, TRADOC is concentrating on the first of these areas while AMC is primarily interested in the third. We are working jointly with AMC in the second area which may cause us to modify some of our cost effectiveness analyses and thus impact on some of our weapons acquisition decisions.

As you know, COL Prillaman of the Armor School has returned from his trip and we also have the report of the USMOST team to which several members of TRADOC were attached. Additionally, we spent parts of two days with General Marshall and we have received a Marine Corps briefing as well as substantial input from the U.S. Air Force. The stories we have received from these various sources do not track completely in all respects. None the less, the technical and tactical story comes through clearly as it was derived mostly at a lower level during a time when the military aspects of the situation were uppermost in everyone's mind.

You suggested that General Marshall had a different slant on certain aspects of the war. We found that there was no disagreement between General Marshall, COL Prillaman and the USMOST team in respect to tactics, techniques and weapons performance. General Marshall, on the other hand, had some exclusive information derived from a higher level regarding morale, political complications and personalities. His visit was most useful and enjoyable.

We have widely disseminated COL Prillaman's initial report. Last week we submitted our initial list of lessons learned in response to a request from your staff. There will be a final report available in June which we hope will contain the detailed tactical and technical information required by the schools and combat developers, the materiel developers and the various

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The Orwin C. Talbott Papers. Box: Deputy CG TRADOC, Arab-Israeli War, 1973. Folder: Letter from General DePuy to General Abrams which analyzes the Arab-Israeli War. . . . U.S. Army Military History Institute, Carlisle Barracks, PA.

evaluation agencies. This letter attempts to highlight some of the more obvious and major lessons learned.

OVERVIEW

After the Arab-Israeli War of 1967 the two sides set off in opposite directions in preparation for the next war. The Israeli success clearly stemmed first from their domination of the air and the disproportionate Arab-Israeli aircraft losses and the disproportionate effectiveness of Arab-Israeli close air support. Secondly, Israeli tank forces constituted the ground gaining punch and in conditions of total air superiority they moved at will against the Arabs. After the war, the Israelis understandably placed the highest priority on the Israeli Air Force and tank forces. They reinforced success. Because of overall resource constraints this resulted in degrading their infantry, artillery, other antitank weapons, night vision equipment and short range mobile air defense forces. On the other hand, the entire Soviet-Arab concept stemmed from their massive effort to neutralize Israeli fighters and tanks. Thus, it was not the surprise attack and the ragged Israeli mobilization which differentiated the 1973 from the 1967 war although both were important, but rather, the concept and weaponry employed by the Arabs. In order to counteract the Israeli Air Force, the Soviet-Arab concept employed a total air defense system which moved with the attacking force and, at least in the early stages of the war, succeeded in denying the battle area to the Israeli Air Force — inflicted heavy losses on the IAF — and minimized the effectiveness of IAF close air support. In respect to Israeli tanks, the Soviet-Arab concept involved the deployment and use of thousands of antitank weapons by regular infantry and specially organized SAGGER units. Initially these weapons also enjoyed resounding success and repulsed early Israeli tank attacks with unacceptably high losses. As the battle continued the qualitative difference in Arab-Israeli training and leadership began to have its effect. Furthermore the Israelis found exploitable weaknesses in the Arab air defense system and developed countermeasures for the SAGGERS. By the end of the war, the Israelis dominated the battlefield and held the initiative. There is some doubt, however, as to whether or not they could have sustained an offensive long enough to destroy the Arab forces as they were destroyed in the 1967 war.

MAJOR LESSONS LEARNED

Close Air Support-Air Superiority. Among the many fascinating aspects of the war, the relationship of air defenses and close air support (CAS) stands out — and deserves a great deal of careful thought. The IAF wanted to launch an air superiority campaign at the outset. This meant a campaign against Arab airfields, aircraft and SAM's. For reasons of politics, timing, and exigency the IAF was forced into close air support of their hard pressed troops instead. Aircraft losses were high — 40 in three and a half days on the Golan front. But more importantly the quality of air support was very low — loft bombing. On the Suez front the IAF was only effective in CAS when the Egyptians sallied out from under the SAM envelope.

The U.S. Army and the U.S. Air Force must pay attention to the implications of this experience.

First, the Army must recognize that the air superiority campaign must precede and be successful if it is to enjoy effective CAS.

Second, Army intelligence, weapons and maneuver can and should play a role in the air superiority campaign in the zone forward of the line of contact.

Third, close operational coordination and integrated air/ground operational planning are required.

Fourth, Army forces cannot count on Close Air Support to substitute for artillery or antitank weapons at all times and places. This is important to remember also because we are likely to be outgunned by Soviet or Soviet supplied artillery.

Fifth, target acquisition (including AD intelligence) must be derived from an integrated air-ground system — integrated throughout planning, deployment and operation.

Sixth, EW/ECM planning deployment and operation must be increasingly integrated.

Air Defense. The obverse of all this is the requirement for an integrated total U.S. air defense system for the field Army and the tactical Air Force. If any element of the air defense system is missing or weak, the enemy will exploit the weakness and outflank or neutralize the system.

The Arabs were weak in air-to-air combat — the Israelis in mobile forward area gun and short range missile systems although the latter caused little difficulty owing to the paucity of Arab CAS.

The U.S. Army is correspondingly weak in the mobile SHORAD (short range air defense) area. Unlike the Israelis who bagged 36% of their AD kills with automatic weapons we have denuded our tactical vehicles of the World War II and Korean War AA machine guns. We should rethink this one.

Quality of Israeli Tank Crews. The most impressive performance during the war was that of the Israeli tank crews. These crews were able to achieve kill ratios varying from one to three in the midst of a night melee — one to six during offensive operations in the day time — and much higher during certain defensive operations. Although the Israelis prefer the Centurion and M-60 tanks to Soviet armor, these differences do not account for the difference in performance on the battlefield. For example, in one action Israeli forces equipped with Soviet tanks, although out numbered at least two to one, reportedly killed 56 Arab tanks without losing one. Israeli tank crews opened fire at ranges out to 4,000 meters and obtained kills at that range. They closed with the enemy and obtained kills at under 200 meters. Their tank crews are generally stabilized and in an extreme case had been together for 14 years. Although there was some scrambling caused by erratic mobilization, the quality of the crews made the main difference. Apparently, the T-62 tank and the M-60 tank are a fair match. Therefore, during the next 10 years battlefield outcome will depend upon the quality of the troops rather than the quality of the tanks. The Israelis are reputed to fire four times as much training ammunition as we do. If there is one paramount lesson to be learned from this, it is that the U.S. Army must make a major effort to upgrade its tank crews and tank commanders. Less than half of our tank commanders can qualify for the NCO basic course which in the case of armor is a tank commander's course. Our best junior NCO's in the Armor corps do not seek assignment as tank commanders. TRADOC will propose to you a comprehensive program for upgrading our

tank commanders, including ammunition allocations, assignment policies, education programs, pro pay and other measures.

Night Operations. The observers found that the Egyptian forces had been equipped with large numbers of night vision devices both active and passive. We have the impression, however, that this capability did not exert a decisive influence on the battlefield even though the Israelis were not similarly equipped. However, it is clear that the Soviets are investing heavily in night vision and it may be that the Arabs simply failed to execute Soviet plans this time. The Israelis are desperately anxious to acquire every bit of night vision equipment available. They seem to understand the threat. We think it is fair to say that the U.S. Army has not begun to exploit with its tactics and techniques the growing capability for night operations inherent in our own excellent equipment.

CBR. Arab forces were equipped for defensive CBR operations whereas Israeli forces were not. Whether the Arabs are also equipped for offensive CBR operations is not as clear, but remembering their operations in Yemen we can only assume the Soviets have equipped them with the same thoroughness they apply to their own forces. The very fact of this disparity is both dangerous and potentially destabilizing, particularly if in the heat of battle the Arabs were forced into desperate straits. Also, we cannot be sure that the use of CBR would not be initiated by the Arabs at the outset of another war.

Electronic Warfare. The Arabs employed broad band barrage-type jamming rather than concentrating with high power on the high priority segments of Israeli communication nets. The Israeli Army had been trained to communicate through this kind of interference and apparently were able to do so by operator techniques and sheer persistence. This tells us something about how to use our own jamming and indicates the high priority for operators trained against prolonged barrage jamming.

Weapons Systems Implications. There are two aspects of our analysis which touch upon weapons systems acquisition decisions:

The Israelis rank the M-60 tank above the T-62 in performance but they find three problems with it which they intend to correct in their own tank. The first is that the ammunition storage in the turret of the M-60 causes a much higher percentage of catastrophic losses. More often than not the entire turret was entirely blown off the tank with a turret hit. Secondly, they found the hydraulic fluid to be inflammable causing crew injuries and tank losses by fire. Thirdly, they did not like the mounting or the functioning of the 50 cal machine gun in the cupola. We should review all of these aspects in respect to the XM1 development program and the M60A3 product improvement program.

The Israelis liked the M-113 and want as many as they can get for their infantry. They are mounting additional 7.62 machine guns on the M-113's on pintle mounts. This action, together with the 7.62 machine guns which they are mounting on their tanks, reflects the Israeli desire for more anti-personnel weapons on their armored vehicles — presumably to defend against infantry with RPG-7's and SAGGERS. All of this seems compatible with the Army's current emphasis on anti-personnel weapons on the MICV and our doctrine of accompanying tanks with mech infantry combat vehicles so that the tanks can concentrate on their main gun mission while the MICV supports against infantry — either while moving or, when necessary, dismounted. It does, however, raise a serious question

as to whether we need the BUSHMASTER on the XM1. The BUSHMASTER is expensive — crowds the turret with both gun and ammunition — limits the amount of ammunition which can be carried and to some extent drives the size and configuration of the turret. We should consider eliminating the BUSHMASTER and adding a pintle-mounted 7.62 machine gun on the tank turret without a cupola.

Although it wasn't present on the battlefield, it seems logical to assume that the BUSHMASTER mounted on a MICV would have been an extremely effective weapon in some of the engagements where Arab and Israeli forces became intermingled both in the day and at night.

The Chief of the Israeli Air Force has assigned a very low value to helicopters. Unfortunately, there is too little data or experience on which to base an opinion one way or another. Our feeling is that the usefulness of helicopters was neither proved nor disproved although we note that Israeli officers have expressed a desire for the TOW COBRA. Some of them told COL Prillaman that they would be happy to conduct the operational tests of TOW COBRA against the Arabs.

The Israelis used a variety of countermeasures against the SAGGER including the suppressive fire and evasive action. We should endeavor to examine these countermeasures in terms of our own doctrine of employment. The SAGGER is a much more difficult bird to fly than the TOW. We should expect that the Soviets will put a more effective antitank missile into the field in the near future at least comparable to the TOW. Correspondingly, we should probably proceed with the hardening of the TOW against electro-optical countermeasures. We also should be absolutely certain that the extended range TOW has sufficient maneuverability beyond 3,000 meters to make it cost effective. There is considerable doubt that this is the case.

There were also some lessons learned which bear upon our own effectiveness analysis of weapons systems now under consideration for development.

At Aberdeen the Soviet BMP infantry combat vehicle apparently has thicker armor of a harder variety than that against which we designed the BUSHMASTER armor-piercing round. It is not yet clear whether this change will affect our conclusions on BUSHMASTER size, cost and effectiveness — but it may. AMC is attempting to run some ballistic test against BMP armor and then we can put the new data through the current cost effectiveness analysis and determine whether we do or do not have a problem, and if so what options are open to us.

Perhaps the most startling aspect of weapons systems performances during the Arab-Israeli War had to do with the impact of training on battlefield results. For example, if we had run the Arab-Israeli tank battles through our models and simulators using M-60, Centurion, T-55 and T-62 tanks, the Israelis would have lost every battle. This is because of the effectiveness measures used in the models and because most simulators contain rules of non-effectiveness after losses reach 30 or 40 percent of the forces committed. This illustrates two points — one, models and simulators cannot measure or reflect the quality of the training and leadership involved and second, it shows that training and leadership weighed more heavily than weapons systems capabilities on the actual battlefield.

In this brief summary of our major findings we have surfaced a number of problems and have not pretended to offer plans, programs and courses of action to meet or offset them. This will come later. You may be assured, however, that we are already bringing these matters to the attention of the students, to our Combat Development elements and to AMC and the commodity commands involved in weapons systems development. When the final report is submitted there will be a carefully thought out, practical recommendation for action programs addressing each lesson or problem area.

signed
W.E. DePUY
General, United States Army
Commanding

General Creighton W. Abrams
Chief of Staff
United States Army
Washington, D.C. 20310

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IMPLICATIONS OF THE MIDDLE EAST WAR
ON
U. S. ARMY TACTICS, DOCTRINE AND SYSTEMS

A Presentation by

General William E. DePuy

Commander

U. S. Army Training and Doctrine Command

The William E. DePuy Papers. Command History Office. U.S. Army Training and Doctrine Command, Fort Monroe, VA.

There have been a number of studies, analyses, and reports about the military implications of the October 1973 Arab/Israeli War. As a matter of fact, there have been so many reports that the important lessons of the war tend to be lost in details. As a consequence, Department of the Army asked the US Army Training and Doctrine Command (TRADOC) to summarize the major lessons learned from that war and to examine the impact of these lessons on the tactics, doctrine, training and materiel development of the US Army. In order not to lose the important lessons in a mass of detail, we emphasized that there is a very important relationship between the lessons learned and the way the US Army intends to fight. In this respect, the format of the briefing will generally follow this chart.

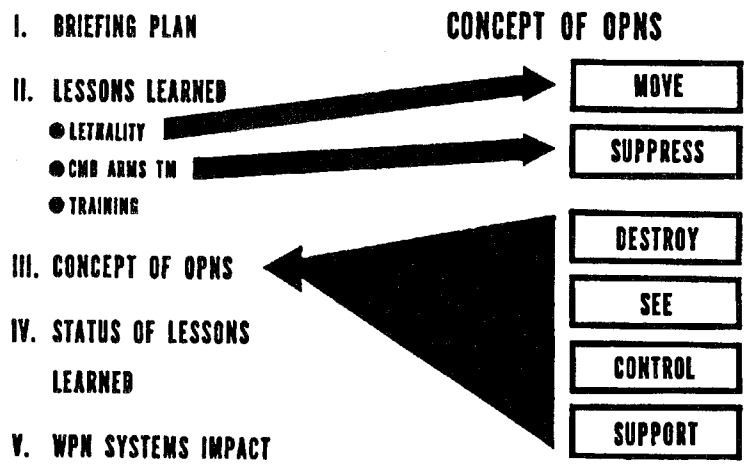


CHART 1

The three major lessons in the war are:

First, that modern weapons are vastly more lethal than any weapons we have encountered on the battlefield before. Second, in order to cope with these weapons it is essential we have a highly trained and highly skilled combined arms team of armor, infantry, artillery and air defense backed by the support required to sustain combat operations. Third, the training of the individual as well as the team will make the difference between success and failure on the battlefield. Well trained Israeli tank crews made the difference in 1973. Their performance in battle has helped us to

understand the requirements of battle, the concepts of operations, if you will. Whether defending or attacking, you must move on the battlefield. You can't be static, that is, go into a Maginot or Siegfried Line and win. In order to move on the battlefield in the face of weapons with high lethality, enemy weapons must be suppressed. You suppress by a combined arms team. If you do that properly, you can move, but you still must have the weapons to destroy the enemy when the objective is reached. To win when fighting outnumbered, it is necessary to concentrate forces at the critical point and at the critical time on the battlefield, in other words, in order to move to the right place, you've got to see the battlefield better than the enemy sees it so you know where to go and when to go. In order to move rapidly to that critical point, you must have total control over your combat elements; so that when you order a battalion to move, it will move immediately. In order to do all this successfully, we need to have support of all kinds. We need the wherewithal of battle, that is, the ammunition, the POL, and the maintenance of equipment. This relationship between our concept of operations and the lessons learned in the Arab/Israeli War will run through this entire briefing. Additionally, I will cover the status of lessons learned, and there have been many. Finally, we will apply the lessons learned and our concept of operations to the development of requirements for specific weapons and materiel systems.

Now we will talk more about lethality.

> ". . . . . THE ARAB - ISRAELI WAR DRAMATIZED THE LETHALITY OF MODERN ANTI - TANK WEAPONS, INCLUDING MOST PARTICULARLY THE HIGH VELOCITY TANK CANNON AND THE LONG RANGE ANTI - TANK GUIDED MISSILE. WITH ONE EXCEPTION (THE BATTLE OF KURSK IN 1943), THERE HAS NEVER BEEN A COMPARABLE LOSS OF TANKS IN SUCH A SHORT PERIOD OF TIME. . . . "
>
> ". . . . IF THE RATE OF LOSS WHICH OCCURRED IN THE ARAB - ISRAELI WAR DURING THE SHORT PERIOD OF 18 TO 20 DAYS WERE EXTRAPOLATED TO THE BATTLEFIELDS OF EUROPE OVER A PERIOD OF 60 TO 90 DAYS, THE RESULTING LOSSES WOULD REACH LEVELS FOR WHICH THE UNITED STATES ARMY IS NOT PREPARED IN ANY WAY."

CHART 2

What we said was that the lethality of modern weapons is so much greater than that of the weapons we have used, or against which we have fought in the past, that we are in a new ball game. Our analysis also pointed out that there are more of these lethal weapons on the battlefield than at any other time in history. Therefore, if we wanted to sum it up in one paragraph, we would have to say that the problem now confronting the US Army is: how to operate on a battlefield which is populated with those very lethal weapons in very large numbers and still get the job done without catastrophic losses; losses for which we are really not prepared.

PROLIFERATION

(ALL FIGURES APPROXIMATE)

	TANKS	APC'S	ARTY TUBES	AD BTRY DEPLOYED
ARAB	4000	3000	3000	150
ISRAELI	2000	4500*	800	10-15

*INCLUDES HALF TRACKS

CHART 3

Let me explain a bit more about the mechanized battlefield and the numbers of weapons we may encounter. This chart simply summarizes the fact that in the 1973 war, Arab forces had some 4,000 tanks. These were first line tanks; T54, T55 and T62. To put it in perspective, the American Army has approximately 1,700 tanks in Europe, which includes those in the hands of troops. We credited the Syrian and Egyptian armies with a starting inventory of three thousand artillery tubes. We have less than 500 US Army artillery tubes and missile launchers in Europe.

INTENSE 18-DAY BATTLE

(ALL FIGURES APPROXIMATE)

● LOSSES	TANKS	APC'S	ARTY TUBES
ARAB	1500-2000	1000	500
ISRAELI	700-1000	1500-2000*	50-75

*INCLUDES HALF TRACKS

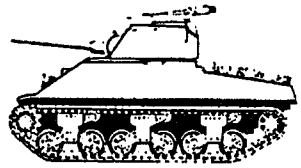
CHART 4

During the very intense 18 day battle, in fact, during the first 12 days, the losses in comparison with anything we have experienced were phenomenal, enormous. Egypt and Syria lost approximately 1,500 to 2,000 tanks. That would equate to all the tanks we have in Europe. Five hundred artillery tubes were lost; almost equal the amount of artillery the American Army has in Europe.

Let me now expand a bit about the lethality of these weapons. Remember, they are in the hands of many countries all over the world.

