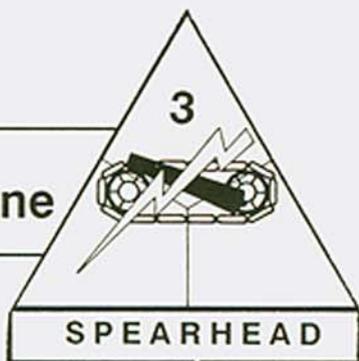


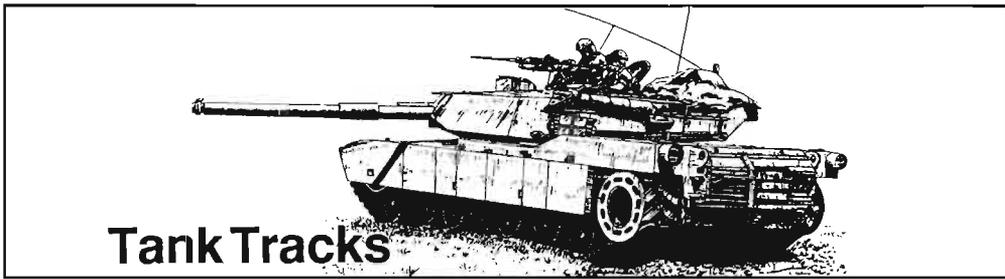
ARMOR

Armor Takes Cologne

*There were good reasons
to send a U.S. armored division
into a city - when doctrine ruled it out*

see Page 32





In our last issue, Major Mike Matheny began his story of the historical use of armor in Low-Intensity Conflict with his examination of the U.S. experience in Vietnam. With this issue, he concludes the two-parter with a look at Soviet operations during the eight-year-old war in Afghanistan. Did the Soviets capitalize on our successes in Vietnam, and did they learn from our mistakes? What do we know now about **Armor in LIC**, the most likely battle scenario?

Another likely scenario for future battle, and one for which we do little training, is combat in and near cities. In "**Armor Takes Cologne**," Major John M. House takes us along with the 3d Armored Division on its mission to take the major city of Cologne early in 1945. This was a mission for which armored divisions were not designed, and one that flew in the face of the doctrine of the day.

In an associated story, Captain Andrew F. DeMario asks "**When Will We Ever Learn?**". Europe is covered with forests and villages and towns of various size. Fighting in these environs will be the rule, not the exception. Because we do not train for heavy combat in these conditions, the author wonders if we are losing sight of the realities of armored offensive warfare.

Deception is a combat multiplier. A good deception plan and operation can move enemy forces out of the way or in the wrong direction, force the enemy to throw his reserves into the pot in the wrong place and time, force the enemy to waste ammunition and other assets, and reap other benefits for the commander who pays attention to deception. In "**Voices in the Sand: Deception Operations at the NTC**," Captain George L. Reed outlines how to confuse and deceive the enemy with a little sleight of hand.

Because training exercises rarely produce real casualties, problems associated with evacuating casualties do not rise to the surface. In "**Medical Evacuation**," CW3 William L. Tozier explains what problems he encountered in operating a battalion aid station when playing realistic casualty evacuation. Many of his vehicles were in the hands of others, and first aid was a problem. This is an eye-opener.

Captain Ed Smith says that well-rehearsed battle drills are the hallmark of a good unit. In "**Team Battle Drills: Translating Doctrine Into Action**," he shows us how to refine and hone responses to contact, indirect fire, and air attack. He also discusses the fine points of conducting a hasty attack, hasty defense, and hasty breach. Precious time is saved when a unit goes into its drill immediately, rather than waiting to think about what to do next.

One final word about something that is a little out of the realm of our usual subject matter, but is as equally important as anything else we do to keep our country strong. In November, we select our country's leadership at every level of government. We in uniform usually find ourselves among the ignored, but it doesn't have to be that way. Our Constitution makes us subordinate to our civilian leadership, but we are equal to any citizen when it is time to say who gets the jobs. Make your voice heard. Register and **vote**.
-- PJC

Mark Your Calendars: The 1989 Armor Conference will take place at Fort Knox, 8-12 May 1989.

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Chief of Staff

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ARMOR

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LETTERS

Chinese Civil War Researcher

Dear Sir:

I am researching a military history of the Chinese Civil War 1945-1950 and am seeking information on the armored forces of the Republic of China. Can any of your readers help me with information on units and operations? I am also looking into the deliveries of armored fighting vehicles to China during the period 1943-1950.

Yours truly,
E.R. Hooton,
24 Seacourt Road
Langley, Slough,
Berks, SL3 8EW, England

Longwinded Gunnery Techniques... Shortsighted Solution

Dear Sir:

This is in answer to SSG Irvin "Red" Thomas' article in the May-June 1988 issue of *Armor*. Before I reply to what I perceive to be his shortsighted article, please let me present some of my credentials to establish my credibility.

In my 25 years experience in *Armor*, 15 of which were spent as a tank commander in a line unit, either as a TC, section sergeant, platoon sergeant, or acting platoon leader, I am left wondering, is it

possible that the basic fire command is so esoteric in nature? So few seem to understand what it is used for, or how to use it.