TODAY'S TANKS ARE ABOUT TEN TIMES MORE EFFECTIVE THAN WORLD WAR II TANKS

SHERMAN M-4



M60A1

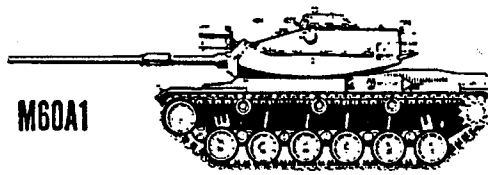
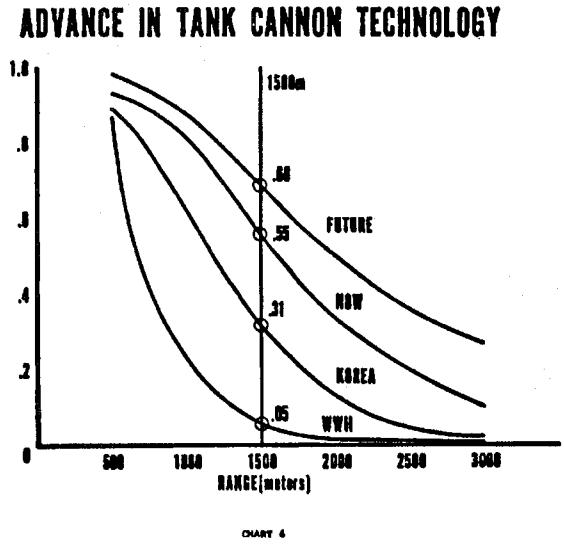


CHART 5

In World War II the American Army was equipped with the Sherman tank. We are now equipped with the M60 tank. We are looking forward to fielding an improved M60 tank. Development of this tank is moving nicely and we hope to put it on the battlefield soon. But, by way of comparison, the basic M60 tank is 10 times better than the Sherman tank of World War II in terms of effectiveness. In fact, that is an understatement.



This chart shows the probability of hit from zero probability to a hit every time you fire. Along the bottom, range is shown from zero to 3,000 meters. At 1,500 meters, which is about a mile, if we were to use the World War II tank, we would have only one chance in 20 of hitting an enemy tank at one mile. By the Korean War, we had installed a 90mm gun on our tanks and the chances of a hit were one in three. With our current M60 tank, the chances are now a little bit better than one in two. We believe the new tank should be able to hit an enemy tank at one mile about seven times out of every 10 shots fired. So far I haven't said anything about lethality given a hit. The fact is the modern tank cannon is enormously more effective than the World War II cannon. So if you multiply the probability of kill, times the probability of hit, my estimate of current tanks being ten times as effective is really quite conservative.

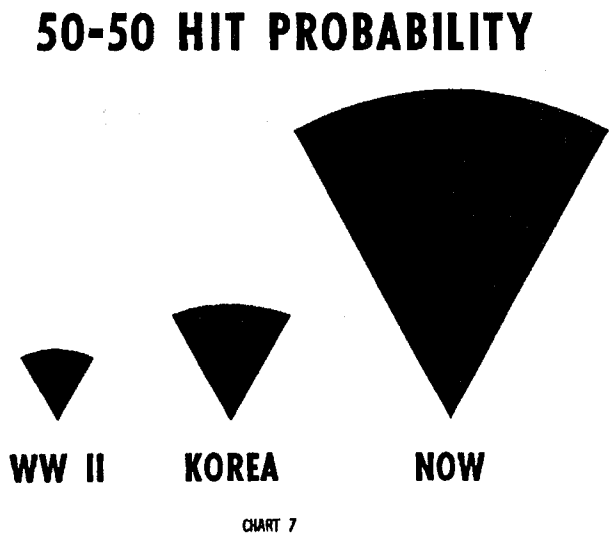


CHART 7

This has many consequences. Back in World War II, a captain commanding a tank company was interested in the terrain his weapons controlled and in the enemy up to as far as he could see. Nonetheless, he was not endangered by very many weapons except those within about 500 meters of him. In those days 500 meters was the distance in which he had a 50 - 50 chance of getting a first round hit. In Korea that distance had increased to 1,000 meters. Now it has increased to 3,000 meters and you can see whats happening to the Lieutenant, the Captain, and the Sergeant in our tank units. They must worry about a lot more hill tops out there from which enemy weapons can fire at him. The current anit-tank guided missiles, the SAGGER, the SNAPPER, and our TOW reach to 3,000 meters and are extremely effective given a hit. You can then see, the enormously more difficult problem for the battlefield commander. It's a much more dangerous environment in which to fight. He must worry about a much greater area. A mistake on this bigger battlefield will penalize the commander by greater casualties.

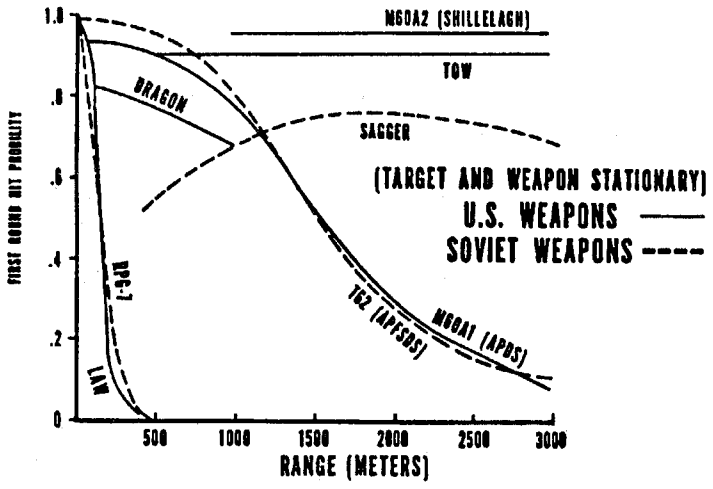


CHART 8

The fact of the matter is that our weapons and the weapons manufactured by the Soviet Union are in many respects very similar. For example, in the middle of this particular chart, and here again we're talking about the probability of hit over range, you can see that the Russians' T62 tank, their new best tank, and our M60A1 tank have similar characteristics. Their tank is a little bit better in close, because it has a higher muzzle velocity. Our tank is just a little bit better at the extended ranges because we have better fire control and range estimating equipment. Our new tank, the M60A3, will have even better effectiveness at the extended ranges. But today we have no decisive advantage, nor do they. You could say, therefore, that he who has the most tanks on the battlefield will have an advantage. The anti-tank guided missile, the SAGGER, has to be flown by a gunner with a joy stick, much like an airplane. The gunner must fly the SAGGER to the cross hairs which he holds on a target. On the other hand, our missiles, the TOW and the Shillelagh, are fully automated. If the cross hair is on the target, the missile flies automatically to the target. You will notice that the guided missiles are vastly more effective at the greater ranges than are the tank cannons. The tank is more effective in close. This graph does not show that the tank can fire more rapidly, but it can. It does tell us something about how to fight. Tanks should not engage anti-tank guided missiles at long range. They should sneak up on the missile positions through cover and concealment. Once they do close within 1,000 meters, the tank begins to have the advantage.

THE APFSDS ROUND OF THE T-62 TANK CAN TRAVEL 1 MILE IN ONE SECOND - IT IS THE FASTEST TANK CANNON ROUND IN THE WORLD:

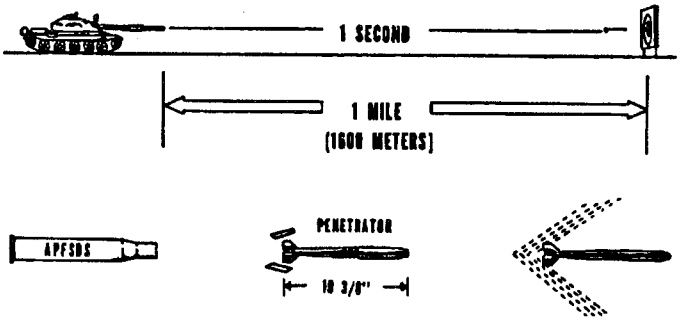


CHART 9

The Russian tank cannon has a higher muzzle velocity than our tank gun. As a matter of fact, the Soviet tank cannon has the highest muzzle velocity of any tank cannon in the world today. The Soviet penetrator, which is a solid steel plug, weighing about eight pounds, travels toward the target tank at the rate of one mile in one second. It drops very little in that one mile, it's going so fast. This means that the Soviet tank can fire battle sights up to a mile. It means there is no time to duck. The penetrator will go through our tank's armor.

PROBABILITY OF FIRST ROUND KILL

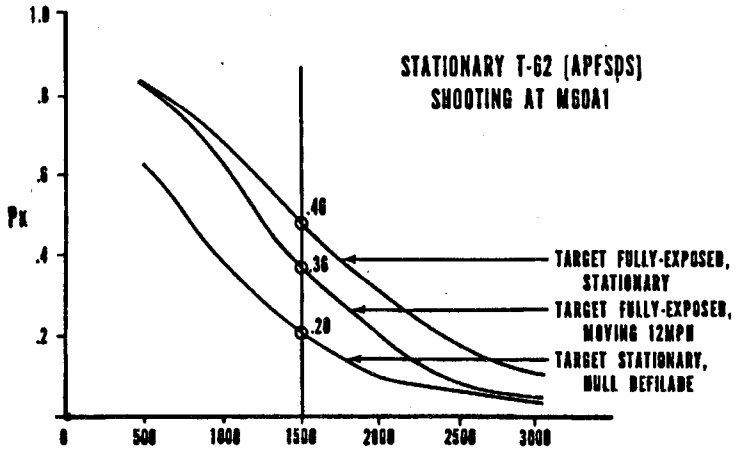


CHART 10

If the Russian tank, firing that kind of ammunition, shoots at one of our tanks which is just sitting in the open, at a distance of one mile, the Soviet tanker has a 50 - 50 chance of a first round kill. Note the change from hit probability to probability of kill. It is interesting to note that whereas the hit probability was 50 - 50, the kill probability is just below that percentage. In other words, if you're hit, the chances are that you will be killed. On the other hand, if our tank is moving 12 miles an hour, he has a somewhat better chance of surviving. Even more importantly, if he happens to be hull down and uses the terrain for protection while only exposing his turret and his gun, he has more than doubled his chances of survival. That of course, is an important teaching point for our tank commanders, our tank platoon leaders, and our tank company commanders.

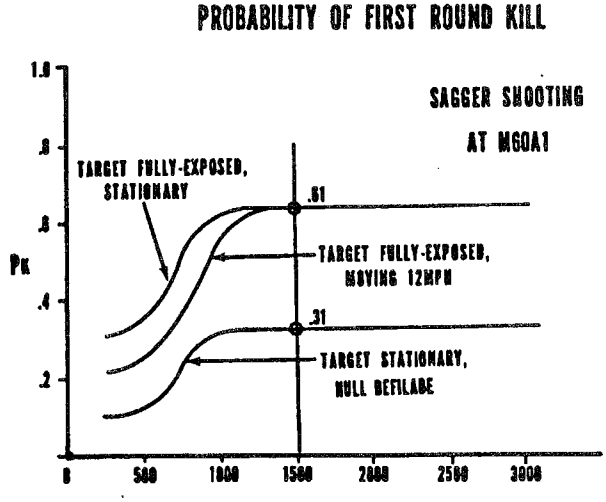
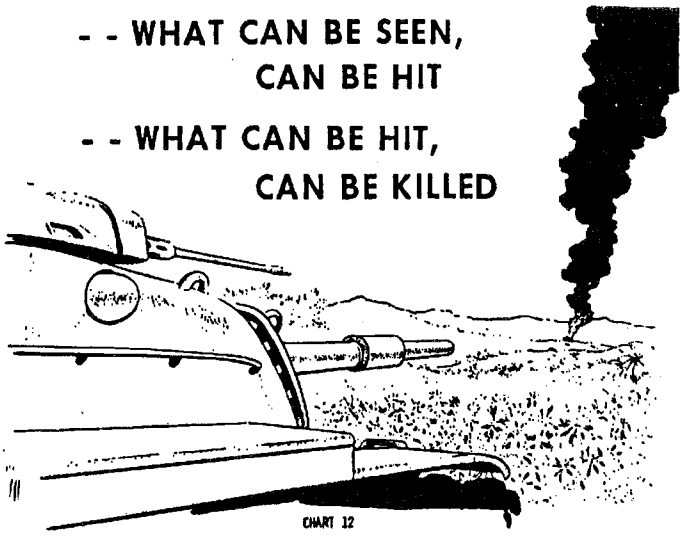


CHART 11

If the Soviet SAGGER is shooting at the M60A1 tank, and again the emphasis is the probability of kill; note that in the early ranges, while the gunner and the machinery is capturing control of the missile, it's not very effective. But, after it gets out to about 1,000 meters and beyond, it's extremely effective. Interestingly enough the missile doesn't care at the extended ranges whether the tank is moving or whether it's stationary, because at that range movement is relatively unimportant. On the other hand, if the defending tank is hull down and uses the terrain and remains camouflaged, then he doubles his chances of survival.



Therefore, we are telling the Sergeants, the Lieutenants, and the Captains at Fort Knox and Fort Benning that if they can be seen on the battlefield, then they will be hit. If they can be hit, the chances of the tank being knocked out of action are very, very high, unless certain actions are taken and those actions are the subject of this talk.

"....TANKS AND OTHER COMBAT ELEMENTS WHICH EXPOSE THEM - SELVES DURING OFFENSIVE ACTION WILL SUFFER UNACCEPTABLE LOSSES UNLESS THEIR VULNERABILITY CAN BE DECREASED THROUGH IMPROVED TACTICS AND TECHNIQUES OF MOVEMENT WHICH BETTER USE THE TERRAIN, AND THE APPLICATION OF SUPPRESSIVE FIRE OF ENEMY ANTI - TANK WEAPONS. I BELIEVE THAT IS THE SINGLE MOST IMPORTANT LESSON ON THE ARAB - ISRAELI WAR."

CHART 13

This leads us to the conclusion that if you expose yourself on the battlefield, you will, in fact, incur unacceptable losses. Unless, that is, somehow you can use the terrain to reduce vulnerability and suppression or obscuration to impair enemy weapons effectiveness; so that the gunner on the other side is either shaken up, driven to the ground, his eyeball is moved off the sight, or smoke obscures his vision. All of this is, of course, the major lesson of the war. It tells us that in order to move properly we need training. In order to fire properly we need training. And, in order to suppress properly we need the training of a combined arms team.

FOREIGN VIEWS ON THE TANK

BRITISH

"THE TANK TODAY IS STILL DOMINANT, BUT IT MUST BE SUPPORTED BY OTHER ARMS".

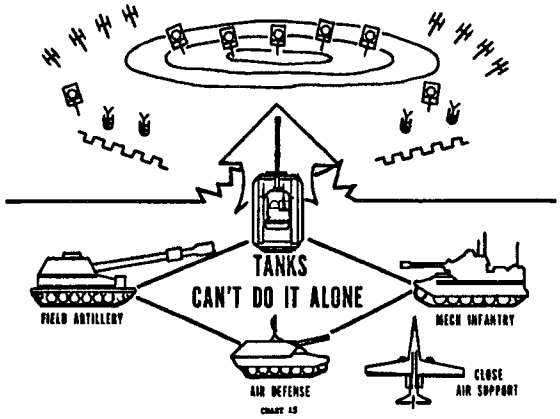
"THE SAGGER DID NOT MAKE THE TANK OBSOLETE. SHARON AND OTHER ARMOR DIVISION COMMANDERS WHO FOLLOWED IN HIS FOOTSTEPS PLASTERED THE EGYPTIANS USING, ESSENTIALLY, TANKS IN THE LIDDEL HART MANNER".

SOVIET

"IN TODAY'S CONDITIONS OF RAPID DEVELOPMENT OF MILITARY EQUIPMENT AND WEAPONRY THE IMPORTANCE OF THE TANK FORCES NOT ONLY HAS NOT DIMINISHED, BUT IS INCREASING. AS BEFORE, SOVIET MILITARY SCIENCE ACCORDS THEM THE ROLE OF THE MAIN STRIKING AND MANEUVERING FORCE OF THE LAND FORCES. TANK UNITS . . . CAN EFFECTIVELY TAKE ADVANTAGE OF THE RESULTS OF NUCLEAR ROCKET STRIKES AND ENSURE THE SUCCESS OF THE OPERATION".

CHART 14

Recurrently there are discussions about the value of the tank. The fact of the matter is, the tank today is the single most important weapon on the mechanized battlefield. There is no doubt about it. The Russians think so, the Germans think so, the British think so, we think so. However, the tank can't do it alone. To win the battle you must move. You can't sit and wait and expect to win. You cannot succeed and perform a useful mission on the battlefield in the long run without moving. The tank is designed to move. It is a heavily armored vehicle carrying the punch of a big gun. The tank carries the battle to the enemy.



Tanks are designed to break through the enemy's defenses and get into his rear, where they can attack his communications, his reserves, his artillery, his maintenance units, and his supply stocks. Tanks can go around the flank too, particularly, if there's an open flank. The tank is heavily armored and heavily armed. Its designed to be particularly effective in the enemy's rear. But one of the major lessons of the war was, that in the face of the lethality of modern weapons, the tank cannot move alone.

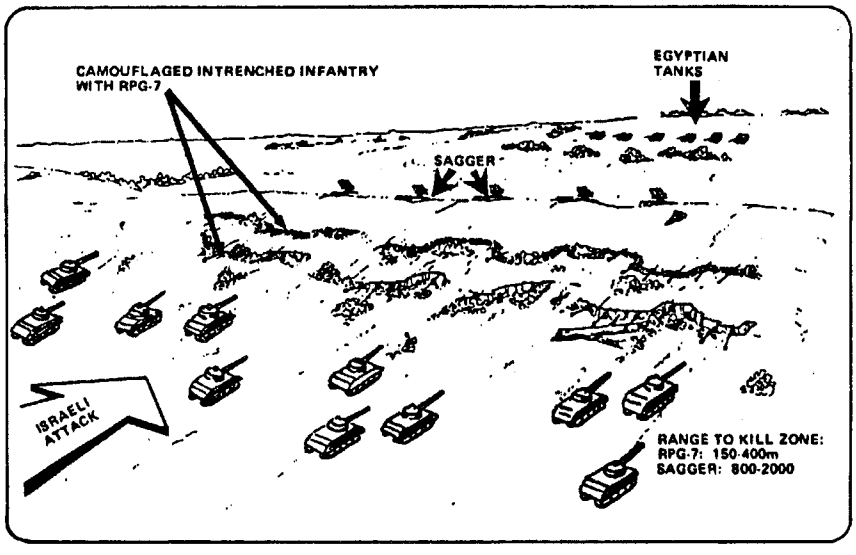


CHART 16

At an early point in the Arab/Israeli War after the Egyptian Army had crossed the Suez, the Israeli Army counterattacked, in the northern sector of the Sinai. They attacked primarily with tanks, not supported with infantry, and lightly supported with artillery. As a matter of fact, the Israelis because of their success in the 1967 six day war, relied almost exclusively on tanks and fighter aircraft.

In this case, they attacked into a defense which included Egyptian infantry. Infantry that was entrenched and armed with RPG7 anti-tank rocket launchers, backed up by literally hundreds, maybe even thousands of SAGGER anti-tank missiles. Behind the SAGGER missile positions were Egyptian tanks, Soviet T55 and T62. What happened was the Israeli force was largely destroyed. The tanks tried to go alone. These tanks could not get through, alone, because the enemy with the RPG7, the SAGGERS, and the T62 destroyed them. We have learned that these anti-tank systems must be suppressed. And so along with the tanks, we must have infantry, and along with the tanks we must have artillery, either to fire on and destroy targets or to fire smoke for obscuration. We need air defense weapons along so that our tank attack will not be destroyed by enemy air.

Now at this point, I'd like to branch off for a moment and talk about the problem of air defense, the problem of fighting against very heavy concentrations of Soviet built air defense weapons. The use of air defense is a major lesson of the war.