Why say "Gunner," indeed? The standard fire command is nothing more than a pattern that is followed to bring fire on a target. The beauty of this pattern is that it lends itself perfectly to what it is supposed to do, a succinct, effective way to control the firepower of your tank. Notice that I said "firepower" and not "main gun." Firepower is, in our case, plural, meaning more than one system. Page 6-2 of FM 17-12-1 explains what the alert element is used for. "Gunner" is only one form of the alert. The same thing applies to the am-

DIRECTORY — Points of Contact

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munition or weapon element. (On other tanks in the inventory, this can also include a sight or light that the TC wants used). Many times, the tank commander will be presented with a choice; for example: Your M1 tank comes upon 20 to 30 enemy troops standing around two trucks at a range of 1,000 meters. Using your sample fire command, you tell your gunner, "TROOPS," and lay the gun. The gunner will say "OK...But what do you want me to shoot them with?" It is the tank commander's job to determine how he will engage a target, before the engagement begins. Do you get the idea? Your way, when used outside a range environment, could cause some confusion. On the other hand, the standard fire command format will lend itself to any situation or weapon system. The standard fire command format lets you, the TC, effectively control the firing of your tank. It may help you better understand what is happening if you think about it this way. The gunner handles the gunning, the commander handles the commanding. The fire command, used by a section leader, controls the fires of the section and by a platoon leader, the fires of a platoon.

In all cases, the pattern is the same. Believe it or not, it will even help you assimilate a new member into your crew. Even scouts and replacements from other tank systems are familiar with the events that happen during an engagement. With about five minutes training, I can have an M48 tank gunner functioning on an M1, if I have to. This stuff works. If it ain't broke, don't fix it. Time for a war story to illustrate a point.

When I was a young buck sergeant, I had an excellent gunner who happened to be a Cajun. Now, none of us were ever sure of what this boy was talking about. Oh sure, he spoke English, but in a way that I, and the rest of the crew, had never heard. We were on Range 45 at Graf, I think. I remember it was a night range and the tank was an M60A1. We were just starting our run and had pulled into the first firing position. I got illumination on the target and gave my fire command. Crew responses were perfect, and we sent one downrange. I was sensing over the top of the cupola and saw the round go right over the target. I gave a subsequent fire command of "OVER, DROP ONE," and my gunner responded with "FIRE." Now, I was the tank commander and no one tells my crew to fire but me. I control the tank, no one else. I leaned back to scream at my gunner to get his act together and I saw him leaning back in his seat, looking up at me, and again he said, "FIRE." It was then that I saw that

the whole inside of my turret was lit up and my tank was actually ON FIRE!

The point here is, be very selective in what you are going to have your crew respond with in your fire command. Do you really want him to say FIRE or FIRING or FIRED when you are the tank commander. As a tank commander, you don't want any surprises during an engagement. Start a fire command some day and hear an "Oh, Shit!" right in the middle of it. See what that does to your concentration. SSG Thomas said, "Battlesight gunnery is an idea whose time has come and gone." Come on, Sarge, wake up. Battlesight gunnery works. And this is just what you are talking about, speeding up the firing sequence.

Battlesight gunnery techniques and reduced fire commands (pg 6-10 of FM 17-12-1) let you do just that. The problem with battlesight is that most tankers don't understand what it is, or how and why it works.

Change 2 to FM 17-12-1 (though not perfect) will help to clear this up when it is published. I hope. As for the subsequent fire commands, again, these are control measures for the TC and should not be changed. Subsequent fire commands are not at all complicated. They are nothing more than an adjustment to allow you to hit a target. You tell us to do away with them, then you use them in your samples. I think subconsciously you know there is a need for them.

I saved this next topic for last because it is a particular irritant to me. You state that changing ammo in the middle of a fire command is not a big problem, but the way we do it is. A good commander knows the limitations of his equipment, as well as the capabilities. You then go on to say the UCOFT is programmed for U.S. doctrine. Who said so? I have spent some time in the UCOFT and went through an I/O course. What I got out of the training was a very good understanding of what the COFT is, and how it works.

I needed this in my work to enable me to talk intelligently with the personnel at the COFT center about their training development, problems, and needs. The other thing I got from my COFT training was physically ill. My blood pressure became so high because of the exasperation I felt at the programs in the computers that I did, in fact, become ill. You are absolutely right when you say, "Remember, you do in battle what you do in training." That is what is wrong with the COFT. In order to progress through the

matrix, you have to learn and practice COFT standards. In other words, play the machine. If someone is certified in COFT, that shows me one thing — that he is certified in COFT. He can play the machine. Until a few things are fixed, I will never certify because I refuse to practice bad habits when it comes to tanking. If you want to fix something, then COFT is a great place to start. It needs it.

MG Thomas H. Tait has an article in the same issue of ARMOR where he discusses using rehearsals in training. Read it; the general has it right. He calls it rehearsals; I still call it drill, but it is the same thing. The same principle applies to using a fire command, too. Get the crews to learn the fire command sequence right the first time. Then practice, practice, practice. Drill the mind and the body until you do it without thinking.

I always taught my crews the equipment first, to include the sight reticles, then how to respond to my fire command, not one specific situation. And then I would teach them gunnery. I never trained for a range, only for different types of engagements. If I could see a target, my crew could kill it.

As a final thought, let me say that you are right, Sarge. Lase and Blaze works, and it works well. The M1 is a fabulous piece of equipment. Our boys proved that at CAT-87.

All the TC has to say is TANK-FIRE, or COAX-TRUCK-FIRE. It works. But think of the support they had! Extended field use does cause problems. You have to be able to operate around those problems. The standard fire command, as is, lets you do that. It will help you in the long run.