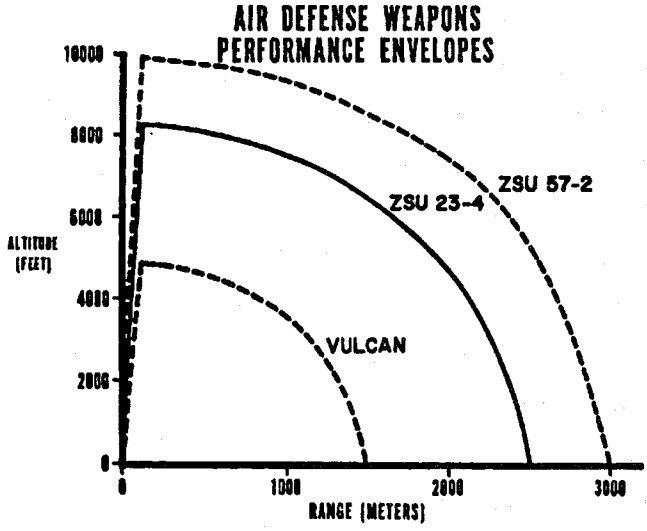
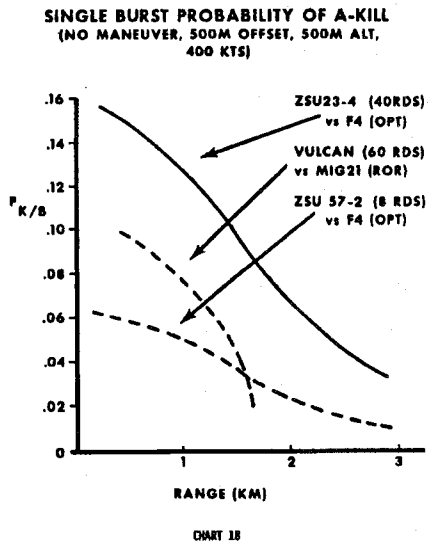


CHART 17

This chart shows the altitude effectiveness and range of our self-propelled automatic gun system, the Vulcan, a 20mm mini-gun system. Also shown is the Soviet Quad-23mm gun system, the ZSU 23-4. The Soviet Twin 57mm gun is shown by a dotted line. We are not satisfied with the Vulcan gun performance and are trying to replace it. The Israelis found the ZSU 23-4 to be a very effective gun system.



This chart depicts the lethality of those same air defense weapons. It shows the probability of an "A-kill" given a burst, meaning the aircraft will be a loss within five minutes. The small caliber weapons obviously have more rounds per burst than the larger caliber weapons. In this chart the aircraft are flying straight and level and do not maneuver. What it shows is that the Quad-23 fires a 40 round burst from its four automatic cannons, and if it fired at an F4 and the gunner is using his optical sights, at a one kilometer range, the ZSU 23-4 has a probability of kill per burst of .12, the Soviet Twin 57 firing an eight round burst has a .05 probability. If the Vulcan is firing at a MIG21, with a 60 round burst and using its range only radar, the probability of kill per burst at one kilometer range is .08. The Egyptian and Syrian forces both deployed the SAM 6, a very effective surface to air missile system, backed up by SAM 2 and SAM 4. On the front line they had a hand-held weapon, the STRELLA, not as good as our RED EYE, but they deployed the weapon in large numbers.

". . . . OUR AIR FORCE WILL BE ABLE TO OPERATE ON A SUSTAINED BASIS OVER THE BATTLE AREA IN OUR SUPPORT ONLY WHEN AIR DEFENSES HAVE BEEN DESTROYED OR SUPPRESSED. CASUAL OR MARGINAL USE OF FIGHTERS WILL NO LONGER BE POSSIBLE. RATHER, WE WILL NEED TO PLAN AND EXECUTE OPERATIONS WITH THE AIR FORCE AS AN INTEGRAL PART OF THE COMBINED ARMS TEAM . . . ."

CHART 19

As a consequence, we concluded that the day of casual air support, where a battalion of American Infantry or tanks can have a long discussion with a fighter pilot to point out targets to be engaged, is a thing of the past. As a matter of fact, the tank and the aircraft have now joined the infantry in their vulnerability, but this does not mean they cannot be used. It just means they must be used judiciously. The infantryman has been vulnerable to the rifle and machine gun for many years. He cannot be employed on the battlefield unless the weapons that could kill him are suppressed. We've learned to live with that. The tank cannot now maneuver on the battlefield unless the enemy weapons that can kill the tank are successfully suppressed. So it is with the fighter, the fighter cannot fly through the air over the battlefield unless the enemy weapons that can destroy him have been suppressed. At the beginning of the Arab/Israeli War that lesson was forcefully brought home to the Israeli Air Force.

It wasn't air-to-air combat that caused the problem with the Israeli Air Force. They ran against a new problem, in which 73% of their air losses were attributable to ground systems. But this is really not the important message to be derived from the chart. The important message is that the Israeli Army didn't get the close air support they wanted, particularly at the beginning of the war. In fact, 90% of the Israeli air sorties were flown more than 5km behind the area of intensive air defense. That means not more than 10% of the air sorties could have been, in what we would term, close air support of ground elements in contact with the enemy.

ISRAELI AIR LOSSES

GROUND SYSTEMS		
SURFACE TO AIR MISSILES	41%	
GROUND GUN SYSTEMS	26%	
UNDETERMINED	6%	
		73%
AIR TO AIR COMBAT		3%
OTHER (TECHNICAL, UNKNOWN)		24%

CHART 20

MAVERICK

- 35 TANKS
- 15 BUNKERS

50

42 DIRECT HITS

CHART 21

There is another side to this point. It's not just that the air defenses are thick and lethal, which they are; it's also the fact that air to ground weapons are getting extremely lethal. If friendly air defense is not available to cover the tank force those tanks can be destroyed by fighters. For example, our Air Force has some magnificent precision munitions. Out of 50 targets attacked by Maverick, in the Israeli War, 42 were direct hits. I don't know what the statistics would have been with unguided weapons, but my guess is that in order to get 42 direct hits, there would have been some thousands of missions flown.

MK 84-2,000lb
"SMART" BOMB

- 16 BUILDINGS

- 16 BUNKERS

32

25 DIRECT HITS

CHART 22

The same is true for the bombs. In North Vietnam the Air Force tried for years to knock out one bridge at Thanh Hoa. As soon as the Air Force developed precision munitions, they hit the Thanh Hoa Bridge on their first time out. The fact is, out of 32 targets struck in the Israeli War with smart bombs, 25 were direct hits. Those same results might well have taken 1,000 or more sorties with conventional bombs. Therefore, we are in a new ball game in the air too. Air weapons are enormously more lethal. We must find ways to keep them off our back. Our adversaries know this and that they must keep our Mavericks and precision munitions off their back. In order to do this, they have simply proliferated a tremendous number of highly lethal air defense systems. The environment of the modern battlefield is becoming more complex, more lethal and more interactive than ever before.

In our analysis of the lessons of the war, the first lesson clearly is the increasing lethality of the battlefield, which I have explained. Lethality is a problem because our concept of operations requires us to move. And you cannot move on the battlefield in the face of that lethality unless you have suppressed the enemy's weapon systems. In order to suppress you must use the elements of the combined arms team. Tanks need infantry. Tanks need artillery. And tanks need air defense.

Now let me go a little further into the concept of operations, and I want to talk first about the defense. Since the anti-tank guided missiles have appeared on the battlefield, there has been a very lively discussion about the proper way to conduct a defense. In addition, there are those who feel that the anti-tank guided missile may have driven the tank from the battlefield. We don't think that's true.

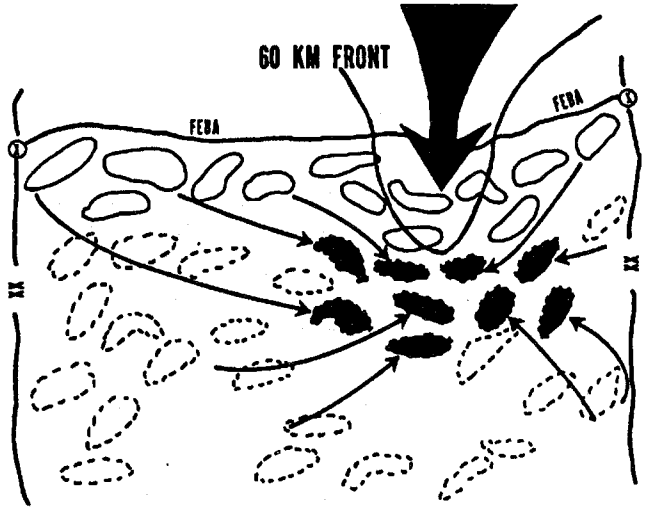


CHART 23

Let me illustrate. In Europe, the 1st Armored Division is deployed on a front which is about 60 kilometers in width, a very wide front for that size force. In that 60 kilometer zone there are several hundred hill tops and other geographic locations on which companies or platoons could be deployed, in hull down attitude; taking full advantage of a defender's ability to diminish his own vulnerability. However, the 1st Armored Division has only some 30 to 40 company size units, which equates to some 100 platoons. There is no possible way 100 platoons can occupy

all positions in sufficient strength to stop an attack. They must know where the attack is coming from and concentrate forces at that point. If the 1st Armored Division commander distributes his force equally, including its anti-tank guided missiles, there is no doubt that it could defeat a small attack. But the enemy will change that equation by concentrating. The enemy will come in great strength and in great depth at one particular point.

The defender who is outnumbered to start with will lose. The position will be penetrated. The enemy will win unless at the critical time and at that critical place, units from the flanks of the 1st Armored Division which are not engaged are moved into the most important blocking position. In other words, the outnumbered force has got to see the battlefield better than the enemy and see it in sufficient time, so that he can move his combat elements to the critical place, at the critical time to insure that a suitable force ratio is achieved. During the battle these positions will be lost, fought over, regained, occupied, abandoned, and re-occupied. What that means is that the defending force must possess the ability to move. It must engage in an active defense of the sector. There is no such thing as digging in and waiting for the enemy to come to you; because it would be a foregone failure.

Now the anti-tank guided missile is a very important addition to the battlefield. In the first place, infantry elements with anti-tank guided missiles can defend themselves against tanks, better than ever before.

Therefore, tanks can be concentrated for the primary and crucial battles, but cannot be squandered in romantic cavalry charges. Furthermore, we are in the process of putting our anti-tank guided missiles on armored vehicles. In the future, we plan to put them under armor, so that the anti-tank guided missiles can also move with the tanks.

On the modern battlefield you need the heavy combat power of the tank. Guided missiles on armored carriers can only be fired when the carrier stops. They are not heavily armed. In addition to the anti-tank guided missile on an armored personnel carrier or dismounted on the ground, we are on the verge of deploying the TOW on the COBRA Attack Helicopter. We are convinced that the high mobility of the attack helicopter equipped with an anti-tank guided missile system may prove to be critical to the execution of that kind of an active and mobile defense I have just described. It may well be that the ability of the TOW COBRA to move across the battlefield at 150 knots, will prove decisive in concentrating heavy combat power at the critical place and at the critical time.

But in any event, the tank is just as important in the defense as it is in the attack, because that defense is active and forces that are outnumbered must move on the battlefield to succeed. You cannot move on the battlefield without tanks.

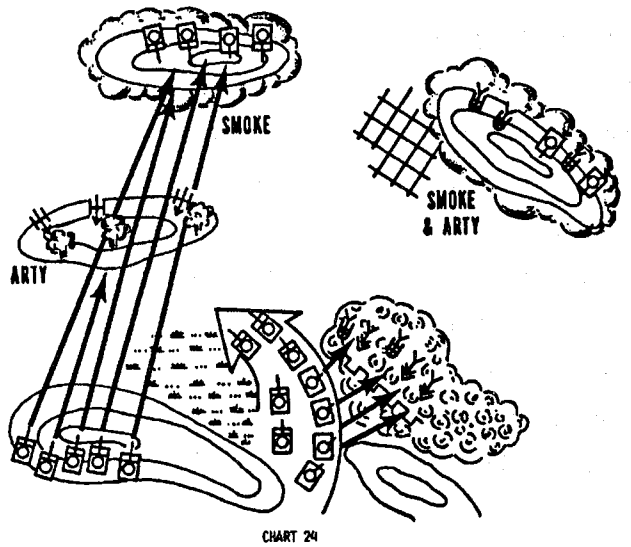


CHART 24

Turning to the offense, let's concentrate on one tiny corner of a big battle. By doing so, we can illustrate completely the interaction of the combined arms team. Let us assume that we are talking about a tank company. Tank companies normally have three tank platoons. We are going to take one of those out and substitute a mechanized rifle platoon, a normal battlefield procedure, because we need infantry. The company commander is given a mission of taking a blocking position, the hill at the left top of the chart. In order to move across the terrain, he decides to put one of his tank platoons in a hull down position on the hill (lower left) to overwatch the terrain and to destroy any enemy tanks that may try to interfere with his attack. Directly in front of him is a hill (left center) with a number of enemy 73mm recoiless rifles, the kind the Soviets build. These weapons are protected by infantry. Farther out is a bigger hill, the objective, which is partly wooded. On top of this hill there are some T62 tanks. On the right of this small battle area is another big hill where the enemy has some SAGGERS. Along the bottom right is a wood line with some RPG7 and perhaps other SAGGERS. Center right is a little town and some roads that go through the area, as indeed the terrain often looks in Europe.

The company commander decides he will take the other tank platoon and move up and occupy a second overwatching position, the hill immediately to his front, by destroying this particular defense. To get there he's got several problems. If he moves his other tank platoon out into the open any of those enemy weapons could destroy his tanks, so he must suppress all of the weapons. The company commander decides to put artillery on the SAGGERS. He also knows that the T62 are hard to suppress. He wants to sprinkle a little high explosive on them, so they button-up and then smoke them so they can't see his maneuver. He will put artillery or mortars on the recoilless rifles to keep the gunners from their weapons.

We have now done what we said was important within our concept of operations. To win you have got to move. We are going to move. But if you move in the face of that lethality you will lose unless you suppress.

If the commander does all of that right and if the air defenses are up close enough, so that his force is not hit by enemy fighters, he has a very good chance of succeeding. This is never a completely successful operation. You can't avoid some casualties on the battlefield. You can't suppress all the weapons.

The wood line in the lower right offers some interesting variations. For example, the commander might want the mechanized infantry to accompany the advancing tank platoon. In which case, they would suppress the enemy in that wood line while moving. If so, he must have a weapons system capable of doing that, such as the Mechanized Infantry Combat Vehicle (MICV) with a stabilized turret. On the other hand, that might not always work and he loses a couple of tanks anyway.

The mechanized combat vehicles dismount their infantry, take up hull down positions, suppress the enemy with a high volume of fire, and the infantry goes in with its M16 rifles and hand grenades. That is the hardest way to do it.

This game of suppression only tilts things your way, you don't win it completely. It is a continous running gun fight and the other fellow plays it too. For example, he knows the chances are that we will smoke his T62 with our artillery. As a countermove, he would like to suppress our artillery by firing at it with his 130mm cannons. It is important to our success that he not suppress our artillery because we must place smoke on the T62, so we in turn suppress his 130s, either with our artillery or our air attacks with fighters. Close air support of the maneuver force is essential. However, in order to launch fighters through a dense air environment, we must

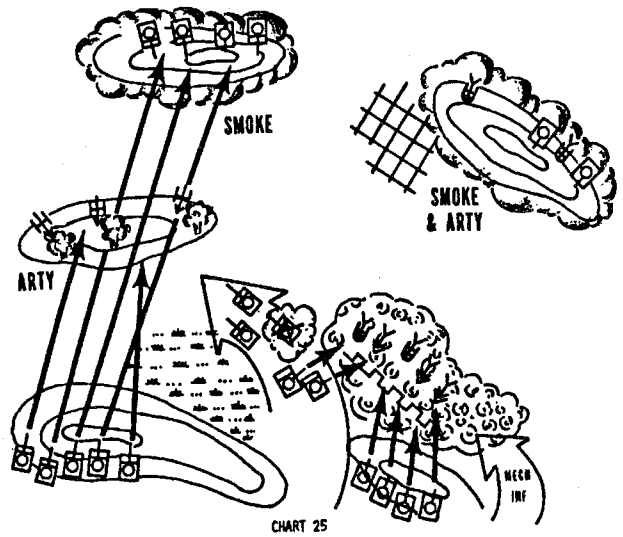


CHART 25

suppress his air defense weapons, either with electronic warfare, electronic countermeasures, or with our artillery, and coupled with many Air Force capabilities to do the same.

This is a portrayal of the heart of the fighting army. Operating in accordance with our concept and our concept is that you have to move. To move against the kind of lethality that we have explained, you need to suppress. The things you move have got to be very strong and powerful combat weapons, because there is no point in breaking through if, when you get there, you can't do anything.

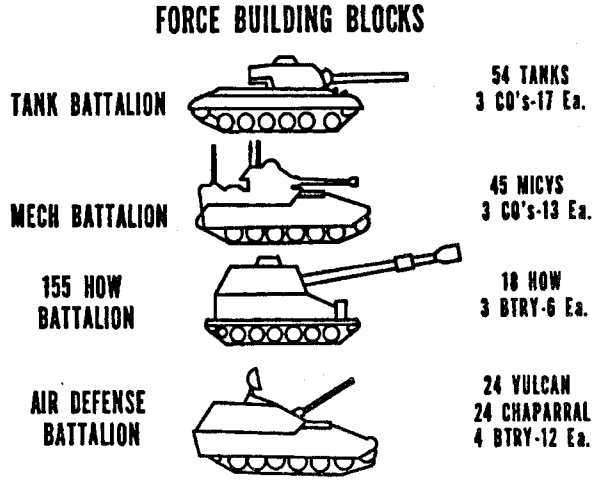


CHART 26

In order to fight while outnumbered you must have your forces at the right place, at the right time, and hope the enemy will have his forces at the wrong place at the right time. Therefore, we need to see the battlefield. We need to see it early and, when we get into a fight, we need to see it in detail. We need total control over our combat forces. And we must continuously maintain them, supply them, transport them, and give them medical support on that battlefield.

When you look at the Army, in the light of that particular picture, you find that there are four combat elements, four basic building blocks in our Army force structure. These four elements deliver ordnance against the enemy. They consist of tank battalions (54 tanks each) of three companies each; mechanized infantry battalions, self-propelled artillery battalions; and air defense battalions.

These types of organizations are analogous to the Navy's destroyers, frigates, and cruisers and the Air Force's fighters and bombers. They carry the battle to the enemy and inflict casualties. Another way to look at these important units is against the background of our deployed forces in Europe.

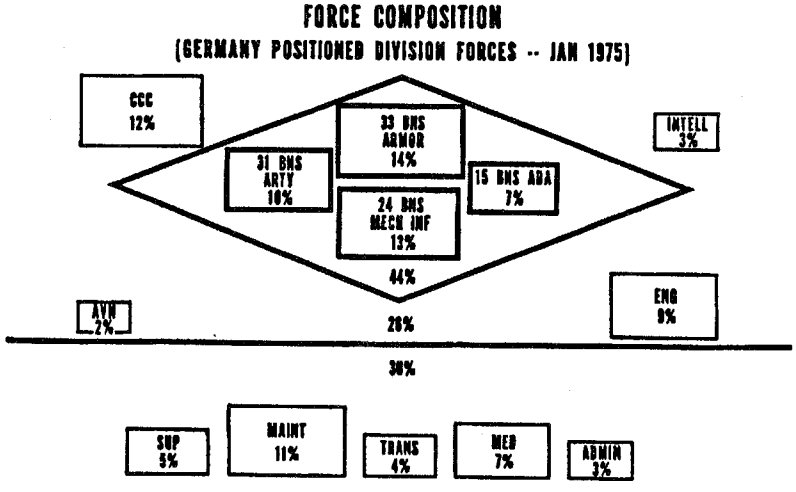


CHART 27

This chart depicts the current organization in Europe. Inside the lazy diamond we have grouped those four ordnance delivering elements of the Army. We have 33 battalions of armor and that includes the cavalry squadrons which are armed with the M551 SHERIDAN. The SHERIDANS are, in fact, mobile anit-tank weapons. To complement the tank battalions, we

have integrated 24 mechanized infantry battalions. That team is supported by 31 battalions of field artillery and 15 battalions of air defense. That is the heart of the combat power of our forces in Europe. However, in order to follow our concept of moving at the critical time to the right place and still be properly supported, there are other units involved. To see the battlefield better than the enemy, and to see it in time, three percent of that force, a very modest number, is involved in intelligence. That percentage may grow in the future. In order to have positive control, so that when we want a battalion to move it can respond immediately, we have 12% of the force involved in command and control, coordination and communication. All of our signal and higher headquarters are included in these totals. In order to support movement on the battlefield nine percent of the force is combat engineer. In the left center of the chart we have two percent aviation. Aviation contributes to intelligence and, increasingly, it will contribute to the delivery of ordnance, particularly as the TOW is put on the COBRA. Below the line, 30% of the force in Europe is classified as combat service support. This category involves supply in general, that is the supply of ammunition, food, clothing, and fuel. It also includes maintenance of vehicles, all combat materiel of the operating units; their transportation and finally medical support and administration. Let me return and go into a little more detail on those battalions inside the lazy diamond, the ordnance delivering part of the Army in Europe.