Believe me, I know. I've been there.

L.E. WRIGHT
Fort Knox, KY

More on Fire Commands

Dear Sir:

The article by SSG Thomas in the May-June issue of ARMOR Magazine brings up many interesting ideas concerning the current "Direct Fire" doctrine, specifically elements of a precision initial and subsequent fire commands, the gunner's response to those commands, multiple tar-

Letters continue on Page 49

MG Thomas H. Tait

Commanding General

U.S. Army Armor Center

So You Want To Command a Battalion...

When promotion or command selection board results are announced, the Armor Center Proponency Office, in concert with Armor Branch, immediately analyzes them. These results are useful to the branch and to the center when we advise officers about their possibilities for promotion, command selection, and, in the case of lieutenants, retention.

The 1988 Battalion Command Selection Board results went through this rigorous process. The records of the 35 selectees were screened, and the results, to those of us who have been involved with boards for some time, were not surprising. In fact, they corroborated what we knew from past experience. For instance, approximately one year ago we looked at the records of 104 serving battalion commanders and battalion command designees and found that 102 served as battalion S-3s or XOs and the other two served as brigade S-3s.

This is the 1988 Battalion Command Selectee Profile:

- The predominant year group was 1971, (57 percent), followed by 1972 (23 percent). Selections were also made from year groups '68, '70, and '73. It is evident that we are selecting younger officers for command. Therefore, it is reasonable to speculate that the predominant year groups for next year's selectees (it will be a larger list) will be 1972 and 1973.

- There were four Vietnam veterans selected — 11 percent. There are very few combat-experienced officers in the queue for

battalion command. This is not terribly important because we did a lot of dumb things in Vietnam, and many of the lessons learned simply do not apply to today's high speed, high technology, heavy combat.

- There were a number of repetitive company commanders, and the length of time spent in command was interesting. The average time in first command was 18 months. The number selected for second command was 13 (37 percent); and the average time in second command was 18 months. Four were selected for third command (11 percent). The average time in third command was 24 months.

- All had served or were serving as a battalion/squadron S3 or XO. The average time in either position was 15 months.

- A smaller number served as brigade/regiment S3s or XOs (14 percent and 17 percent, respectively).

- All were C&GSC graduates (a requirement for promotion to LTC — nothing surprising here).

- Interestingly, 87 percent of those selected had a master's degree or better. However, the board did not consider this a discriminator.

- Of the 35 selected, eight had either Joint Professional Military Education (JPME) or had served in a joint assignment.

There are certain truths: one must command well in order to be promoted to major and subsequent selection for battalion command.

The number of companies commanded is probably not a discriminator; however, if you are a superior company commander, you may very well be selected to command the headquarters element of your battalion/squadron or brigade. The real discriminator is serving as a battalion S3 or XO. It is readily evident in Armor that if you haven't done so, your chances for battalion command selection are poor at best.

The next question is how do I get to serve in a battalion as a major? First, ensure that Armor Branch knows your desires. Then, if assigned to USAREUR or a large installation like Fort Hood, it is up to you to make every effort to get to a battalion. As a personal experience, when commanding the 1st Independent Cavalry Brigade of the 8th Imperial Division in Mannheim (1979-1981) I had difficulty getting Armor majors into the tank battalions and the cavalry squadron. There were plenty of them in Heidelberg, but they were too comfortable or too important. My advice is to seek the troop assignments if you want to be a warrior leader. We have all kinds of opportunities to track in alternate specialties. We need warriors in a command track — our soldiers deserve that.

After all, *warfighting is not an amateur sport!*

Treat 'Em Rough!

(CPT Fierko, Office of the Chief of Armor, provided statistics.)

RECOGNITION QUIZ

This Recognition Quiz is designed to enable the reader to test his ability to identify armored vehicles, aircraft, and other equipment of armed forces throughout the world. *ARMOR* will only be able to sustain this feature through the help of our readers who can provide us with good photographs

of vehicles and aircraft. Pictures furnished by our readers will be returned and appropriate credit lines will be used to identify the source of pictures used. Descriptive data concerning the vehicle or aircraft appearing in a picture should also be provided.

Answers on Page 48



Armor in Low-Intensity Conflict (LIC):

The Soviet Experience In Afghanistan

(Part II of two parts)

by Major Michael R. Matheny



Although armor was born on the high intensity battlefield, both superpowers have employed mechanized forces in low intensity conflict. At first, the U.S. Army expected no role for armor in Vietnam, but the employment of mechanized forces grew steadily throughout the conflict (see July-August 1988 *ARMOR*). In contrast, the Soviets overrated the role of armor in Afghanistan.

Prior to the Soviet invasion of Afghanistan, in a number of articles which discussed mountain warfare, several military authors writing in *Voennyi Vestnik* confidently asserted that tanks could operate "jointly with motorized rifle and artillery units, and even sometimes independently."¹ By 1982, after three years of fighting, articles discussing armor operations in mountainous terrain were much more cautious.² In the same year, the popular press in the West claimed that the Soviets had changed their tactics in Afghanistan.³

In both Vietnam and Afghanistan, the success of armor depended upon the function it fulfilled within the combined arms team. J.F.C. Fuller defined these functions as finding, holding, hitting, protecting,

and smashing. In a previous article, I examined the role of armor in Vietnam using these functions to analyze the doctrine for armor in LIC. Now, I propose to do the same for the Soviet employment of armor in Afghanistan and then suggest the implications for armor doctrine in LIC.

The first Soviet postwar (WWII) experience in low intensity conflict began on 24 December 1979 when the Red Army invaded Afghanistan. In a well-planned operation, an airborne division seized the capital at Kabul, while two motorized rifle divisions attacked from across the Soviet border. The invasion force grew into the 40th Combined Arms Army, with seven motorized rifle divisions and an airborne division, supported by five air assault brigades. The Soviet divisions came into Afghanistan with no specific doctrine for counterinsurgency. They came armed only with their superior technology and a conventional doctrine to employ it.

Combat operations in Afghanistan essentially mean mountain warfare. The range of the Hindu Kush covers half the country, with peaks rising to 17,000 feet. Although the Soviets consider combat in moun-

tains as warfare under special conditions, they have no specific doctrine for fighting guerrillas in mountainous terrain. Apparently, they believe that tactics suitable for combatting regular forces will work equally as well against guerrillas. The key elements in their offensive doctrine for mountain warfare are their unshakeable faith in combined arms and the importance of mechanized forces.

Soviet doctrine foresees an important role for all the arms of service in mountain warfare. Recognizing the difficulty of massing artillery fires and "the limited accuracy of artillery in the direct-fire role, tanks supplement the artillery and provide support by fire for maneuver forces."⁴ The Soviets consider the BMP particularly suited for combat in mountainous areas because its armor can protect the infantry squad while its armament can hit the enemy.⁵ With the exception of special operations forces, the entire Soviet army is mechanized. The very force structure of the Red Army suggests that primarily mechanized forces will fight mountain warfare. The doctrine does state that motorized rifle troops will dismount to attack, but they will attack with support from both tanks

and BMPs. Airmobile infantry is also important and can secure high ground otherwise inaccessible to the motorized troops. All combined arms encircle and destroy the enemy in a coordinated attack.

In a typical attack, helicopters conduct reconnaissance ahead of the main body. On the ground, combat reconnaissance patrols scout ahead to identify less accessible routes for possible use by the outflanking detachment. The main body proceeds up the most accessible route. The next take the commanding heights along the route of advance or to the rear of the enemy at all costs. The outflanking detachment, which can be either motorized rifle units or airmobile troops, does this. The outflanking detachment would ideally contain artillery and engineers. Once the dominant heights are secure, a coordinated attack — preferably from two directions — completes the encirclement and destruction of the enemy.⁶

The functions of the various arms determine their employment. Helicopters and ground reconnaissance units find; tanks and mechanized infantry protect, hit, and destroy; airmobile infantry also fix and destroy; finally, artillery, rotary, and fixed-wing aircraft hit. Soviet officers probably had little idea how to adjust this tactical system in order to work in the low-intensity environment of Afghanistan.

Shortly after the invasion, the Soviets began large-scale offensives to pursue the *Mujahedin*, the resistance forces, to their strongholds. In February 1980, 5,000 Soviet troops attacked into the Kunar Valley. For two days, the Soviets hammered the area with artillery and air strikes. Troops then airlanded onto the nearby ridges. Following the air assault, "columns of tanks and BMP

infantry combat vehicles swept rapidly northward, ploughing through whatever was left of the settlements."⁷ The offensive drove many of the Afghans into exile, but failed to crush the resistance.

A year later, the Soviets were unable to do any better. Some Western observers claimed the "Soviets' tactical reliance on armor curtailed their effectiveness in dealing with the guerrillas."⁸ At least one analyst pointed simply to the Soviet inability to execute their own doctrine. The motorized rifle divisions that took part in the invasion had at least 50 percent reservists on 90-day call-up. Training was certainly an important factor. A year after the invasion, however, an eyewitness account of a battle that took place at Paghman, 15 miles northwest of Kabul, offers some insights. In the three-day battle, the tanks and BMPs made headway over the hilly terrain. However, only a few reluctant Afghan infantry units (forces of the Soviet-backed regime) supported the armor. The Afghan infantry failed to close with the enemy. The *Mujahedin* roamed the battlefield in small groups, armed with RPG-7s and antitank grenades. Despite their advance, by the third day, the Soviets were forced to withdraw their armor.⁹ Obviously, when the infantry failed to fulfill its function, the combined arms team was broken.

The reluctance of the Afghan units to attack their countrymen was understandable. Within a year of the invasion, the Afghan army disintegrated, from a force of 90,000 men in 1979 to 30,000 in 1981. The Soviets looked for solutions by increasing their troop strength and adjusting their tactical system. Less willing to depend on their allies, the Soviets annually increased their troop strength by 10,000 in 1981, 1982, and 1984. Soon these Soviet

troops were taking the field and assuming more of the combat burden. The Soviets also began what one observer called, "a trial-and-error search" for tactical solutions.¹⁰

By 1982, the Soviets continued large-scale offensives, but with some new tactical adjustments, principally with a marked increase in the use of airmobile and special operations forces. In May and June, the Soviets and their Afghan allies massed 15,000 troops against 3,500 *Mujahedin* in the Panjshir Valley, 40 miles north of Kabul. The Soviets attacked into a 300-meter to two-kilometer-width gorge. Air assaults descended on the ridges, while an armored column attacked up the valley. The air assaults ran into stiff resistance and had to withdraw. Without command of the dominating heights, the Soviets took heavy losses. After a good deal of fighting, the Soviets declared victory and returned to their permanent garrisons. The *Mujahedin* returned also, which prompted another Soviet offensive into the Panjshir later the same year.