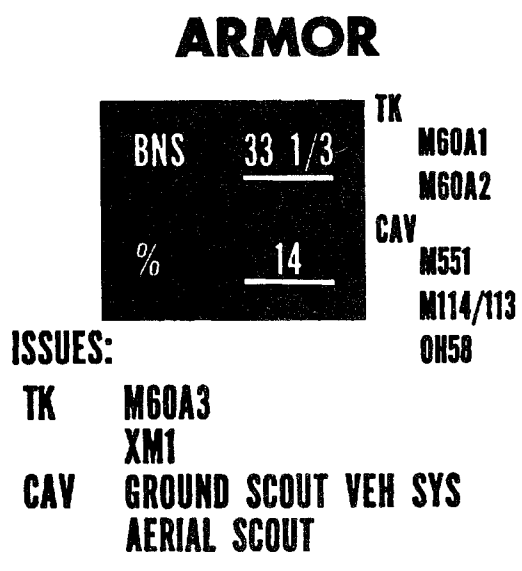
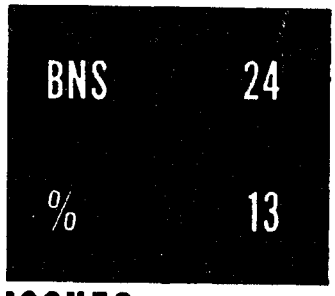


CHART 28

Thirty-three battalions, representing fourteen percent of the force, are armed with the M60A1 and M60A2 tanks and the cavalry with the M551 Sheridans. From a combat developments standpoint we are trying to improve that combat building block. The question as to how many building blocks we place in the force has to do with the strategy, the dollars available to procure equipment and train personnel and the success of recruiting.

At the moment the Army is upgrading the performance of the tank inventory through cost effective improvements. We are considering the M60A3 tank with the laser range finder and full solution computer. We are looking at the XM1 tank with its improved armor as a step toward an effective anti-tank guided missile defense. We are also considering a number of gun candidates. With the cavalry we are looking at ground and air scout vehicles.

MECH INFANTRY



M113A1 W/50 CAL MG

ISSUES:

MICV/BUSHMASTER

CHART 29

Mechanized infantry with 24 battalions comprising 13% of the force is now equipped with the M113A1 and a 50 caliber machine gun. We need a true fighting vehicle, a mechanized infantry fighting vehicle. One that is armed with a much improved automatic cannon for suppression, and capable of outranging the 73mm gun on the Soviet mechanized combat vehicle (BMP) and defeating it with an armor piercing round.

ARTILLERY

155mm SP
8" SP
175mm SP

ISSUES:
- CLGP
- TPQ 36/37 RADAR
- TACFIRE

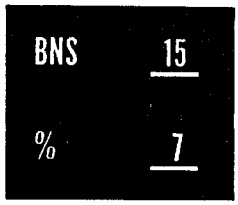
CHART 30

We have 31 battalions of field artillery, mostly 155 self-propelled howitzers, but some 8 inch and 175mm for a total of ten percent of the force. I talked a bit ago about the difference between bombing targets without precise weapons and bombing them with precise weapons. The Cannon Launched Guided Projectile (CLGP) with its laser seeker, is designed to hit the target the first time. The Army would be extremely happy to obtain the Air Force's Maverick effectiveness where out of 50 tries they very nearly achieved 45 hits. In addition to CLGP we will also have, and are now testing for the first time, a radar which can find enemy artillery and mortars. With these radars we will be able to find the enemy's artillery and then suppress it before he can suppress ours. We want our artillery to be able to put smoke on the T62, so our tank attack can succeed. Because we are going to fight outnumbered, we must get more out of the artillery we have now. The Tactical Fire Direction System (TACFIRE) will help by improving the efficiency of our artillery.

In air defense, we are behind, except that the improved HAWK is probably better than any surface to air system on the battlefield.

The CHAPARRAL and VULCAN systems are not satisfactory. We are now considering the facts and analyzing the need for a new division air defense gun system to replace the VULCAN to give our Army a system better than the Soviet ZSU-23-4. We also have under development an improved man-portable air defense missile, the STINGER, and the SAM D for high and

AIR DEFENSE



HAWK
I HAWK
CHAPARRAL
VULCAN

ISSUES:

DIVAD GUN & MSL
STINGER
SAM-D

CHART 31

medium altitude coverage. We have just given a contract for a short range air defense missile system.

I am not going to talk more about this just now except to make a very important point which I have not yet emphasized from chart one. If lethality is the problem and the combined arms team is the solution, training will make the difference. There were times in the Arab/Israeli War when T55 tanks fought T55 tanks and the quality of the crews, the courage, imagination, and training of the commanders made the difference.

PERFORMANCE GAP

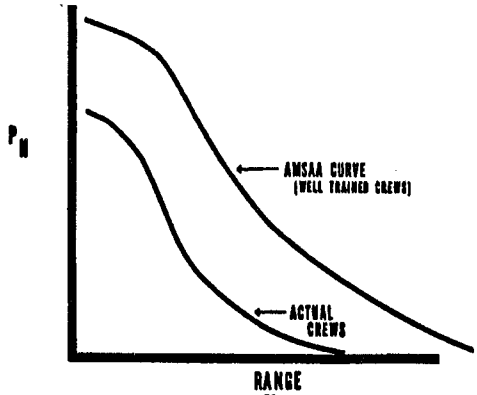
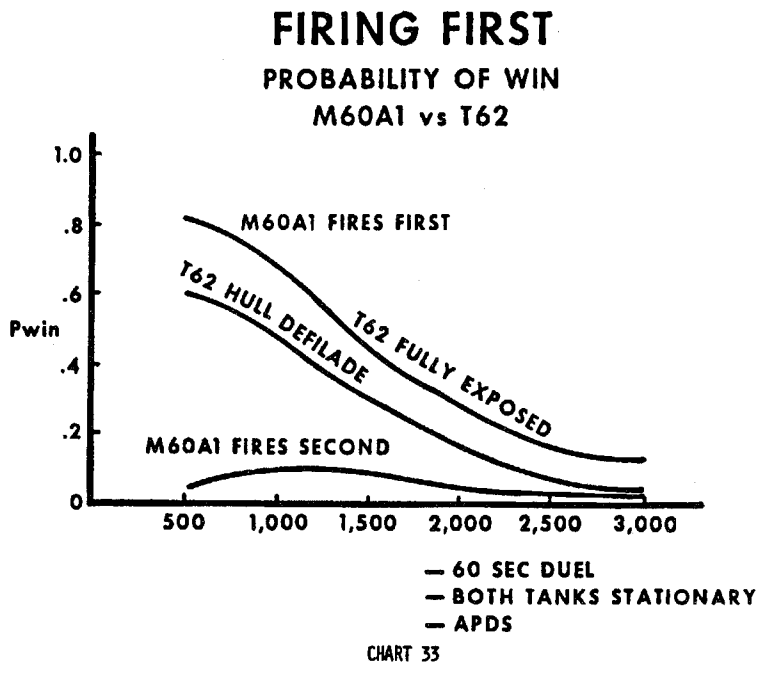


CHART 32

We buy weapons that have a high probability of hit over particular ranges and we have spent millions of dollars in acquiring that capability; but many times when we put those new weapons in the hands of Army crews, they did not achieve the capability we built into the weapon. The difference between actual crew performance and where we ought to be can only be closed through training. I will give you just one example — this is a subject unto itself.



Earlier I indicated that the T62 tank and the M60 tank were essentially equal in combat capability. This chart shows that the tank that fires first, up to about 1,000 meters or maybe even 1,500 meters, has a 50% probability of winning that engagement over the tank that fires second. I think it is even more telling to think about what happens each time to the tank that fires second. In order to close that gap, and in order to exploit our weapons systems potential, we are changing our gunnery procedures in order to fire in five to seven seconds, instead of 13 to 15 seconds. We need to do this in order to achieve a high probability of winning future tank battles. The Israelis proved to be masters at this art. Although I don't intend to talk about the importance of training in any depth, I would conclude that the combined arms team may be the answer to lethality but the combined arms team requires training to be effective.

Lest I give you the impression that we are only dealing with the Arab/Israeli War in terms of generalities, let me say that there are literally dozens of important but detailed lessons learned. These lessons vary all the way from the logistical problems to small technical problems within particular weapons systems and all have been addressed.

1973 MIDEAST WAR ANALYSIS

162 RECOMMENDATIONS

- ACTION UNDERWAY 142
- COMPLETED 20

CHART 34

As I said at the beginning you can sometimes get lost in 162 recommendations and not quite derive from them the real meat. But they are all important in one way or another. We are currently working on 142 and 20 have been completed. I want to give you an example or two of these detailed lessons.

The Israelis pointed out to us that the hydraulic fluid in our tanks was flammable. Army Materiel Command is now contracting for non-flammable hydraulic fluid.

They pointed out that the number of catastrophic losses of tanks, such as the T62, came from the fact that too much ammunition was stored in the turret. The Israelis want to store as much of it below the turret ring as possible, but yet not decrease the number of stored rounds in the tank. Reason — when you are in hull defilade only the turret is exposed. If the ammunition is not up in the turret it won't explode if the turret is hit. You won't then have a catastrophic fire or explosion, which could destroy the whole tank. We are rearranging main gun round storage.

FOR INSTANCE

- FLAMMABLE HYDRAULIC FLUID
- MAIN AMMO BENEATH TURRET RING
- USE SUPPRESSION (HIGH VOLUME FIRE)
- CBR DEFENSE
- BATTLEFIELD CANNIBALIZATION

CHART 35

The use of suppression. The Israelis understand and want an improved suppression capability. They would like to have an automatic cannon. As a matter of fact, they would like to suppress at a distance up to 3,000 meters. We frankly haven't found how to suppress with an automatic cannon at 3,000 meters and still keep it cost effective. We do agree with the desirability of such a weapon system. However, the BUSHMASTER system in development is effective at a mile.

CBR Defense. We now know, and are shocked in fact, by the extent the Soviets have built CBR defense into all of their systems. We have a long way to go and a lot of money may be required to catch up.

Battlefield Cannibalization. The Israelis put hundreds of damaged tanks back into operation, 2,700 in 10 days, or more than they had in their inventory. Many tanks were repaired over and over again. They sent highly skilled teams out on the battlefield to take the turret from this tank, the track from that tank, the engine from that tank, and the fire control equipment from a fourth tank. They then put it all together and obtained one operating tank. We have run an experiment on battlefield cannibalization at Anniston, Alabama and found that our mechanics are well trained, the equipment they have is about right, but we don't have those trained experts who can say that it is better to take that turret, take that track, take that power train and put it all together on this tank. We are addressing that and may have to provide specialized training to achieve a similar capability.

Let me finish with a series of charts which draw this together in terms of our weapons systems acquisition effort. Our purpose is to depict how the lessons learned coupled and interacting with our concept of operation determine the characteristics required in our new systems. These charts are designed to show the impact of these factors on the weapon systems acquisition process, on the determination of the requirements, and on the capabilities and characteristics that we want to build into our weapons systems, provided we can demonstrate they are cost-effective.

SYNOPSIS

TANKS

SINGLE MOST DECISIVE WEAPON ON BATTLEFIELD. 66 BATTALIONS. 12% OF DIVISION FORCES.

CONCEPT	TECHNOLOGY/COST EFFECTIVENESS	LESSON LEARNED
TANK IS BASIC ELEMENT OF COMBINED ARMS TEAM	M60A3 XM1	TANK STILL DECISIVE WPN ON MECH BATTLEFIELD M60A1 - T62 EQUAL
SHOOT FIRST	LASER RANGEFINDER SOLID STATE COMPUTER	FIRST RD HITS WIN BATTLE
SHOOT ON MOVE	M60A1(AOS), M60A3, XM1 STABILIZED	SOVIET TANKS & BMP STOP TO SHOOT EFFECTIVELY > 1000M
INCREASED PROTECTION	IMPROVED ARMOR XM1	SOVIET APDS RD PENETRATES UNIMPROVED ARMOR
ON BOARD SUPPRESSION	REPLACE M219 - PROB WITH M60	COMMONALITY SMALL CALIBER (LARGE NO RDS) M219 UNSAT
SUSTAINED COMBAT	INCREASED AMMO STORAGE M60, XM1 IMPROVE RAM: M60A3, XM1	WANT MAX NUMBER MAIN GUN RDS BELOW TURRET RING. US TANKS EASIER TO MAINTAIN
FIGHT AT NIGHT	TANK THERMAL NIGHT SIGHT	SOVIETS HAVE GOOD NIGHT FIGHTING CAPABILITY
OBSCURATION OF AT WPNS	SELF-GENERATING SMOKE, XM1	OBSCURATION DEFEATS AT MISSILES

CHART 36

Let's start with tanks. Down the left side is our concept of operations: shoot first, shoot on the move, on-board suppression and so on. On the right side are the lessons learned from the Arab/Israeli War which correlate with our concept of operations. Down the middle we have the characteristics which should be incorporated in our new tanks or should be incorporated in the product improvement of the tanks we already have. For example, in the Arab/Israeli War, it was clear that he who fires the first round is likely to win. Our concept now says shoot first. To do that at longer ranges we are evaluating the laser range finder and full resolution computer, we need on-board suppression. The Israelis don't like our co-axial machine gun. It is not reliable. We agree. We are going to replace the M219 machine gun, probably with a M60 machine gun.

SYNOPSIS

MECH INFANTRY COMBAT VEHICLE

COMBAT VEHICLE, TRANSPORTS INFANTRY, SUPPRESSES ENEMY, DEFEAT BMP.
43 BATTALIONS 9% OF DIVISION FORCES

CONCEPT	TECHNOLOGY/COST EFFECTIVENESS	LESSON LEARNED
COMBINED ARMS TEAM REQUIRED FOR MECH BATTLEFIELD	MECHANIZED INFANTRY FIGHTING VEHICLE (MICV)	TANKS CAN'T SURVIVE ALONE.
SUPPRESSION	BUSHMASTER -- HE AMMO	SUPPRESS ATGM AND RPG
FIGHT (AND SUPPRESS) WHILE MOVING	STABILIZED TURRET FIRING PORT WEAPONS	MECH INF SHOULD BE ABLE TO FIGHT FROM CARRIER - COULDN'T FIGHT FROM M113
MOBILITY COMPATIBLE WITH MBT	MICV: IMPROVED SUSPENSION/ CROSS COUNTRY SPEED (25 MPH)	INFANTRY MUST BE ABLE TO ACCOMPANY TANKS
DEFEAT BMP	BUSHMASTER: - RANGE TO DEFEAT 73MM - AP AMMO - DUAL FEED	
FIGHT AT NIGHT	NIGHT SIGHT ON BUSHMASTER W/1000M RN	LARGE BATTLES WERE FOUGHT AT NIGHT

CHART 37

As indicated in the earlier discussion on tactics at the company level, the Army must have the capability to fight while moving. The Israelis agree. They don't like the M113 because you can't fight from that carrier. Therefore, we are pressing for a mechanized infantry combat vehicle that can move with the tank and can fire while on the move. It must have a stabilized turret to do so. Although the Israelis did not address the problem, we are convinced that we must not put our MICV on the battlefield and have it out gunned by the Soviet BMP. Therefore, we are putting a BUSHMASTER automatic cannon capability with armor piercing ammunition on the MICV to defeat the BMP beyond the range of its 73mm gun.

SYNOPSIS

FIELD ARTILLERY

CLOSE, CONTINUOUS, TIMELY FIRE SUPPORT TO MANEUVER UNIT.
INTERDICT, SUPPRESS, OBSCURE, ADD DEPTH TO THE BATTLEFIELD
75 BATTALIONS, 9% OF DIVISION FORCES

CONCEPT	TECHNOLOGY/COST EFFECTIVENESS	LESSONS LEARNED
MAKE UP FOR INFERIOR NUMBERS BY MASSING FIRES - INCREASE EFFECTIVENESS OF FIRES	TACFIRE BETTER METRO VELOCIMETER PADS (SURVEY)	SOVIET TYPE FORCE HEAVY IN ARTILLERY.
IMPROVE RANGE	SOFT RECOIL ROCKET ASSIST PROJECTILE SABOT GENERAL SUPPORT ROCKET SYSTEM	SOVIET 130MM GUN HAS COUNTERBATTERY RANGE ADVANTAGE.
IMPROVE LETHALITY, SUPPRESSION AND OBSCURATION	ICM RANDOM DELAY PROJECTILE IMPROVED SMOKE ROUND FOR 155	ARTY REQUIRED FOR SUPPRESSION OF ATGM/TANKS
ANTI-ARMOR CAPABILITY FOR ARTY	CLGP FASCAM AT ROUND FOR 105MM	CAN EXPECT MASSIVE TANK ATTACKS
ARTY CONTRIBUTES TO AIR DEFENSE SUPPRESSION	NONNUCLEAR LANCE EXTENDED RANGE AMMO	FA MUST ASSIT IN AD SUPPRESSION

CHART 38

With respect to field artillery, we are almost totally dependent on field artillery for the obscuration or suppression of anti-tank weapons that are out beyond the effective range of our tanks. One new innovation to aid us in providing suppression is a random delay projectile, a projectile which goes off over a period of time with small munitions, forcing the enemy to stay covered over a long period. We are urgently pursuing an improved smoke capability for our artillery. The Israelis learned the need for artillery to support their tanks and that those artillery pieces must move with the tanks. We already have that kind of artillery piece but its mobility needs improvement.

SYNOPSIS

AIR DEFENSE

PROTECTIVE UMBRELLA OF MANEUVER FORCE
31 BATTALIONS 5% OF DIVISION FORCES

CONCEPTS	TECHNOLOGY/COST EFFECTIVENESS	LESSON LEARNED
EFFECTIVE BATTLEFIELD AIR DEFENSE REQUIRES MASS & MIX OF COMPLEMENTARY WPNS	STINGER DIVAD GUN SHORAD MISSILE I-HAWK SAM-D	ARABS CREEPING AD ENVELOPE FRUSTRATED IAF CAS UNTIL SUPPRESSED. INTEGRATED FAMILY OF WPNS SYSTEMS REQUIRED.
ALL ARMS SELF DEFENSE AD	STINGER/IMPROVED IR IMPROVE SMALL ARMS AD TRAINING	36% OF ARAB A/C KILLED BY SMALL ARMS
AIR DEFENSE MUST OPERATE EFFECTIVELY IN ECM ENVIRONMENT	DUAL OPTICS/RADAR TRACK ON SHORAD, DIVAD GUN & I-HAWK	ARABS USED INTERMITTENT RADAR (RANGE) OPERATION WITH OPTICAL TRACK
AD MOBILITY AND SURVIVABILITY EQUAL TO SUPPORTED FORCE	DIVAD GUN ON MICV IMPROVE HAWK MOBILITY (REDUCE MARCH ORDER/ EMPLACE TIME)	ARABS' AD MOBILITY PROVIDED HIGH AND FORWARD COVERAGE SYSTEM SURVIVABILITY
RELIABLE, MOBILE, AUTOMATED COMMAND AND CONTROL	AN/TSQ-73 W/IFF	CONTROL OF AD FIRES INADEQUATE-ARABS SHOT DOWN OWN PLANES.