On better ground, the Soviet mechanized forces found it much easier to encircle and thus obtain better results. The city of Herat sits at the western foot of the Hindu Kush near the desert. It had long been a hotbed of resistance. Following the Panjshir operation, the Soviets surrounded Herat with more than 300 armored vehicles and conducted a house-to-house search. Most of the *Mujahedin* had fled, so the Soviets met little resistance.¹¹ All the same, the Soviets reestablished their control of the city.

The most effective tactical adjustment made by the Soviets was the increased use of special forces (*Spetsnaz* and airborne units) in small-scale search-and-destroy mis-

sions. Curiously, even these operations occasionally involved armor. A British journalist traveling in Afghanistan reported a mechanized ambush. Six BMDs were airlifted into a *Mujahedin* infiltration route along the Pakistan border just before dark. In a 10-day period, the small armored force destroyed six insurgent supply groups and killed 18 *Mujahedin*.¹²

Most heliborne operations were still in support of large-scale offensives, which depended mainly on mechanized forces in the combined arms team. The Kunar Offensive, which took place in May 1985, is a good example of the evolution of

the Soviet tactical doctrine and its effectiveness. The primary objective of the Kunar operation was to open the Jalalabad-Chagha Sarai road and establish security posts to block *Mujahedin* infiltration routes into Pakistan. The operations also had the subsequent mission to destroy insurgent strongholds in Pesh Dara and Asmar. Finally, the Soviets intended to relieve the garrison at Barikot, which had been besieged by the *Mujahedin* for over a year. To accomplish these goals, the Soviets gathered two Afghan infantry regiments, two Afghan commando units, a border brigade (all Afghan units were at 50-percent strength), a Soviet motorized rifle

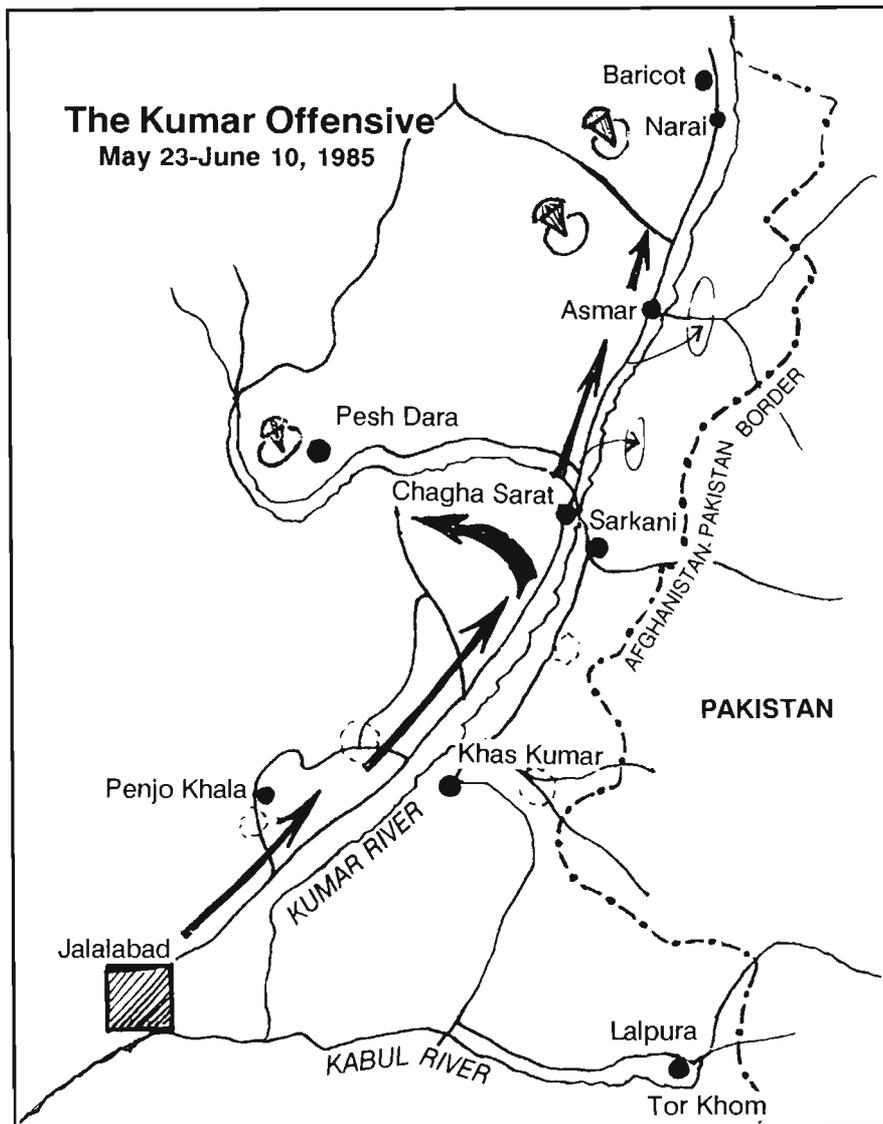
"Soviet success, however, was only temporary. Once the Soviet troops returned to their permanent bases, the Mujahedin eliminated the isolated security posts..."

regiment, and a *Spetsnaz* battalion. On 23 May, the Soviets led the way from Jalalabad to Changa Sarai.