CHART 39

In respect to air defense the Israelis were most impressed with the envelope of Arab air defense that moved with the advancing Syrian and Egyptian forces. Our concept is to provide a complete mix of air defense guns and missiles. This force must be mobile and it must be forward. The Army is buying an improved man-portable air defense missile, the STINGER. Although the issue of a divisional air defense gun is still controversial within our family we are convinced we need it. We have already decided to purchase a new short range air defense missile. The Improved HAWK is probably the best surface to air missile in the world. Efforts are in progress to make it more mobile. The HAWK depends on cables to connect the radars with the command and control and the missile. These are being replaced in the Improved HAWK program with radios to increase its mobility. The SAM D is being developed to provide an essential area defense to the battlefield and rear areas.

SYNOPSIS

ANTI-TANK

OFFSET ENEMY'S NUMERICAL SUPERIORITY IN TANKS.
131 DRAGON TRACKERS 545 TOW LAUNCHERS

CONCEPT	TECHNOLOGY/COST EFFECTIVENESS	LESSON LEARNED
OFFSET SOVIET ARMOR PREPONDERANCE PROVIDE INF CAPABILITY TO DEFEND AGAINST TANK HEAVY FORCES	1-LAW; DRAGON DRAGON MOUNTED ON M113 TOW, XR TOW COBRA/TOW HELLFIRE?	ATGM FORCE TANKS TO OPERATE MORE CAREFULLY AS PART OF COMBINED ARMS TEAM
PROTECT AT WPNS AND CREW	TOW UNDER ARMOR ON M113 AT VERSION OF MICV FIRE TOW/DRAGON FROM BUILDINGS INTEGRATED ARMORED TOW/ BUSHMASTER TURRET ON ARSV.	AT MSLS AND CREWS SUSCEPTIBLE TO SUPPRESSION BY FIRE
SUPPRESS ATGM OBSCURATION	NEW SMOKE ROUNDS FOR ARTY AND MORTARS	EFFECTIVENESS OF ATGM CAN BE DEGRADED SEVERLY BY SMOKE.
MUST BE ABLE TO FIGHT AT NIGHT	THERMAL SIGHT FOR TANKS AN/TAS 5/4 (TOW DRAGON)	EXTENSIVE OPERATIONS OF TANKS AT NIGHT
OPERATE IN ECM ENVIRONMENT	HARDEN TOW ELECTRONICALLY	SOVIET-TYPE FORCE HAS ADVANCED EW CAPABILITY

CHART 40

The anti-tank guided missile has now put the tank in the same position as the infantry and fighter aircraft. That is, in a position in which employment must be thoroughly supported and carefully planned. But the anti-tank guided missile is also vulnerable which leads us to placing them under armor.

First, the TOW has been fitted to the M113. We hope later to integrate the TOW with the BUSHMASTER in a single integrated turret for a ground scout vehicle. We plan to use the MICV for this purpose. We are also looking at a version of the MICV optimized for TOW, under armor. The DRAGON ATGM is also being fitted to the M113 as an interim fix, and later we'll try it on the MICV.

The Arab/Israeli War did not reveal much about Army aviation. Neither side used Army aviation except for logistics and a raid or two. It is safe to say that our concept of operations is far in advance of that of the Israelis. The Army is well aware of the need to provide suppression in emergencies from our own aircraft and we are developing an improved rocket system for the suppression of air defense.

The Syrians and Egyptians on the first day of attack were able to concentrate their armor on the Golan Heights and along the Suez, in vastly superior numbers to the defending Israelis. The Israelis reacted and moved their armor, but they had difficulty; because they could not see the battlefield well enough to determine where the main attacks were concentrated.

Our concept of operations stressed the need to see the battlefield better than the enemy. As a consequence, we are examining a new advanced scout helicopter. One that can see in the daytime and can also see at night.

There is also a demonstrated need for an anti-tank missile that can be carried over the battlefield at high speeds. We have the TOW COBRA and are deploying it to Europe. We will also equip the Air Cavalry Combat Brigade (ACCB) at Fort Hood with it. For the future, we are developing the advanced attack helicopter.

Our interest in the Arab/Israeli War, all the analyses, and all the discussions are not just an intellectual exercise. True, it is fascinating for soldiers, but there is a purpose to this study and the purpose is that we want our schools, our combat developers and those involved in training, to remember these lessons and to relate them to our concepts. All that we do must relate to these very important lessons, crosswalked to our concepts, and result in the best weapons, the best tactics and the best techniques for the US Army to enable it to win the first battle of the next war while fighting outnumbered.

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TRADOC LEADERSHIP CONFERENCE
22 May 1974
[At Fort Benning, Georgia]

KEYNOTE ADDRESS
By
General William DePuy

I very nearly refused to accept this invitation, not because I am particularly afraid to get up and talk to you, but because I thought I might do more damage than good. I say that quite sincerely. I explained that to General Tarpley and I suspect that some of my older friends here are worried that I might do just that. The reason is, that if I had attended one or two leadership seminars, I probably would be able to talk to you about the kinds of things that you are mostly talking about here. But I have not, I have been preoccupied with other things. I still am and I am going to talk about those things instead, but I think they have something to do with leadership.

I am starting out this way to tell you that I am going to give you one man's narrow view of the problem, from one aspect. I am not suggesting to you that there are not a lot of other angles to leadership other than the one I am going to talk about—there are. The proposition to you is that you have to start with my angle on leadership, and then you can work your way on through the rest of them afterwards. In other words, I am going to talk about the cake and not the frosting on the cake. I am not going to talk about the fine tuning. I am going to talk about the gross adjustment of the leadership problem. I am going to get at it by talking about the thing that is worrying me the most about the US Army when I think about the next war. All of those fellows in the first row, Generals Starry, Cushman, Tarpley, Forrester, McAllister, also Richardson and Long over there, have heard this speech about a hundred times. So fellows, it is going to happen again.

The Arab-Israeli war is kind of a sobering thing. There are a lot of aspects of it which ought to worry a lot of Americans, including soldiers. The obvious and apparent thing about it is the

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Manuscript provided by Major General William ("Bill") Carter, formerly General DePuy's executive officer.

amount of equipment that the Russians have given to the Syrians and Egyptians. For example, the Syrians and Egyptians lost (destroyed) as many tanks as we have in Europe in Seventh Army plus all the prepositioned equipment there. Seventeen hundred tanks were lost or destroyed. They had more air defense batteries in the Egyptian and Syrian Army than we have in the active and reserve forces of the United States. On one very narrow little part of the front, where the Israelis broke through to the Suez Canal between two armies, the Israelis captured 300 Egyptian artillery pieces. We only have 437 artillery pieces in Seventh Army in Europe.

The first thing that gets to you about this, is that you are going to be fighting a lot of equipment. In the old days of WWI and WWII, the American way was to just provide more of everything than the other guy had. If one Division was not enough we would use two, if two was not enough we would use four. Our tanks were not as good as the German tanks but we had three times as many. Now it is kind of un-American, is it not, to find out that the other guys have more equipment than we have? Then my next point is that their equipment is just as good. For example, their tanks—there are certain aspects of their tanks which are better than ours and certain aspects of our tanks that are better than theirs, but it is sort of a general opinion that they come out about even. They have a mechanized combat vehicle which is highly sophisticated. It is better than the M113. It has weapons which can kill tanks, and it is in all respects, an admirable vehicle. Actually, they are optimizing theirs as a tank killer and we want ours to be optimized for suppressive fire. We have a different concept of MICV on the battlefield. The quality of their MICV is better than the one we have now and about as good as the one we are going to have.

We are now faced with a situation like that which faced the Israelis when they fought the Egyptian tank brigade that tried to break out from the Sinai. The Israelis who fought that brigade were equipped with T55 Russian tanks which the Israelis had captured earlier, in the 1967 six-day war. The Israelis were equipped with T55 and the Egyptians with T55, so the real battle was a battle between the people who manned the tanks. The Israelis, for a variety of reasons, came out way ahead, 150 to 1. The fact of the matter is, the equipment was the same. The difference was in the training, the leadership, the motivation, the courage, and the flexibility—the skill, tactical and technical skill on the battlefield.

In addition to Americans being used to having more of everything than the other guy, and until recently even having better, there are a lot of associated problems. One is that we now have a volunteer Army. You fellows in the units know that we are not getting the college graduates

in the Volunteer Army. That does not mean we are not getting good men; we are getting some good men and we are getting some marginal men. From that raw material we are trying to make fighting units with a qualitative difference in performance, but using equal equipment. That is a sobering thing to think about. When you take the average of the Israeli Army—that is sort of a mobilization Army, and they take everybody they can get their hands on, the higher the quality the better, and throw them into combat—it is different quality of person than on the average we are recruiting in the United States Army.

Another aspect of that Arab-Israeli war that we do not think about enough, is why they lost all those tanks. The losses for twenty days were phenomenal on both sides. If we lost tanks at that rate in a war we might fight in Europe with Seventh Army, we would run out of tanks almost immediately. We do not have the kind of war reserves which would support a war with losses that high. You have to ask yourself, "Why are the losses so high?" The losses are high because the modern day tank cannon—theirs and ours—is the most vicious weapon on the battlefield. With reference to the other wars we have fought, there is no comparison. The modern tank of today with its very high velocity gun, with its very effective ammunition and its very sophisticated and accurate fire control equipment has made it almost certain that anything which is seen on the battlefield will be hit, unless the tank doing the shooting is under fire or moving, or is driven back. Almost anything on the battlefield that is seen will be hit. The single shot hit probability of a Soviet 115MM smooth bore cannon, up to about 2000 meters when it is standing still, is about .6 or .7. About 70% of the time it will hit the target with the first round. Muzzle velocity is 5000 ft per second or more. Back in WWII, I can remember when 2800 ft per second was regarded as good, and that was an 88MM gun. They finally got it to 3200 ft per second and we called them a whiz-bang, because by the time you heard the whiz, the bang was already there. Now it is twice that fast. They do not even have to use complicated computers and whatnot for targets out to 1500 to 2000 meters. The trajectory is flat.

In TRADOC, those of us who think a lot about that are worried, and I am sure the FORSCOM commanders are equally worried about it. This tells us that we have got to use the terrain to protect ourselves. We know that the American Army is lousy at that. Yes, the unit you are in is good, but the rest of them are no good. The reason is that in Vietnam we did not get much practice. You could not see very far for the leaves were two or three feet in front of your face. If you were a commander, you flew in a helicopter and everything looked like a shag rug. There was not any

terrain from a helicopter, it all just seemed sort of flat. So we have a whole generation of our people who have not fought on terrain. We did not use terrain, we used fire power. We had defensive positions that were conspicuous by their visibility because they were manufactured to be that way. None of those would survive for two seconds on the modern battlefield. A tank could sit off there at 2000 to 2500 meters and knock every bunker off at one round per bunker. We have got to use the terrain and we are not very good at it.

The Israelis understand terrain, and they are building a new tank so big that you can walk in it through a rear door. The engine is in front and it is high. The gun is almost the highest thing on the tank. They say that their tank has the lowest silhouette of any tank in the world, above the gun tube. What they plan to do is have nothing stick over the hill but that gun. The Germans have a big mechanized combat vehicle, but they put the gun on top of a funny looking thing that looks like a stalk, and on top of the stalk is a pod and out of the pod comes the gun. What the Germans have in mind is that there will be nothing but the pod visible to the enemy.

We have to recognize that it is a new ball game, and I do not know whether we recognize this or not. This tells you a lot of things which you ought to do in training combat units. We are trying to develop and teach tactics and techniques in the TRADOC Schools, which optimize the use of terrain to minimize the vulnerability of our forces to the Soviet tank cannons and artillery and to direct line of sight weapons.

What we are trying to do is change a preoccupation with formations; geometric formations, the Y formation, the V formation, the echelon right, the echelon left, and the alternate and successive bounds, which on the battlefield sort of plow across the terrain as some of us say, irregardless, and exposes the force half the time on forward slopes. You can not do that. Once you get one of those outfits out on a forward slope by mistake because you were in a Y formation, and there happens to be a T62 tank over there in the woods, and you cannot see it but he can see you, then that is all she wrote. That is the end.

Monday and Tuesday up at Fort Monroe, we hosted a meeting of the Army Scientific Advisory Panel, a lot of smart chaps who advise us on one thing or another. They are smart, interested and high priced. They argue a lot about whether we are developing just the right weapons systems. For example, do we want a Bushmaster or do we want a 20MM on the MICV? What is the relationship between the silhouette of our tank, how much of it is above the gun trunnion, to its vulnerability to a Soviet tank? You can figure that out mathematically, assuming that one tank

is sitting at one end of the football field and the other tank is at the other end. What I am saying to you is that I can take two tank companies or platoons, sit out here and pretend that I am a T62 tank, and take pictures of your tank company approaching me over a mile of broken ground. If you are a poorly trained tank company, the number of square meters of target per minute presented to me will be high. If you are a well trained tank company, trained in the techniques that permit you to use the terrain, both for your overwatching position and your routes of advance, then the number of square meters of target per minute presented to me will be 1/100th of that. That is training, technique, and skill on the battlefield, and it overwhelms the difference in the design of the tank. The fact that there are two or three inches more or less above the gun trunnion is insignificant, compared to the quality of your training, how you move that tank company forward and how much of it you expose to the enemy.

What does this have to do with leadership? My first impression of leadership is that it is only important in terms of the job performed. Leadership is not exempt from all other kinds of training, it has to be performance oriented. The end results of the training is whether we are going to put a tank company on the battlefield that moves that mile or so toward the enemy, exposing itself only 1/100th as much as that untrained tank company, and that the tanks run, and the guy who is running the tank, and the tank company commander know what they are doing and they have enough courage to fight. That is leadership.

I can tell you by looking at a tank company whether the leader of the tank company is any good or not. I do not even have to see the men in there, they can all be funny looking little guys like I am or they can be handsome like Major General Tarpley. You do not even have to see them. You do not even have to know if they have their hands in their pockets, or wear glasses, or have one short leg. You just have to see the tank company moving around out there on the terrain in training or combat, and you will know whether or not the company commander, the platoon leaders and the tank commanders are good leaders. That is the ultimate test of leadership.

All the rest of it is sort of small potatoes compared to moving a little better across the terrain. You are not going to be moving across the terrain pretty well if the tank commanders are not motivated to care, or if you have race relations problems in the company, and everybody is on drugs, you can tell that too. They are not going to work very well out there. They will look pretty lousy and everybody will know it. On the other hand, if that company commander is burning with desire to train his tank company and he can hardly wait to get his hands on it; if he resents

anything that interferes with his training or prevents him from being on the gunnery range or out there on the tactical fields, then he is not going to have as many of those other problems. In fact, the people are going to be embarrassed to talk to him about other problems because they know he is preoccupied with mission readiness—that is leadership.

We have a lot of sergeants, platoon sergeants, infantry squad leaders, tank commanders, rifle platoon leaders, company commanders and battalion commanders who will be assigned to a command position, and who will sit back and wait for the training schedule to arrive and who will wait to be told what to do. That even affects lieutenant colonels. That kind of guy is no leader, because leadership is job oriented, performance oriented, and it can all be summed up that way.

All of us in this room have worked for leaders who were really obnoxious. We did not like them at all, because they did not have the first drop of the milk of human kindness in them, they did not look good and they did not act right as far as externals were concerned. Some of those fellows were dedicated, humorless professionals, as far as their job was concerned. I would rather have a guy like that, than someone who is a smoothie, who does not care or know much about his job. I have often used the example, "You cannot be a leader in a chemical laboratory unless first you are a chemist." It is perfectly possible to be a chemist and be a bad leader of a chemical laboratory, but you have to be a chemist first and then you have to learn to handle other chemists.

The best leaders in the Army have always been those individuals, all the way from a buck sergeant to a general, who were really sort of obsessed with accomplishing what they regarded was an important objective which was directly related to the Army's mission—meaning how to fight better. All of our best leaders have always been those kinds of people, impatient with anything that interfered with that. General Ham Howze—some of you young people do not know him—but he was a man obsessed with training. He knew more about all the details than anyone else. Single minded and humorless, but by God, he was devoted and focused. You have seen it, some sergeant out there in the rifle squad, tank company, or maintenance section, who is so sincere, who knows his job so well that sometimes he is even oblivious to the human conditions around him. Now you are all going to learn here that such behavior is bad. I am going to tell you that kind of a guy, once in a while, turns out to be just a great commander. People are afraid to bother him with personal problems, because he is so anxious to get the job done. He does not

have time for it and they go out and talk to someone else about it. I am not saying that is best, but I am saying that it is the cake, and that the frosting on the cake is to be civilized and perceptive.

I suspect that if you agree with me, you have to start with what I am talking about, which is the sense of urgency for mission readiness. I am going to agree with you, that you can add another 10 or 20 percent on top of that, if you think hard about how to deal with your people, the people who have to deal with mission readiness. I will not reverse it however, and say that dealing well with people will take care of the first 80 percent. You have to have both, but job knowledge, self-confidence, determination, faith and an inner burning desire to take that small unit or battalion, and mould it the way you want it moulded must come first. The unit's troop leading procedures are the way you want them, its techniques are your techniques. Take the Infantry School techniques, they have to be yours, they cannot be somebody else's.

Try to get a starting line-up and get just the right squad leaders, just the right tank commanders, just the right company commanders, and you will evaluate them against just one standard, and that is performance. With an Army filled with people like that who can hardly wait to get their hands on the next unit, to make it the way they want to make it—they resent being interfered with, even visited by brigade commanders and battalion commanders—they just want to get out and get this job done. That is leadership.

I do not propose to talk about that other important 20 percent. I am not inferring that I am the only person here smart enough to see all this. You all know this better than I do. I am just not going to talk about that other 20 percent, or about the techniques involved in it, and the perceptions required, the great body of knowledge being collected on how to do it better, the lessons learned, and the importance of it when we are dealing, on the average, with the lower mental qualifications. The importance of the other 20 percent is clear at a time when the social standards in the United States have changed, the physical appearance has changed, the black members of the United States Army are more conscious of themselves and all blacks in relation to the Army than ever before. I am not going to talk about it in detail because I know all those things, and I know you are faced with them from day to day, and I know you cannot be out there obsessed with training every minute. We do not have enough money, not enough time, not enough troops, and we have to do a lot of other things. You have to spend a lot of time keeping troops happy, and you are not able to train as much as you want to.

There is no way to be a leader of a rifle platoon unless you understand how to train the squads within it, and run them yourself while showing the squad leaders how to train those squads. There is no way that you can be a platoon leader of infantry unless you know exactly how to site that platoon on the terrain. It is a work of art to do that, and it is a joy to professionals to do it. You have to be that way and get that kind of satisfaction. If you do not have the 80 percent, then that other 20 percent is like frosting without the cake, sort of gooey in the bottom of the pan. It is pretty good when on a nice piece of cake, but unless you have that, then the other 20 percent has no place to go, it has no basis for operating.

You can have all sorts of marvelous human communications and relations with privates in your platoon or your company or battalion, but unless it all takes place within the framework of trying to get the job done, it is irrelevant, a waste of time, and you can fold up and go home. The only way you can judge what is good and what is bad, what works and what does not work, is to judge it in the light of whether it advances you toward your objective or not. If it does not, it is a waste of time. We are not in this business to be good guys.

Nice warm human relationships are satisfying and fun, but they are not the purpose of an Army. Establishing the most marvelous, friendly, warm, sympathetic, and informed relationships is unimportant, except in the context of making the team work better. In that context it is all important. In any other context it does not have anything to do with the Army. All of this is only important to you as you select those techniques which improve your team training, the team training that you the team leader, the commander, have devised, and in which you have confidence. You have practiced that training and you know that it is relevant, that it is essential to fighting on the battlefield against all that equipment that I have mentioned. And if those techniques do not have anything to do with improving mission readiness—they may make you more friendly with your wife, your children, or your neighbors—they do not have anything to do with the Army. I hope I have made a simple, direct point. Thank you.

4

23 July 1974

Dear Dave, Tom [Tarpley], Don [Starry], CJ [LeVan], Bill [Maddox], Jack [Cushman] and Hal [Parfitt],

In France in the house of a peasant there is always a pot of soup boiling in the fireplace. From time to time someone throws in a potato, leek, some chicken stock or beef gravy, an occasional carrot or whatever. Over time the soup gets better and better. Everyone can add to it and anyone may partake. I view the attached paper somewhat the same way.