After establishing security posts along the highway and a strong firebase at Changa Sarai, the Soviets launched attacks on two axes, with a supporting attack toward Pesh Dara. An air assault, planned to assist the advance, became isolated when the ground attack stalled. The air assault force suffered heavy casualties and had to withdraw by helicopter. The main attack to Asmar was also supported by *Spetsnaz* commando teams, which seized key points along the route. The *Spetsnaz* teams leapfrogged ahead of the main body during the day, but withdrew at night. Fierce battles broke out near Narai, but with the help of 150 helicopter gunship and aircraft sorties a day, the Soviets pressed on toward Barikot. As the main column approached Barikot, the Soviets airlifted a strong striking detachment into the garrison. They then launched a pincer attack simultaneously from the garrison and the relieving column. In the face of such pressure, the *Mujahedin* withdrew into the mountains.¹³

Soviet success, however, was only temporary. Once the Soviet troops returned to their permanent bases, the *Mujahedin* eliminated the isolated security posts and once again besieged Barikot.

In 1985, Soviet offensive tactical doctrine still called for mechanized forces to protect, hit, fix, and destroy the enemy.¹⁴ In practice,



...An uphill fight

In Afghanistan, the Soviets quickly learned that they could not maneuver along valley floors unless they controlled the heights along the route. These photos are from Soviet publications.



Soviet experience in Afghanistan paralleled the U.S. Vietnam campaigns against similar indigenous guerrillas.

The Soviets discovered that while they might win set-piece battles, it was difficult to find and fix the Mujahedin. And even if they gained control of an area, they had to remain there if they wanted to keep it.



special heliborne forces most often compromised the outflanking detachments to fix the enemy. As is evident in the Kunar operation and others, the mechanized forces could hit and protect, but rarely could they fix or destroy with significant results. The Soviet doctrine remains basically the same; seize the heights, then encircle and destroy with a coordinated combined arms attack. The Soviet mechanized forces were unable to fulfill their prescribed functions, and so their role in the combined arms team changed. Mechanized forces continued to be the primary instrument in large-scale offensives to protect Soviet troops while hitting the enemy. Special heliborne forces fix and in small-scale operations find, fix, and destroy. Other adjustments to the offensive tactical doctrine have included saturation bombing from high-altitude bombers, and chemical weapons.

The failure of Soviet mechanized forces to perform as prescribed is probably due to terrain, organization, and the influence of their operational plan for victory. Years ago, J.F.C. Fuller granted that truly steep terrain was unsuitable for mechanized forces. Instead, he emphasized their utility in securing the valley floors.¹⁵ Obviously, there are places where tracked vehicles simply cannot go. When the *Mujahedin* withdrew into the mountains, often they could be pursued only by foot and fire. A doctrine that called for outflanking detachments composed of mechanized forces and other combined arms elements, such as engineers and artillery, was bound to undergo some adjustments.

The organization of the Soviet Army, most of which is mechanized, encouraged the Soviets to try the same old hammer and anvil tactics. Their insistence on combined arms is certainly correct in the right

place, but operations in difficult terrain — mountain or jungle — call for a high order of cooperation. In many of their operations, they appeared unable to execute their doctrine or the adjustments they made due to poor synchronization of the combined arms. Isolated air assaults, failure of the infantry to close with the enemy, failure of the combined arms to fulfill all the tactical functions required to destroy the insurgents, were all key problems. Some readers may point to poor training or reluctant allies, but part of the reason may lie in tactical organization. If the U.S. Army was any better using mechanized forces in Vietnam, it may have been due to the concept and organization of armored cavalry. Although the Red Army has reconnaissance units, it has no comparable organization for an organic combined arms force. The American ACR is a balanced force, combining all the arms in a tightly-knit unit, which constantly trains as a team.

Finally, to a much greater degree than was the case in Vietnam, the Soviet operational plan influenced tactics. Apparently, the Soviets intended to defeat the insurgency at an operational, rather than tactical, level. They used military force not so much to destroy the insurgents, but to exhaust and attrit them. The Red Army protected the urban areas and lines of communication, patiently waiting for the insurgency to collapse, or for Sovietization to remold the country. In order to minimize political and military costs, they maintained a relatively small force to deal with an insurgency in a large country. In short, the Soviet doctrine for mechanized forces in Afghanistan did not work to crush the resistance because the number of troops was insufficient. The Soviets, "in contrast to American policy in Vietnam, would apparently rather risk losing tactically than

spending more on their purely military adventures."¹⁶

Whether in Afghanistan or Vietnam, history demonstrates that armor does have a role in LIC. The most appropriate tactical doctrine for mechanized forces in LIC depends upon the combat function they will serve within the combined arms team. As noted, these functions will vary with terrain and the operational plan. At the very least, armor has demonstrated that in the LIC environment it can protect and hit. When properly organized and employed, it may also be used to find, fix, and — in conjunction with the other arms — destroy insurgent forces. To make the most of armor on the LIC battlefield, an army must have a good combined arms doctrine before it is committed to fight. The evidence suggests that mechanized forces are best employed in battalion- to brigade-size small-scale cordon search operations. Their mobility and firepower are best employed in encirclement operations, or as a reaction force, or reserve.