I do not intend to publish this paper as a TRADOC Headquarters publication. I would like to have you discuss it with me or send comments, recommendations or amendments and particularly additions to it. From time to time we will gather to discuss it or aspects of it.

Those parts of it which seem relevant and useful to your business should find their way into your doctrinal manuals and your instruction in both officer and NCO schools and should provide a conceptual basis for the determination of weapons systems requirements. Operational tests, force development tests evaluations and experiments should be conducted in a manner consistent with the tactical concepts on which I hope we can agree through the medium of this paper.

I do not expect or wish to whip up a lot of additional paperwork. I do want the Air Defense School to contribute some obviously missing parts. Treatment of the Engineer aspects are much too thin and I expect some input from that quarter. In short, I want this paper to stay alive and improve, but I want to keep it as an informal TRADOC document which will not see the light of day as a separate official publication. I don't care who sees it or how many copies are made. I just want to keep it like that pot of French soup.

Sincerely,

Incl
As stated

W. E. DePUY
General, United States Army
Commanding

Major General David E. Ott
Commander, US Army Field Artillery Center &
Commandant, US Army Field Artillery School
Fort Sill, OK 73503

The William E. DePuy Papers. Box: Personal Files 1974–1975. Folder: O. U.S. Army Military History Institute, Carlisle Barracks, PA.

TRADOC
DRAFT CONCEPT PAPER
COMBAT OPERATIONS

(For coordination and comment
with School Commandants.)

I. GENERAL BACKGROUND

1. It is in the nature of our democracy and its geographic location that Army Forces sent overseas at the beginning of any war will almost certainly be outnumbered in men and outweighed in materiel and weapons. Furthermore, the quality of the weapons we can expect to face will be roughly equal to the quality of our own. This means that success in those early critical engagements will depend mostly upon the courage of our soldiers, the quality of our leaders and the excellence of our techniques and tactics. It will depend also on whether or not we are convinced - utterly convinced - that we will win. This confidence can only come from training - training supported by a full understanding of the dynamics of the battlefield. Our soldiers must not only understand what to do - they must also understand why it must be done. With this understanding imbedded in the officer and noncommissioned officer corps, the application of the proper techniques and tactics to each unique situation on the battlefield can draw upon the marvelous ingenuity and endless imagination of the American soldier.

2. Warfare has changed - not abruptly but steadily and rapidly. The range, accuracy and lethality of the modern tank cannon makes it at least 5 times as effective as the tank gun of World War II. The antitank guided missile has just appeared on the battlefield and is a deadly weapon out to 3000 meters. Even against rapidly moving crossing targets it can achieve 90% first round hits. The Air Force has introduced smart bombs and the Army will soon have smart artillery shells and helicopter launched precision missiles. But even now the attack helicopter is being armed with the TOW missile and the lethality of artillery ammunition is 4 to 10 times that of World War II. Weapons are equipped with increasingly effective night sights and a variety of sensor

The William E. DePuy Papers. Box: Transcripts and Diplomas. Folder: Field Manuals 100-5, 1974–1977. U.S. Army Military History Institute, Carlisle Barracks, PA.

devices are employed to detect forces and equipment on the battlefield. All this means that individuals and weapons systems which are not employed properly will surely be destroyed. In any event losses are apt to be high. The loss of tanks and other combat vehicles in the 1973 Arab-Israeli war is conclusive evidence of the mutual destructive power of modern Army forces when locked in violent combat and fighting for high stakes.

II. BATTLEFIELD DYNAMICS

3. Modern weaponry has already reached a point where any element which exposes itself on the battlefield can be destroyed unless one of three conditions has been met.

a. Enemy weapons which could engage the exposed element have been destroyed

b. Or effectively suppressed

c. Or the view of the enemy gunners has been obscured by smoke, night, fog or bad weather.

Correspondingly, enemy weaponeers cannot destroy Army combat elements which move or station themselves on the battlefield under the protection of terrain cover or natural concealment.

4. Inherent in this capsulized description of the dynamics of the modern battlefield is the basis for all combat operations. The commander who minimizes his own vulnerability by covering and concealing his own forces while at the same time suppressing or destroying the weapons of the enemy can dominate any battlefield even against much larger forces. This dynamic applies with equal force and logic to units as small as a rifle squad or a tank platoon and to forces as large as divisions and corps. If the rifle squad advances against the enemy with one team delivering suppressive fire from concealed positions while the other team advances by a covered or concealed route, the squad leader has demonstrated his understanding of the basic dynamic of combat operations. If the battalion commander fires artillery on a distant woodline from which enemy antitank guided missiles could destroy his advancing tanks, he too has demonstrated an understanding of combat operations.

If the brigade commander fires his artillery to suppress enemy air defense weapons so the US Air Force can deliver precision munitions on enemy tanks which are holding up his attack, he shows an appreciation of the measures and countermeasures which can tilt the battle his way.

When the division commander directs the division artillery to suppress that enemy artillery which has been firing at our TOW antitank missile teams in order to minimize losses among attacking enemy tanks, we have followed the action/counteraction as far as words can convey the principles involved.

In short we seek to preserve our combat power by reducing its vulnerability by both active and passive measures —

- active measures involving the suppression or destruction of enemy weapons.

- passive measures involving the use of cover and concealment during all phases of combat operations.

III. OFFENSIVE OPERATIONS

5. Although defensive operations are both required and preferred under certain circumstances, the general outcome of battle derives from the success or failure of offensive operations by one side or the other. Thus we discuss the attack first.

6. Attacking against forces equipped with modern weapons is a difficult and expensive operation. The defender has many advantages and one serious disadvantage. His chief advantages stem from the fact that he can, and usually does, organize the ground to his own advantage by maximizing the use of cover and concealment by his forces and by choosing ground which requires the attacker to expose himself in areas where the defenders' weapons can be brought to bear most effectively. For example, the defenders' tanks will be in hull defilade and also concealed or camouflaged while the attacker's tanks will be required to cross at least some terrain fully exposed. The defender can mine or create obstacles on the approaches which are most dangerous to him and which the attacker is most likely to use. He can preplan and register his defensive fires. He can know the terrain completely and select weapons positions which are mutually supporting with interlocking fields of fire while still utilizing cover from frontal fire. Lastly he can position each weapon so that its engagement ranges are optimized and its vulnerability minimized. For example, he can open fire with his missiles against enemy tanks before the tank guns have closed to their most effective ranges. But he has one great disadvantage; he does not have the initiative. The attacker can concentrate his combat power at one or two selected points while the defenders' forces are spread more thinly. Thus by surprise, concentration of force and concentration of suppressive fires, a bold and aggressive attack can succeed.

7. Although some attacks are deliberate from the outset, most involve a movement to contact by most of the combat elements of battalion size or lower. The division may consider the operation to be an attack but to the company it starts with a meeting engagement. The meeting can take place soon or only after prolonged movement. The chief characteristic of the movement to

contact is that the advancing small unit does not know exactly where the enemy is located. If he does he is ready for a deliberate attack. If he doesn't he must find the enemy with the minimum losses in the initial collision. The defender has most of the advantages in a meeting engagement at the time of initial contact. He has chosen the ground where the attacker is at maximum disadvantage. Normally the latter is exposed in an area from which withdrawal or maneuver are difficult. At this time the defender has surprise and tactical superiority. Thus the cardinal rule for the meeting engagement is to find the enemy with the smallest possible force. This rule tells us that as we approach the suspected enemy positions or defended areas, we should select covered and concealed routes whenever possible and we should always have a substantial part of our force in selected and successive positions from which suppressive fire can be delivered against the most likely enemy positions when the battle starts. In Infantry platoons one squad and one or more heavy weapons would normally be overwatching the forward movement of the remainder of the platoon. Only one squad would be expected to come under direct enemy fire at the outset and hopefully only one team of that leading squad would be caught out in the area selected by the enemy for his opening fire.

In tank platoons one section would habitually overwatch the forward movement of the other section or in a tank company or mixed company task force, one platoon of tanks would overwatch the movement of the forward advancing element. In the case of companies and larger units suppressive artillery fire would be planned or even registered on the most likely positions from which tank or antitank missile fire could originate.

In any event the movement of the attacking force to initial contact should be controlled and directed so that the most favorable overwatch positions are selected personally by the combat unit leader and routes forward are selected for cover and concealment. Only on terrain as flat as a table is it permissible to plow forward in geometric formations. Even then trailing elements must be ready to open fire in support of forward elements and must be far enough back so as not to be in the beaten zone of fire directed at the forward elements.

If the terrain has the slightest roll or pitch the movement forward must be under positive control of the unit commander as he tailors his movement and selection of overwatch positions strictly to the terrain. A good commander at any echelon will find the enemy with a small part of his force—be able to deliver suppressive fire instantly—and have a maneuver element on hand covered and concealed from the enemy.

8. If the meeting engagement is with light or covering forces, they must be driven back by leading elements of the attacker. If the attacker has come up hard against a deliberate defense he will need more combat power and more time to apply it correctly. Only well trained or seasoned commanders can determine quickly which of these two situations exists.

It is important to find out quickly but in a manner which will not lead to unnecessary losses. There is a proper technique to do this. There is no way, of course, to do so without some losses and no way to do it with super caution. If the defender is thin on the ground or is merely an outpost or covering force he can be maneuvered out of position and forced back or destroyed with minimum friendly losses.

The fundamental technique of offensive combat against light forces is a continuation of the technique used in the final stages of the meeting engagement with one important exception. That exception is that the elements which have been placed in the overwatch positions actually deliver their supporting suppressive fire and additional fire support is brought to bear. Artillery is fired on all known and suspected enemy positions which could directly affect the battle and air strikes or attack helicopters are employed if appropriate targets are presented. Small combat units aggressively more forward under the 1/3 rule - 1/3 overwatch and suppressing - 1/3 moving forward by covered and concealed routes to the next overwatch position and 1/3 recovering from the overwatch and preparing for the next move forward. If a company cannot move forward in this manner and each of its forward moving elements is stopped, the commander is faced with the probability of a deliberate defense by significant forces. He may be able to arrive at the same conclusion because of the volume of defensive artillery fire used by the enemy or the general nature of the terrain. But if a battalion cannot outflank or punch through quickly, the brigade or division commander may legitimately assume that a deliberate attack will be required. This will be discussed later.

Nevertheless combat between light forces—that is a light defending force and the advance elements of an attacking force—is not unusual and calls for the highest quality of training and leadership.

9. During mobile offensive operations against enemy covering forces or during meeting engagements, the team work between the tanks/mechanized infantry/artillery and other fire support is critical. In mobile warfare the tank is the decisive weapon. The infantry and the artillery are used to assist the movement of the tanks. If friendly tanks can be moved successfully

to properly selected objectives in the enemy rear or onto critical terrain features, the enemy's system of defense can be defeated. In this kind of warfare, the infantry and artillery are used to suppress or destroy those enemy weapons which are a threat to our tanks. Because the enemy antitank guided missiles can outrange our tank cannon and our suppressive automatic weapons, it will be necessary and normal to employ artillery high explosive and smoke against known and suspected enemy ATGM positions beyond 1500 meters and sometimes closer. On the other hand, the enemy's shorter range antitank weapons—the RPG series and the recoilless weapons will ordinarily be suppressed by automatic weapons. The 50 caliber machine guns or the 20mm cannons on our armored personnel carriers are designed for this purpose as are the machine guns of the infantry platoons. In particularly stubborn cases where suppressive fire does not eliminate the active threat to our tanks, the infantry must dismount and under the overwatching suppressive fire of the armored vehicles assault the enemy positions on foot with grenades and small arms.

10. The deliberate attack against an organized defense is the most costly and difficult offensive operation. Nonetheless, by minimizing one's own vulnerability while maximizing the effective employment of one's own weapons at the decisive point a position of relative superiority can be achieved. It is easier to do this on the defense because vulnerability usually increases and weapons effectiveness usually decreases while moving. Nonetheless it is necessary to move to win—to move without losing superiority. There are also psychological aspects to offensive operations which sometimes equal or even exceed the effects of the actual combat power developed by the attacker. The side which thinks it will win usually does. The opposite is also true. But at the point of decision the side usually wins which is able to bring to bear overwhelming - terrifying - force and violence. When, in addition, the violence is applied in such a manner that the "system" of defense is broken, then victory is assured. All defensive deployments depend on a mixture of weapons selected and sited to provide mutual support and to exploit their primary capabilities. All weapons also have vulnerabilities. For example, most defensive positions rely upon mortars and artillery to cover terrain which is unsuitable for direct fire flat trajectory weapons—like dense woods or thickets, ravines or choppy and rough terrain. If the defender's mortars and artillery can be suppressed with counter battery fire even in part at the critical point in time, then the attacker can slip through or charge through. If the defender's antitank guided missiles can be suppressed or their vision obscured, then the attacker can move his armor in closer and use it to destroy or overrun selected portions of the defense. If certain key weapons positions

can be destroyed or obscured, then the mutual support system begins to collapse and the enemies' defense will unravel. The attacker should plan carefully to defeat the defensive system in any deliberate attack.

11. Close air support of offensive operations has been greatly complicated by the existence of highly effective forward area enemy air defense weapons. Nonetheless, the ordnance load of the modern air force fighter is so lethal in its wide variety of special and general purpose weapons that it continues to be the most effective method of destroying hard targets available to the ground commander under conditions of intense combat against enemy forces with modern air defenses. The employment of close air support requires a coordinated plan of air defense suppression including extensive use of electronic countermeasures. Fighters are better at destruction than at suppression because of their intermittent delivery of fires. However, in a less lethal enemy air defense environment, the fighters can deliver short duration suppressive fire from automatic cannon.

12. Friendly Air Defense.

13A. Forward area air defense weapons play an increasingly important role in the combat operations of both sides because of their greatly increased lethality and numbers and the practice of moving them with the foremost elements. The Arab-Israeli War of 1973 was the first case in which one side sought completely to deny the airspace over the battlefield to the other side.

The combination of SA-6's, 7's, SA-9's, twin 57's and quad 23's - all radar directed and produced and distributed in large quantity throughout the world presents a formidable problem to the attacker. This is particularly true in the case of U.S. Forces which rely heavily upon close air support and increasingly upon attack helicopters. Thus it is that air defense suppression in concert and collaboration with the U.S. Air Force is now one of the most important operational problems facing the ground commander. Conversely, the U.S. Army does not now have a comparable array of air defense weapons. Nonetheless, considering the counter air capability of the USAF and the high effectiveness of the Redeye and the HAWK and the complementary value of Chapparal/Vulcan, a formidable defense may be thrown up against enemy air. It is absolutely essential to do this so the enemy air cannot destroy or suppress our maneuver elements and fire support echelons. Although new and improved air defense weapons are under development, we must improvise to exploit the very maximum effectiveness from what we've got now.

(Air Defense School fill in, please.)

13. Sometimes enemy defenses will be so formidable that the only way to degrade them sufficiently for successful offensive action will be to attack at night. Even this option is becoming much less attractive as night observation devices proliferate in all modern armies. Nonetheless, all defense weapons are less effective at night than in the day and this is particularly true of the longer range direct fire weapons such as the ATGM or the tank gun itself. For example the TOW is effective to 3000m in the day but has no effective night sight at this time.

The first generation or two of night vision devices were limited in capability to an extent that they only provided some assistance to movement at night as in the case of Infrared driving devices and some assistance to riflemen and gunners as in the case of the metascope and the starlight scopes. We are now beginning to receive night vision devices with longer range and greater resolution. The tank sight, the dragon sight, the night vision goggles and some early versions of thermal imagery devices are opening up a whole new range of possibilities. The force which can operate at night exactly as it does in daytime - that is full use of cover and concealment and effective use of suppressive fire - will easily defeat a force which cannot. The U.S. Army is on the edge of this capability now. Small highly trained infantry elements using night vision goggles could exploit this capability now in patrolling and raiding.

There are two categories of night attacks. One of these is much more common - easier - and less costly. This is an attack which seeks to by-pass enemy positions and thus place a friendly force on favorable terrain behind or on the flank of the enemy defense. The movement at night degrades enemy weapons effectiveness and reduces losses. The achievement of success and the seizure of the objective disrupts or defeats the enemy's defensive "system." The other mode of night attack is an assault against a key enemy position - a position so strong that daylight attack would be too costly. This is the most difficult and sophisticated of all offensive operations. It should never be undertaken without detailed reconnaissance - sufficient knowledge of the terrain and enemy so that each squad/tank can be given separate and individual orders and objectives. All leaders down to squad must have seen the terrain. The distance from the attack position (the last cover) to the enemy should be no more than can be negotiated in a single rapid rush. Either overwhelming fire support or complete surprise are essential.

(Attack helicopters in the attack and counterattack)

(Airmobile offensive opns - exploitation
pursuit
special operations)

21. Pursuit to exploit a successful attack *or* a successful defense is the counterpart to the tactics of delay. The pursuer is by definition stronger in the aggregate. The defender seeks to be stronger at the point and time of each collision between the delaying and pursuing forces. The tactics of pursuit are much the same as the tactics of a meeting engagement except the pursuer takes higher risks and longer steps. In order to avoid unnecessary losses, the pursuer advances rapidly by covered routes with a part of his force ready to support any engagement with suppressive fire. But he also seeks to cut through and get behind the delaying forces. He continues his attacks at night. He sends his infantry aggressively through difficult and untrafficable terrain deep behind the delaying forces. He pushes his reconnaissance elements forward day and night. If he has air cavalry he moves it around flanks and into the rear looking for soft spots - bottlenecks - headquarters and support. Airmobile infantry armed with antitank weapons positioned on the enemies' lines of withdrawal could be decisive in destroying and trapping his light forward elements. The pursuit is characterized by boldness - speed - and stamina.

IV. DEFENSIVE OPERATIONS

14. The basic concept of the defense is to optimize the employment of one's own weapons—to exploit every conceivable advantage of the terrain to minimize one's own vulnerability — and to establish a system of mutually supporting weapons positions and actions which anticipate and defeat the attackers' plans and actions. The defender has many advantages. He can select terrain which gives him cover and concealment. His tanks can be in hull defilade thus exposing only 1/8 of their bulk and only the most heavily armored parts. His antitank guided missiles can be placed to cover tank approaches which expose the attacker at long ranges on forward slopes. Approaches to his position which are broken or covered with thick vegetation and thus difficult to cover with direct fire weapons may be mined and heavy concentrations of artillery and mortar fire may be pre-planned and registered.

15. The attacker, however, also has some advantages of which the defender must be aware and against which he must take both active and passive measures. The attacker will concentrate on a narrow sector which he regards as the weakest part of the defense. He will concentrate both assault elements and suppressive firepower. Thus the defender must adopt all possible measures

to reduce the effect of enemy suppressive fires and must be able quickly to reinforce the threatened sector.

16. The first and cardinal rule in minimizing vulnerability to suppressive fire is concealment. Any part of the defense which can be seen by the enemy will be destroyed or suppressed. Every commander from squad to battalion must inspect his defenses from out front—from the terrain from which the enemy direct fire weapons will be brought to bear on his defense. If any can be seen they must be moved or improved.

17. Even perfect concealment will not provide adequate protection against direct fire suppression. The enemy will fire suppressive fires at areas where he suspects the defender is located or from which the defender could inflict losses on him if they were occupied. Thus, the defender must use every wrinkle in the terrain to provide cover from frontal suppressive fire by direct fire weapons. This means that defending direct fire weapons will normally fire at an angle across the front of the defended locale from behind natural cover. If natural cover cannot be found then cover may be constructed but the use of natural cover is vastly preferred as it is instantly ready and needs no artificial camouflage from the outset. In addition to the obvious advantage of using natural cover against the suppressive fires of enemy elements directly to the front, there is another equally important advantage to be gained by firing at angles across the front from behind cover. Enemy elements, armored vehicles or individuals moving forward against the defense must move into the field of view and the field of fire of the defensive weapon before they can see him or return fire. Although sometimes measured in split seconds, this advantage lies always with the defender who "gets the drop" on the attacker as he literally "comes around the corner." Thus it is that a high degree of cunning should go into the selection of each defending position—each should be the equivalent of at least a mini-ambush.

18. If the enemy forces are heavily armed with tanks, the defense should be built around the anti-armor antitank weapons system. The first of these in terms of range and accuracy is the antitank guided missile. TOW, the ground launched antitank guided missile (ATGM), is soft compared with a tank and is susceptible to suppression by artillery or when the tank closes to 1500 meters or less by direct tank fire. Additionally, the heavy ATGM can be suppressed (that is the gunner driven off the sight) by automatic cannon or machine gun fire at various ranges of 2000 meters or less. Furthermore, the single shot hit capability of the ATGM does not vary significantly between short and longer ranges whereas the accuracy of the tank guns, the

automatic cannons and machine guns fall off very sharply at increased ranges. Therefore, the heavy ATGM has a great relative advantage at ranges beyond 2000 meters—its effectiveness is high, its vulnerability is low except to accurate artillery fire. For all of these reasons, the heavy ATGM should be emplaced wherever possible so that targets will appear between 2000 or 3000 meters from the launcher. The use of antitank mines to canalize the enemy or stop him in exposed and preselected target areas should be synchronized with the employment of the ATGM. Additionally, some of these weapons should be placed to cover likely enemy tank overwatch positions from which some enemy tanks will be delivering suppressive fires or from which they plan to engage defending tanks or other weapons positions. Our own tanks will always constitute a prime element in our antitank defensive system particularly when the enemy begins to close to within 2000 meters of the defenses and when he uses very heavy volume of artillery or direct suppressive fire against our ATGM's. The defending tank remains vulnerable to the enemy's overwatching ATGM's and tanks and it must take full advantage of cover. Like the infantry position, the tank can be especially deadly when firing diagonally across the front from behind cover. The tank which fires first has a ___ % advantage over the tank which fires second. Positions behind frontal cover afford this advantage to the defender. If the enemy tank force manages to penetrate the forward defenses, the defender must react in such a manner that he retains as many of his automatic advantages as possible. Counterattacks which expose the defending force to the attackers overwatching positions — which surrender the advantages of cover — and which cause weapons effectiveness to fall off because of movement may well fail. On the other hand, carefully selected blocking positions which retain the innate advantages of the defense may be much more effective. Limited counterattacks conducted on reverse slopes fully covered from the attackers' overwatching weapons may also be more effective.

19. Counter suppression by artillery fire or obscuration of the enemies' overwatch positions with smoke must play a central role in the defensive action. The effectiveness of attacking tanks is reduced by at least 33% when buttoned up. Thus a certain amount of artillery should be devoted to keeping all enemy tanks buttoned up at least during the critical phases of the action.

Artillery suppression of enemy forward air defense may well be a necessary pre-condition for the effective use of close air support by the defender. Cooperative ECM operations involving both USAF and Army elements may also be required.

20. In modern industrialized countries such as those in Europe, the landscape is rapidly being transfigured by the spread of cities and the growth of villages. Much fighting in any future war would perforce take place in built-up areas. By and large, man-made structures favor the defense. Tank forces can be ambushed or stopped in cities or towns and house-to-house fighting is slow and expensive. Built-up areas infested with well trained infantry equipped with ATGM and hand held antitank rockets must be by-passed or cleaned out by the attacker. While field positions may often be suppressed by automatic weapons or artillery, it is much more difficult to suppress defending forces in around buildings which provide "instant" cover and concealment. In any event defending forces should take full advantage of built-up areas. Attacking forces must either by-pass those it can isolate and afford to leave behind or reduce those it cannot by-pass or afford to leave behind. House-to-house fighting by infantry supported tanks, artillery and engineers is slow, costly and difficult. However, the defender has substantial difficulties in that extensive built-up areas require very large numbers of infantry to cover every house or avenue of penetration. In order to exploit this weakness, there are two modes of attack which avoid costly and demoralizing house-to-house fighting. The first is a demolition attack. By using heavy assault firepower each enemy defended building in a selected narrow sector can be turned into a trap for the defender. This is not always possible with public buildings or other structures with very thick walls but is possible with medium or light family or commercial structures. The most effective direct fire demolition weapon is the gun on the Combat Engineer Vehicle (CEV). It fires a charge of 30 lbs of plastic explosive with enough accuracy to fire at or through windows, corners and structural weak points. It is a concussion weapon as well which stuns as well as kills.

Self-propelled artillery and tanks may be added to the CEV's and employed in mass at a selected time and place to punch through enemy defenses. Following infantry assigned to specific buildings can keep the hole open and reserves can be moved through to deeper targets thus disintegrating the defense.

The second alternative to the house-to-house attack is a sudden surprise assault at night. In such an attack each assault infantry team is targeted against a single building or part of a building. Many of the targets are deep in the third or fourth row of buildings. The concept of attack is that the capture of 1/2 or more of the targets in the initial assault will collapse the defense and make reconstitution impossible. This discussion of the attack of built up areas is included at this point to round out the picture of measures and countermeasures involved.

Add

Delay

Reconnaissance & Surveillance

Attack helicopter in offense and defense and delay.

Raids and offensive airmobile

Airmobile in pursuit as nearly impossible for enemy to handle -

22. The tank killing helicopter—the TOW/COBRA—adds a new capability for attack, counterattack, defense and delay. It will be a long time before the full range of capabilities and limitations of the attack helicopter are fully understood and a part of the consciousness of the Army. However, we do know enough from operations in Vietnam and from extensive testing and experimentation to describe the considerations which should govern its initial commitment to combat. The attack helicopter with the TOW has a range advantage over the T-62 tank, (BMP's, BTR's), the Infantry Combat vehicles, and the ZSU 23-4 radar controlled air defense weapon. This advantage is retained at ranges beyond 2000 meters and is rapidly reversed at lesser ranges. The attack helicopter is outranged by the Twin 57, the SA-7's and SA-6 surface to air missile.

Because of the forward employment of the ZSU 23-4, the Twin 57, the SA-7's and SA-6's, the attack helicopter will not survive on the battlefield if he exposes himself more than momentarily to weapons which are range effective which have not been destroyed, suppressed or obscured.

Thus there is no essential difference between the problems faced by the attack helicopter and any other combat element. Operating as a part of the combined arms team — engaging at ranges which minimize its own vulnerability — taking maximum advantage of terrain cover and concealment — and coordinating suppression with its movements — the attack helicopter can contribute to the favorable outcome of the battle.

If the enemy comes out from under his SAM envelope or outdistances these air defense elements and his ZSU-23-4's can be suppressed (by ECM or artillery fire), the attack helicopter should have the clear advantage.

Because the attack helicopter is an expensive and valuable weapon, it should not be employed haphazardly and exposed under disadvantageous circumstances through carelessness or poor techniques. The Army is providing one scout helicopter for every two attack helicopters in attack companies and battalions for just this reason. The scouts are expected to take greater risks and losses than the attack helicopters by preceding and aiding them in the selection of routes into and out of engagement and the selection of firing positions and the provision of target information. Both the scouts and the attack helicopter pilots will be expected to practice terrain flying and precision navigation with minimum mechanical aids. Nap-of-the-earth flying is only one technique of minimizing vulnerability. NOE flying down forward slopes will not necessarily afford protection against radars sensitive to moving targets or whirling rotors as in the case of the ZSU-23-4 radar. Terrain flying, route selection and position fixing are essential and require skills far beyond those required for simple NOE flying.

Helicopters should be employed in large numbers at critical points. This means they will normally be committed by platoons in series and recycled back into action as rapidly as they can be rearmed and refueled as long as the battle lasts.

Attack helicopter unit commanders must be experts on the scope and nature of air defense suppression operations.

Battalion, brigade and division commanders must plan and coordinate air defense suppression operations using all available assets or they will not receive effective support either from attack helicopters or USAF fighters.

5

Aug 17, 1974
Highfield

MODERN BATTLE TACTICS

CHAPTER I

Strategy versus Tactics.

When the Egyptian Army crossed the Suez canal on Saturday 6 October 1973 it was the expression and outcome of Arab strategy long in the making. When the Egyptian Army repulsed and destroyed the Israeli 190th Armored Brigade with a fire storm of anti-tank missiles on Tuesday 9 October 1973 and even captured its commander Roland Assaf Yagouri it was the work of Arab tactics. The Arab strategy will be enshrined in the books of common history.

The Arab tactics will be studied by a more narrow cult.

When Field Marshal von Rundstedt was launched into the Ardennes in December of 1944 it was the last strategic blow struck by the mad leader of the Third Reich. When the U.S. 7th Armored Div held the road and rail hub of St Vith for 4 days against the attacks by Field Marshal Hasso Von Manteuffel 7th Panzer Army - it was the tactical demise of the German strategy.

The strategy that succeeds or fails changes the history of mankind. Tactics can only support or deny the strategy and is by its inherent military nature a second order of things. Thus it is that books are written about wars and campaigns mostly at the strategic level. Or, at the other end of things at the personal level. Most classic works have centered upon Generals or Generalship - upon the principles of war - upon the marshalling of great forces and their application to more or less successful campaigns. This was less true in the age of Marlborough and especially Napoleon but even then it was the sweeping deployment of corps and divisions rather than the work of battalions which has survived the retelling.

There are other reasons - other than their arcane nature - for the modest exposure of battle tactics to public view. The United States has ordinarily won its wars through the weight it could throw rather than the skill it could apply.

World War I and World War II were wars of courage - yes - but more than that they were wars of mass and bulk. Strategy and Generalship had more to do with the concentration of force in critical theatres of war than in the professional honing of the fighting machine. The Army of the United States expanded from a 130,000 man standing Army to a mammoth of 8,000,000 men and machines. Whole regiments went to war with one, two or no regular officers.

Handwritten. The William E. DePuy Papers. Box: Trascripts and Diplomas. Folder: Field Manuals 100-5, 1974–1977. U.S. Army Military History Institute, Carlisle Barracks, PA.

There was no other choice - no other way. Some units became superb fighting organizations - most were just fair - many downright poor. The miracle was that it could have been done at all - an instant Army. The heroes of the war were strategic planners and mobilization managers (Marshall, Arnold, King) and Theatre or Army commanders Eisenhower, Bradley, Patton, MacArthur, Stilwell, Krueger.

Tactics had to be assumed. In the Army it was the staff college at Fort Leavenworth not the Infantry School at Fort Benning that was universally regarded as the cradle of victory.

For well over half a century America has been regarded as the arsenal of democracy. The last but certain recourse for the Free World - for democracy.

As a last resort the giant could be awakened - given time to gird his loins - and steered massively into the fray. The outcome was foregone. If one division proved to be inadequate - then two could be employed. If the German tanks were in most respects superior they could simply be outnumbered. If the Japanese fought stubbornly from their caves then the whole island could be pulverized.

Oh yes there was more to it than that. There was courage aplenty - and some cowardice as well. There were natural leaders who surfaced in the midst of the brutal process, as they have always surfaced from amongst our people. There was sacrifice and a common will growing out of a common purpose but it was mass and time more than skill and precision that carried the day.

Now the scene has changed. Modern forces can be moved so fast - modern weapons take so long to build - soldiers take so long to train - and modern weapons are so lethal that the outcome of the next war will be largely settled in weeks with the forces and weapons on hand at the outset.

So this book is about the tactics of that modern battle. It is about the quality of our performance in those initial (perhaps also final) engagements. It is about modern weapons and their employment - about how to exploit them, and defeat them. It is in short about Modern Battle Tactics.

ADD - test of strength
fight outnumbered
NATO pause

Inflation Energy Ecology - Diplomacy
Short duration conflict
Turkish graben Cyprus
Fait accompli -

I Strategy vs tactics
Israeli Arab vignette & get
Generalship
Principles of War
The U.S. Experience
WWI First Div
WWII 90th Div
WWII Eisenhower Leavenworth

II Tactics vs strategy
The reverse Israeli & hist
examples were tactical
proficiency made the diff.

III Weapons & lethality growth -
bring up to 1974 & project
use tank/TOW fighter/AD

IV Tactics and weapons

V How to fight on the modern battlefield
a. tanks anti tank
b. Tank Inf Arty AD
c. air/anti air
c[1] close air support
d. night
e. air mobility
f. recon surveillance
g. combat in built up areas

VI The future -
leaders
soldiers
weapons
tactics

6

ACTIVE DEFENSE

The method or system of defense on the modern mechanized battlefield can best be described as "active". The "active defense" is designed to fight successfully against greatly superior numbers of attacking armored vehicles with mounted or dismounted infantry, heavy supported by artillery, protected by mobile air defense weapons and also supported in varying degrees by armored helicopters and fighter aircraft. The concept of active defense is to wear down the attacker by confronting him successively and continuously with strong combined arms teams and task forces fighting from mutually supported battle positions in depth throughout the battle area. Defending platoons companies and battalions maximize the effectiveness of their weapons by the selection of advantageous positions and minimize their vulnerability by use of the terrain by concealment and otherwise exploiting all of the advantages of the defender. Antitank Guided Missiles (ATGM) are sited to exploit their long range and pin point accuracy, tanks are sited to exploit their armor protection high rate of fire and lethal main armament. Infantry are employed as necessary to protect the battle positions and suppress or destroy enemy infantry and antitank weapons.

Company teams are the basic element for the conduct of the active defense. Ordinarily battle positions are occupied by Co teams. On extended frontages it may be necessary to employ independent platoons but this should be rare. The adjacent positions with which mutual support should be exchanged and some idea of what the next move might be. For example "be prepared to move on my order to Battle Position 56 or 57. I am going to try to trap the enemy force between Battle positions 58 and 60". In order to conduct such a defense successfully the company team must be able to move rapidly—protect itself as it moves—occupy new positions. On the other hand it may be necessary to use entire battalions on single battle positions in the zone of main attack. These decisions will be made normally by Brigade and Battalion commanders.

Normally company teams will be given mission type orders to "occupy and defend battle position number 55". Sometimes the orders would be more elaborate and specify the avenue of approach to be covered quickly and exploit every opportunity to engage the enemy effectively.

When the enemy has been weakened and his forward elements are exposed they should be destroyed by fire or if necessary by counterattack. Company teams may be ordered to counterattack exposed enemy forces or shift to more advantageous Battle Positions from which the enemy can be destroyed by fire. Counterattacks should be conducted so that the advantages of the defender are not needlessly surrendered. Whenever possible counterattack should move so that they are covered from the overwatching fires of the attacker. Counterattacking forces may not need to close with the enemy to destroy him. Company teams may be ordered to counterattack to seize or recapture a Battle Position.

Handwritten. Provided by Dr. John Romjue, Office of the Command Historian, U.S. Army Training and Doctrine Command, Fort Monroe, VA.

In any event as the enemy attack moves into the defended area it should meet ever increasing fires from the front and especially the flanks. It should encounter constantly shifting defense forces taking maximum advantage of the terrain. It should encounter obstacles which cause it to stop or slow its attack in areas covered by defensive weapons.

The problem of the defender will be to destroy a very large number of enemy vehicles and personnel in a short time.

In order to slow the attack so that there is more time to engage the large number of targets the defender may find it necessary to hold certain terrain features for extended periods of time with a reinforced company or even a battalion while the remainder of his force moves actively to and from the most advantageous nearby battle positions.

In these cases it is permissible to establish a fully developed strong point. There are both advantages and disadvantages to the use of strong points. The advantage is to hold key terrain around which the active battle can pivot. The disadvantages are that strong points will be subjected to massive artillery suppression—will be assaulted by enemy infantry and thus will be difficult to extract and casualties may be high. In the active defense the strong point should be the exception and not the rule. However when a piece of terrain must be held to accomplish the mission or create a trap for many forces the battalion or Brigade commander should not hesitate to order the development of a strong point by one of his teams or task forces on the appropriate Battle Position. Thus company teams must be trained to occupy develop and operate in strong points.

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(8 Jan 75)

DRAFT

MEMORANDUM FOR THE CHIEF OF STAFF

SUBJECT: How to Determine Requirements for the Army's Weapons

1. As you know, better than I do, the Army has always had a difficult time explaining just why it needs a particular weapons system and even more difficulty in explaining how that particular weapons system fits in with all of the other Army systems and organizations and finally difficulty in answering the inevitable question as to whether some other combination or alternatives might not be better or more effective. All of this stems from the fact that ground combat is, without any doubt, the most complex set of interactions in any kind of military operations by any service or any country. Unfortunately, just asserting this does not help much. Our civilian masters find it most difficult to follow our logic and understand our case for a particular system. The most recent example of this problem is the reaction of Under Secretary Staudt to the series of briefings he has received on the lessons of the Arab-Israeli War. I have the impression that he has been choked with details but that no cohesive, understandable picture has emerged in his mind. We professional soldiers have not been able to articulate in simple, understandable terms the major features, characteristics and elements of a fighting Army on the modern battlefield. In the absence of this comprehensive but simple and clear picture, we have been unable to explain how any one weapons system increases or decreases our battlefield effectiveness so that reasonable decision makers feel comfortable with the decisions they none the less make.

2. I have been asked to brief Secretary Staudt sometime within the next month regarding the "real" lessons of the Arab-Israeli War. He has already had four detailed briefings and I do not intend to compound the difficulty by adding a fifth increment of detailed analysis and discussion. However, I do hope to give him that comprehensive, hopefully simple and clear picture of how an Army fights in the desert against the kinds of forces that have been organized and trained by the Arabs and equipped by the Russians. To do this, it will probably be necessary to oversimplify

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The William E. DePuy Papers. Box: Transcripts and Diplomas. Folder: Field Manuals 100-5, 1974–1977. U.S. Army Military History Institute, Carlisle Barracks, PA.

to some extent. The purpose of this letter is to give you a summary of my thoughts and my approach beforehand so that we can discuss this methodology of presentation and, more importantly, the tactical concepts which lie beneath them if you so desire. Mr. Augustine strongly believes we need to make a super effort at articulating our tactical concepts as expressed in our organization and weapons systems. From our brief discussion with the Secretary of Defense, I feel certain that he would appreciate some simplification and improved articulation of our concepts and requirements.