Keeping Fuller's battlefield functions in mind, the implications for armor in LIC may look like this:

Protect: In the near term, operations require a light armor vehicle of 15-20 tons to meet deployability requirements. Strap-on armor might be an alternative once the vehicle deploys to the contingency area.¹⁷ If money is not available for research and development of a new vehicle, modified M2s or M3s would be preferable to less effective alternates, such as the HMMWV or a product-improved M551. In fact, weight of the vehicle is less a deployability problem for LIC than other levels of war. Light forces can initially secure the endangered government until the heavier and better protected armored vehicles

arrive. Although a light tank may be the optimum solution, we should not hesitate to deploy M60 or M1-series tanks with follow-on contingency forces involved in LIC.

In the future, the next generation of armored vehicles should have a common system base. If weight could be reduced to the 35- to 40-ton range, similar to the current family of Soviet tanks, deployability of main battle tanks would greatly improve. In this case, a standard organization for armor units would become possible, perhaps eliminating the need for light armor units. Since deployability drives armor to reduce weight and thus reduce protection, research and development should focus on improving the means of transporting heavier vehicles and developing lighter armor.

Hit: In the near term, fire systems that suppress, such as the 25-mm automatic cannon and the grenade launcher, should be most effective in permitting forces to close with the enemy. Large-caliber direct-fire weapons, such as the 105-mm tank cannon, remain effective against insurgent fortifications and point targets.

In the future, a major concern in LIC is to limit the destruction caused by military operations. We should push technology to develop acquisition systems that permit the delivery of direct and indirect "smart" munitions. Discreet fires would limit collateral damage.

Find: Local and battlefield intelligence play a large role in locating the enemy. The combined arms organization on the LIC battlefield should have an attached or organic military intelligence company. Organic aerial reconnaissance assets would also increase effectiveness.

Fix: In the near term, using air-mobile and ground forces to fix the

enemy through encirclement will continue to be the most viable method. Whether air-mobile infantry or fast-moving mechanized troops do this will depend upon the terrain and the urgency of the situation.

In the future, technology and doctrine should look at the development of armor vehicles that a helicopter can deploy to the battlefield. In appropriate terrain, this would give the fixing force the advantages of protection, firepower, and mobility after commitment. We may also wish to consider the potential of a non-lethal incapacitating gas. Once such a chemical weapon is delivered into a suspected insurgent area, protected troops could quickly move in to search and sort out insurgents from civilians without loss of life.

Destroy. Combined arms will remain the most successful way to conduct offensive operations in LIC. A single combined arms doctrine, which prescribes the tactical employment of all arms, to include the armored cavalry, will contribute strongly to our chances of success in the most frequent level of war — low intensity conflict.

Notes

¹Larry A. Briskey, Soviet Ground Forces in Afghanistan: Tactics and Performance, unpublished graduate paper, Georgetown University, 1983, p. 5.

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³Aernout Van Lynden, "Soviets Change Tactics Against Afghan Rebels," Washington Post, 27 Dec 1982, p. A-26.

⁴General Lieutenant D. Shrudnev, Voyenny Vestnik, July 1978, quoted in Briskey, Soviet Ground Forces, p. 17.

⁵C. N. Donnelly, "Soviet Mountain Warfare Operations," International Defense Review, June 1980, p. 829.

⁶ Ibid, p. 831.

⁷Edward Giradet, Afghanistan, The Soviet War, St. Martin's Press, NY, 1985, p. 33.

⁸Van Lynden, "Soviets Change Tactics," p. A-26.

⁹Ibid.

¹⁰Zalmay Khalilzad, "Moscow's Afghan War," Problems of Communism, Jan-Feb 1986, p. 4.

¹¹Charles Doe, "Soviets See Time on Their Side in Afghanistan," Army Times, 21 Jan 1985, p. 28.

¹²David Isby, The Better Hammer, Soviet Special Operations Forces and Tactics in Afghanistan, 1979-1986, unpublished paper, 1986, pp. 26-27, 255P255D

¹³This account is taken from COL Ali Jalali, The Soviet Military Operation in Afghanistan and the Role of Light and Heavy Forces at Tactical and Operational Level, Light Infantry Conference, Seattle, WA, 1985, pp. 178-179.

¹⁴For a discussion of Soviet offensive tactical doctrine see COL G. Ivanov, "Battle in a Canyon," Krasnaya Zvezda, 1 Oct 1985, translated by JPRS-UMA-85-068.

¹⁵J.F.C. Fuller, Armoured Warfare, Greenwood Press, Westport, CT, 1983. Originally published in 1931 as Lectures on FSR III, p. 168.

¹⁶COL Jalali, Soviet Operations, p. 163.

¹⁷Directorate of Combat Development, Armor Support of Light Forces, transcript of concept briefing, 17 Jan 1984.

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Team Battle Drills: Translating Doctrine into Action

by Captain Ed Smith

Well-rehearsed battle drills are the hallmark of a good unit. Most units understand and can quickly prioritize individual training, but the number of collective tasks that a company/team must be able to execute often overwhelms them. Battle drills are the key building blocks for performing more complex tasks, such as a night attack against a strongpoint, and also provide a framework for training specific skills, such as scanning and target acquisition. In addition, they ease the rapid assimilation of new units and new soldiers. Battle drills enable the small unit leader to translate doctrine into specific actions on the battlefield.