3. The concepts of the United States Army for fighting against large, modern mechanized forces such as those we face in Central Europe and would probably face in the Middle East is based upon the following facts, convictions, assumptions and discussions:

a. At the present time, and for the foreseeable future, the tank is and will be the primary weapons system on the battlefield. The tank, which is a highly mobile, cross-country, heavily-armored vehicle transporting both machine guns and a high-powered antitank gun which can double as an assault gun, is the primary offensive weapon in all armies designed to fight where the terrain permits the use of mechanization. This includes all of the Middle East and most of Central Europe. The best way therefore, to visualize the operation of a modern army is to start with the tank and consider not only the quality and characteristics of the tank itself but the quality and characteristics of all other systems which work with, support and sustain the tank as it performs its role on the battlefield.

b. Theoretically, it is possible to conduct defensive operations without tanks in certain kinds of terrain and in particular circumstances. However, for the purpose of this discussion, defensive operations in Central Europe and the Middle East cannot be conducted without tanks simply because the frontages involved are so great and the size of enemy forces so large that the defender must be able to move around the battlefield actively in order to concentrate or interpose his defending forces at the times and places where the enemy attacks. To move about the modern battlefield requires an offensive capability down at the fighting echelon, even if the larger force considers itself to be in a defensive posture. More will be said later about the use of the tank in the defense but suffice it to say that the United States Army is convinced that the tank plays as central a role in the defense as it does in the offense and that no active defense can succeed without large and effective tank elements and that the active defense is the only defense relative to modern mechanized warfare. If the reader wishes to go further into these concepts he could make

reference to the German Army Panzer and Panzergrenadier concepts as explained in latest German doctrine (HDv 100/100).

c. In the attack the objective must be to move tank formations through weak points in the enemy forces or around his flank to seize critical terrain in his rear and to disorganize and destroy his forces piecemeal. In short — to disintegrate his defense and destroy him. The armored firepower of the tank is the principal Army weapons system for this purpose. Once friendly tanks have penetrated or outflanked an organized enemy position, their mobile firepower, both machine gun and main gun, can destroy his artillery, air defense units, supply and maintenance echelons, command and control and, if necessary, attack his reserve positions from unexpected directions with suddenness and surprise. Although other elements such as properly equipped mechanized infantry and cavalry can wreak havoc in the enemy's rear, they do not have the devastating effect of the more heavily armored and heavily armed tanks.

d. The tank cannot fight effectively or even survive on the battlefield alone. Historically, those armies which attempt to win with tanks alone, that is tanks operating without infantry, artillery, air defense and air support, were routinely defeated and in some cases annihilated. For example, Soviet tank formations in the early stages of World War II were employed without infantry against the combined arms formations of the German Panzer/Panzergrenadier Divisions. The Germans won every battle. In the early days of the war in North Africa, the British armored divisions were organized without infantry and again were routinely defeated by the combined arms organization of the Afrika Corps. In the Arab-Israeli War, after the successes of the Six-Day War, the Israelis unbalanced their forces by emphasizing tanks and deemphasizing mechanized infantry. Consequently, Israeli tank attacks along the Suez were destroyed totally and utterly by the Egyptians. This should be no surprise to any student of military tactics and techniques.

e. A US Army tank which exposes itself on the battlefield to a Soviet T62 tank at ranges of 1500 meters and less will be hit and destroyed six times out of ten by the first round fired by the Soviet gunner unless his vision has been obscured by smoke or his tank has been destroyed by an American tank or antitank missile. If an American tank ventures into the open within 300 meters of an enemy infantry position, it will probably be hit by one or more hand-held Soviet antitank rockets fired from the RPG-7 or the new RPG-15. The Soviet gunner has one chance out of two of hitting a stationary American tank at 300 meters unless he has been killed by the suppressive fire of our infantry weapons, or our artillery or forced to take cover by the suppressive

fire of our infantry, our tank machine gun, our artillery or mortars. American tanks moving in the open will be destroyed by enemy antitank guided missiles from ranges out to 3000 meters unless the antitank guided missile gunner has been destroyed by our artillery fire or his vision has been obscured somewhat or he has been forced to take cover from our high explosive fire. Lastly, our tanks will be destroyed by enemy fighter aircraft if they are permitted freedom of operation over the battlefield and are not destroyed or driven off by our forward air defense units. The overwhelming and central lesson of the Arab-Israeli War was that tanks cannot operate alone on the battlefield but must be supported by the teamwork of these four elements of the combat arms under the skilled command and control of well-trained, aggressive leaders.

f. Although there are many weapons in the United States Army, the armor and mechanized battle will be won or lost by seven basic systems. The Army organized its mechanized combat around six of those systems, whereas the seventh is represented by the fighters of the US Air Force which provide close air support to mechanized forces whether they are attacking, defending or delaying. The building blocks for organizing, equipping, training and operating United States Army forces on the modern battlefield include a tank battalion, a mechanized infantry battalion, the 155mm SP artillery battalion, the Chapparal-Vulcan air defense battalion and the supporting squadrons and wings of the USAF. The tank battalion consists of 54 main battle tanks in three companies of 17 tanks each and three tanks in the battalion headquarters with nine mechanized reconnaissance vehicles and four 4.2 inch mortar carriers. The mechanized infantry battalion consists of 53 mechanized infantry combat vehicles, 18 mechanized carriers for the TOW missile, nine mechanized reconnaissance vehicles, nine 81mm mortar carriers and four 4.2 inch mortar carriers. These are divided into three rifle companies of 21 mechanized vehicles each and a combat support company containing the remainder. In addition to 18 heavy antitank guided missiles (TOW), the battalion carries 27 medium antitank missiles (DRAGON) and as many light antitank missiles (LAW) as the situation seems to warrant. The 155mm artillery battalion, SP, consists of 18 SP 155 howitzers divided into three batteries of six howitzers. The Chapparal-Vulcan battalion consists of 24 SP Chapparal air defense missile fire units, and 24 SP Vulcan air defense fire units. These weapons systems, organized, trained and operated within the framework of four battalions appropriately mixed in accordance with the requirements of each situation, tied together by signal communications and supported with----------ammunition, food, maintenance and medical support

represent the combat power of the United States Army on the battlefield. To the extent that these weapons are competitive or superior to the enemy's comparable weapons, to the extent that American tactics, techniques and leadership exploit the maximum potential of these weapons, to that same extent will our forces win on the battlefield if deployed in reasonable numbers vis-a-vis the strength of the enemy at any one time.

g. Because tanks cannot operate alone, experience and logic has led the Army to organize for combat by cross-attaching or cross-reinforcing its tank and mechanized infantry elements. For example, a tank battalion will often drop one of its tank companies and pick up instead one company of mechanized infantry. A mechanized infantry battalion, having surrendered one of its companies to a neighboring tank battalion, will pick up the tank company and thus acquire a mix appropriate to its particular task on the battlefield. A tank battalion thus cross-reinforced would have 37 tanks, 17 MICV's, 2 TOW's and 9 DRAGON's. Fighting, however, often takes place at the next echelon below the battalion; that is, the company task force. Thus the basic combined arms fighting element is the company task force; a tank company minus one of its platoons, plus mechanized infantry platoon, which would have 12 tanks, 4 MICV's, 3 DRAGON's, TOW (possibly 2 TOW's from combat support company), and 81mm mortars or a mechanized infantry company minus one mechanized platoon having gained one tank platoon and would have 5 tanks, 13 MICV, 2 TOW,* 6 DRAGON and 3 81mm mortars. A platoon of 4 Vulcan air defense fire units, would accompany the company task force or the task forces parent battalion in order to deny or destroy enemy fighters which could interfere with the accomplishment of the mission.

h. The employment of a tank company task force in the attack would normally involve the employment of one tank platoon in an overwatch position prepared to deliver antitank fires against enemy tanks, infantry or antitank guided missiles which might interfere with the forward movement of the other tank platoon. The mechanized infantry platoon, either mounted or dismounted depending on the situation, would provide suppressive fire against enemy infantry and enemy hand-held antitank weapons to protect the forward moving tank platoon. The 155mm artillery would smoke distant hilltops from which long-range antitank guided missiles could be

*organic to mechanized company plus number from combat support company depending on mission, terrain, etc.

brought to bear on the forward moving tank platoon, and artillery or mortars would suppress or smoke other areas from which antitank guided missiles, tanks or infantry could deliver fire against the advancing tank force. The timing, the sequence, volume and mix of these suppressive and obscurative fires and the routes, overwatch positions and scheme of maneuver would be determined by the captain commanding the task force, depending on his judgment, the enemy and the terrain. The attack is, in microcosm, a picture of the entire battlefield with all the principal movement, concealment, overwatch and suppression displayed and manifested.

i. There are of course several sets of problems involved in organizing, equipping and training Army forces. Among them, the question of mix is ever present. The easiest way to visualize the proper mix is to think in terms of a single mission at a single place at a certain time against a known enemy force. In this case, if the enemy is tank heavy, our force would have more tank battalions than mechanized battalions. If the enemy had a balanced force, our mix would be the same. On the other hand, if he consists of more mechanized infantry, and if the enemy is tank heavy, then we would be forced to match his heavy, mobile firepower unless the terrain or the mission would permit some other mix. On the other hand, if his force is evenly balanced or primarily infantry, we should then seek an optimum force indicated by the terrain and mission, trying always to assemble a force more powerful, more mobile and more versatile than his, which would also consist of a workable mix of the four elements of the combat arms plus adequate air support. The terrain, on the other hand, will tell us much about the proper mix between tanks and mechanized infantry forces. If the terrain is open, we will weight the force with more tanks. If the terrain is mixed and broken, we will then go to a balanced force. On the other hand, if it is thickly covered with woods and forests we will require more infantry than tanks. Thirdly, if the mission is to attack and the terrain permits, we would weight our forces more heavily with tanks. If the mission is to defend and the terrain is rough, we would be forced toward more infantry. If the mission is delay and the enemy force is clearly superior, then the mix again will depend particularly on the terrain but will then, too, favor a rich mixture of tanks. In Germany today, in the open plains of northern Europe, the German Army has concentrated its Panzer Division and Panzer/Grenadier Division. In mixed and broken terrain it has deployed Panzergrenadier divisions, and in the thickly forested and steep hills of Spessart and Odenwald it has deployed a Yeager Division which is primarily dismounted infantry.

j. In order to conclude this very basic discussion, the lowest level broken down is the individual system and weapons themselves. It seems obvious that our tank battalions, companies and platoons will be more effective if our tanks taken individually are more effective than Soviet tanks taken individually. This is true also of our mechanized combat infantry, our self-propelled howitzers and associated ammunition, our mortars, our rifles, machine guns and fighter aircraft. The Army believes that we can safely proceed with the acquisition of a new tank, a new MICV, a new antitank guided missile, a new forward air defense weapon or a new fighter or any of the supporting equipment and communications to take its place within this simple framework of tank mechanized, tank infantry, air defense and close support if the employment and effectiveness of each weapon compares with the effectiveness of the weapon which it replaces and offsets proportionately the increased cost.

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3. [sic] There are other weapons which are extremely effective in the defense besides the tank. These include carefully sited antitank guided missiles, obstacles and minefields covered by our entrenched infantry equipped with hand-held antitank weapons as well as heavy concentrations of preplanned and preregistered artillery. Such forces are strengthened by the inclusion of tanks which can withstand enemy artillery and other suppressive fire better than dismounted infantry or light armored forces such as cavalry. However, the principal role of tanks in the defense is not the reinforcement or the thickening of the infantry defensive forces. The tanks contribution to the defense comes from its mobility. In almost any conceivable situation in Central Europe or the Middle East the frontages defended will be wide compared to the number of defending forces available. This means that the defender must concentrate at the points of decision at the time of the enemy attack. In short, the defender must move to blocking positions which will prevent the enemy attack from succeeding. As the battle progresses, he may lose and be forced to move and to regain some of these positions by counterattack. In any event, it is certain that his defense will be active as he occupies, withdraws from and reoccupies those positions from which he can best execute his mission successfully. This kind of movement on the battlefield and in the heat of battle can best be performed by the tank adequately supported by the other elements of the force.

8

ATCG 24 March 1975

SUBJECT: Basic Combat Training

Training Center Commanders:
Major General Donn A. Starry, Commander, US Army Armor Center
Major General William B. Caldwell, III, Commander, USATC & Ft Jackson
Major General John G. Waggener, Commander, USATC & Ft Leonard Wood
Major General Marion C. Ross, Commander, USATC & Ft Ord
Major General Thomas U. Greer, Commander, USATC & Ft Dix
Major General Robert Haldane, Commander, USATC & Ft Polk
Brigadier General Joseph P. Kingston, Commander, USA School/Training Center & Ft McClellan

Soon to be Training Center Commanders:
Major General David E. Ott, Commander, US Army Field Artillery Center
Major General CJ LeVan, Commander, USA Air Defense Center
Major General Thomas M. Tarpley, Commander, USA Infantry Center
Major General Charles R. Myer, Commander, USA Signal Center

1. I have received and reviewed the work of the "Committee of Six." I have approved in principle and in general terms the findings of that Committee. TRADOC will publish a definition and description of BCT in the very near future. It will be somewhat in the nature of a mission type order to the Training Center Commanders.

2. As you know, you are each totally responsible for turning civilians into soldiers through the process we call Basic Combat Training or in the case of the Women's Army Corps, Basic Training. Nothing which is published by TRADOC, Ft Benning, or any other agency relieves you in any way of that total responsibility. You will be responsible for success. You must insure that nothing which is silly, ridiculous, illogical, superfluous, or otherwise unproductive takes place during training. This feeling of responsibility must permeate your entire organization down through the chain of command to each drill sergeant. Each member of the chain of command is expected to think and act responsibly, sensibly and productively. Things that don't make sense should be quickly abandoned. Things that make sense should quickly be put in their place.

The William E. DePuy Papers. Folder: Correspondence 1973–1977. Command History Office. U.S. Army Training and Doctrine Command, Fort Monroe, VA.

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3. Although we don't know all we ought to know about the psychology of changing civilians into soldiers, we have enough empirical data and experience to proceed with confidence. I look upon the elements of Basic Combat Training in the following general categories:

a. School of the Soldier, to include discipline, motivation or spirit, and knowledge of the customs, courtesies and procedures of the Army.

b. Training in a few very fundamental skills, such as lifesaving aspects of first-aid, the actions to be taken under a chemical attack, and so on.

c. Basic rifle marksmanship.

d. Individual Tactical Training.

e. Physical conditioning.

Putting this all together into a coherent, integrated, productive and progressive program is your responsibility. Let me say a little bit about each one.

4. With respect to the School of the Soldier and the ways of the Army, including the inculcation of spirit, discipline and team work, I approve the conclusions of the "Committee of Six." This calls for highly structured control during the first two weeks or so of the trainees' life in BCT, gradually tapering off toward the end as the trainees, individually and collectively, respond to the structured requirements of the Army discipline, while displaying increasing willingness and ability to accept personal responsibility for their actions. This endeavor, running throughout all of the weeks of basic training, will succeed or fail depending mostly upon the drill sergeants and the company commanders. Your problem will be to prevent this facet of our responsibility from being overly structured by headquarters above company, particularly in connection with those activities which take place after the formally scheduled work of each day.

5. With respect to those few fundamental skills we wish to teach, I am satisfied that there is a correct consensus against too many performance tests which, in turn, absorb too much of the nonscheduled attention of the drill sergeants—tests which in themselves are too narrow in scope to comprehend the full range of knowledge we wish the trainee to carry away with him when he leaves Basic Combat Training. We are not abandoning performance-oriented training; we are bringing it back to reasonable proportions.

6. We are all in agreement and have already adopted a system of basic rifle marksmanship qualification which deletes the scoring of night firing, and puts that requirement on a go/no-go basis. My only continuing concern about BRM is the amount of time we waste, or the inefficiency of the program when viewed through the eyes of the individual soldier who spends most of his time waiting.

7. Individual tactical training has improved enormously, but we still have a long way to go. Generally speaking, we have not simplified it enough. In too many places we spend too much time on inconsequential or peripheral aspects of the problem. Additionally, the captains, lieutenants and sergeants generally do not explain to the soldier in simple terms what it is we are trying to teach him, and why. Let me itemize what I believe to be the heart of the program and

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the objectives we should seek, together with a word about the techniques which will be most helpful.

a. Individual tactical training in BCT must be the first step in a progressive program which extends onward and upward through Combat arms AIT for those who take that route, and then into team, squad, platoon, company and battalion tactics and techniques. For other soldiers, BCT must embody those rudiments of tactics he might encounter in field service. The principles and the techniques utilized in BCT must be the same in practice and in logic as those which follow in successive steps.

b. We wish to teach each soldier in the Army that he may find himself in combat, even if he is assigned to a headquarters, to a signal communication relay station, a maintenance company, a supply point, a truck unit, a computer center, or any other element of the Army which will find itself deployed in a theater of operations. This is because warfare has become fluid, and enemy military forces can go deep into our rear with armored penetrations, parachute assaults, heliborne raids, or guerrilla attacks.

c. In order to get the job done on the battlefield, whatever that job may be, each soldier must be able to defend himself and his unit and, if necessary, to attack and kill or subdue the enemy. We must teach each soldier that he must master four techniques which will serve him well, make it possible for him to do his job, and survive on the battlefield. They are these;

(1) Cover. He must understand the meaning and use of cover, in both the attack and defense. Very simply, he must understand that even the smallest wrinkle in the ground can protect him from enemy fire. In short, he must understand the principle of cover, be able to identify it, and be able to use it.

(2) Concealment. He must understand the principle of concealment and camouflage in both the attack and defense. In short, he must understand that if the enemy cannot see him, it is unlikely that he will be hit.

(3) Suppression. He must understand that while he or his group are moving in the open—that is without cover or concealment—that someone else or another group must deliver accurate suppressive fire against the enemy in order to prevent the enemy from firing accurately and effectively against him, his buddy or his team.

(4) Teamwork. He must learn in BCT the basic lesson that battles are won by men working together, talking back and forth, planning and acting jointly. Although he will not be expected to practice more than shooting to suppress for a buddy moving, or to protect the front of a buddy's foxhole, we must be sure he understands that team play is the essence of tactics.

d. Individual tactical training starts by teaching the soldier how to crawl, how to run, how to identify and use cover and concealment and how to deliver suppressive fire. We must explain these points to him clearly and simply and allow him to demonstrate that he understands. We must not be drawn off into side issues such as how to get into and out of a trench, how to tip-toe through barbed wire, to slither over a log, or to cope with any other ridiculous digressions. In training the soldier to recognize and take advantage of cover and concealment, we must give him

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an opportunity to learn by differentiating and choosing between good cover and bad cover, good concealment and bad concealment, good routes forward and bad routes forward. We should teach him to look for and use both cover and concealment simultaneously when the terrain affords such combinations. Logs lying in the open are cover, but they are bad cover, and in battle a man would use a log in the open only if there were no other alternatives. The fire and maneuver course should be the graduation exercise (the performance test) during the offensive phase of training, and should afford many choices of good positions, fair positions and bad positions so that the soldier learns to choose and think and may be fairly evaluated.

e. The defensive aspects of individual tactical training should be explained logically as the application of the same principles of cover, concealment, suppression, and teamwork as we have taught during the offensive phase. In short, the parapet foxhole provides the cover of a berm to the front and concealment when that berm has been camouflaged. It is our counter to enemy suppression. We defend by relying on the fire of buddies, just like we do in the attack. The same logic that applies to the offense applies to the defense in that a soldier who exposes himself in the defensive without cover or concealment or suppressive fire will be killed, cannot perform his mission, and cannot support his buddy or his unit.

f. You all know that I have been unhappy with the infiltration or overhead fire course. None that I have seen have resembled a realistic battlefield situation. I have been told in one way or another by each of you that there is a benefit to the trainee growing out of these exercises associated with the fact that overhead fire is a novel, exciting, and, therefore, memorable experience. I accept that, while recognizing that it is an expensive operation. However, the only thing missing in our offensive and defensive training as I have described it in the preceding subparagraphs has to do with the familiarization of the trainee with the sounds of incoming and outgoing fire and his ability to distinguish a crack from a thump and thus determine which way the fire is going. We must incorporate such familiarization in our Basic Combat Training and do it in such a way that it continues to provide that memorable and exciting experience. Tug Greer has put together a very short course which is a supplement to the fire and maneuver course. He runs the men through an exercise where they move out on a mission, are brought under fire—utilize a bank for cover while the enemy fires into the bank—crawl across an open space while the fire is overhead, until they have cover behind a second bank—whereupon they maneuver briefly against the machine gun with simulated fire and movement. Paul Gorman will give you details on that, as well as a laser system which will permit us to exercise the principles and practices of the defense against an enemy attack without the usual safety restrictions which make most such exercises unrealistic.

8. I believe we are all in agreement on the intensified physical fitness program insofar as it relates to the better qualified, more athletic soldier. We seek to challenge trainees of whatever physical capacity, so we probably ought to standardize the test scoring beyond 500. Other than that, what you are already doing seems eminently sensible, and is producing better results across the board.

9. We cannot neglect what we tell the trainee about his training. I find the SMART BOOK is filled with extraneous, irrelevant and peripheral matter, and it will be revised. Some of the performance tests provided by this headquarters and some of the subject schedules are equally

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defective. It will take at least a year to clean up the paper work. In the meanwhile, you may proceed on the basis of this letter and your own good judgment to achieve success in the accomplishment of our collective mission to turn civilians into soldiers. This is a dynamic business and we wish to keep it so. I expect and want innovations, the exchange of information among training centers, and as many suggestions to me as you may see fit to make. All in all, I am very pleased with what I see at all of the Centers.

W. E. DePUY
General, United States Army
Commanding