Examples of the following seven battle drills for offensive operations are:

- Actions on Contact
- Hasty Attack
- Hasty Breach
- Movement Formations
- Hasty Defense
- Reaction to Indirect Fire
- Reaction to Air Attack

Although not all-inclusive, these battle drills generally address the most frequent small unit engagements that will occur during offensive operations. They are in order of importance, and cover those engagements where we stand the greatest chance of killing the enemy or of suffering the greatest number of casualties. These drills are not a substitute for the detailed planning so necessary for a deliberate attack, but rather serve as a quick reaction to the unexpected. Record the battle drills in the unit's tactical SOP, and be as specific as possible at the squad and tank level. The use of matrices to detail individual squad and crew member actions for each drill is a good way to spell out expected standards.

In garrison, practice the drills dismounted on a weekly basis and reinforce with mounted drills when resources permit. The drills in this article are for a tank-heavy team (M1-M113 mix) with Stinger (1/4-ton mounted) and attached FIST.

Actions On Contact

Our doctrine states that, upon contact, the team returns fire, seeks cover and concealment, reports and then develops the situation. However, doctrinal publications fail to emphasize that the primary reason for actions on contact is to survive long enough to destroy the enemy by some other maneuver. The team's only recourse may be an immediate assault of the enemy force, but survival remains the underlying purpose. The commander translates these general requirements into specific actions. The reaction must be violent and it must be automatic. Unfortunately, most units do not develop violent battle drills for actions on contact. The typical unit makes contact with the enemy, stops, and dies. It does not return fire because it doesn't see the enemy. It doesn't move to cover and concealment because there isn't any. It often dies before it can report.

Actions on contact are easier to understand if we think of the enemy fire sack as either a near or a far ambush. Far ambushes are much more common, because the enemy retains his standoff distance to shoot at us longer with his direct

and indirect fires. In a well-designed fire sack, the nearest thing to a covered and concealed position can only be found by moving out of the enemy's fire sack or by seizing the enemy positions. In the far ambush, backing out of this fire sack offers the shortest path to a "position" not covered by direct fire. Moving 500 meters to the rear temporarily pulls our chestnuts out of the fire and enables the command to survive the initial contact with maximum forces intact. However, if the enemy positions are closer than the nearest "position" outside the fire sack, the team faces a near ambush. In this instance, the lead platoon assaults the enemy position with all weapons firing in the direction of contact. Of the two types of ambushes, the near ambush is the most dangerous. Fortunately, it is the least likely of the two, due to its high risk for the enemy (exposed flanks and rear) and the limited availability of natural reverse slope positions in most terrain. As a result, the team's initial actions on contact are always for a far ambush. In both cases, the team fires rapidly, regardless of whether it has a target in its sights or not. During the operations order sequence, the commander must template at what point along the unit's axis of advance he anticipates a near ambush (defiles, built-up areas, and woodlines) and where he expects a far ambush.

Anyone may initiate the actions on contact drill. All crews immediately return fire in their assigned orientation, or at identified targets. Simultaneously, the drivers put the vehicles into reverse (unless they can see a covered and concealed position within 100 meters), activate the on-board smoke system, and back up 500 meters. The designated crewman (it doesn't have to be the vehicle commander) gives a brief alert over the radio, per unit SOP.

Most units don't return fire because they do not see a target and they cannot find enough dead space to obtain cover and concealment. One quick radio transmission, by any crewman: "CONTACT FRONT (or LEFT, RIGHT, REAR)," weapons firing, and the lead platoon moving to the rear at high speed in a cloud of smoke will let everyone know that the team has made contact, that it's a far ambush, and the general direction. The lead platoon and the overwatching platoon are now moving back out of immediate danger, and the commander can enjoy a brief respite while he obtains more information and decides upon his options (hasty attack, hasty defense, bypass, or continue to develop the situation). The FIST requests fires, the executive officer reports to task force, and the platoon leaders look for favorable indirect routes to assault the flanks of the enemy position.

Only a platoon leader or the team commander initiates the actions-on-contact drill. He announces "ACTION FRONT (or LEFT, RIGHT, REAR)." He then leads the platoon into an immediate assault of the enemy position.

All tanks guide on him in a wedge and place all fires at either identified targets or likely enemy locations. The crews do not activate on-board smoke systems and do not stop until the platoon leader issues further instructions.

In both versions of this battle drill, the overwatching platoon leader gives an immediate support by fire command to his platoon. Target priorities, in order, are: observed enemy positions, lead platoon's tracers, and likely enemy positions.

The overwatching platoon leader places the highest possible volume

"During the operations order sequence, the commander must template at what point along the unit's axis of advance he anticipates a near ambush (defiles, built-up areas, and woodlines) and where he expects a far ambush."

of fire onto his target area and moves as necessary to prevent the lead platoon from masking his fires and to see his target area.

Hasty Attack

After the initial actions on contact, the commander analyzes his options and determines, based on his understanding of the mission and his war-gaming, that a hasty attack is the appropriate option. By definition, the sequence of events for any attack involves the troop-leading steps and the concomitant decision-making process. However, since companies frequently conduct hasty attacks, a drill-like series of steps will increase the unit's chances of success.

The commander delays the assault to ensure the positioning and availability of dismounted infantry, indirect fires, and the support-by-fire element. The hasty attack battle drill uses the lead tank platoon as the support-by-fire element and the other tank platoon, followed by the mounted infantry platoon, as the assault element.

First, the commander queries the FIST to determine if he can suppress the position the commander wants to assault, isolate mutually supporting positions (real or templated), and screen the movement of the assaulting platoons. Next, the commander places the

support-by-fire element in the most advantageous position not masked by the assault. The commander will also cast about for other elements in the task force that may be available for supporting fires. In a mechanized task force, the antitank company/team will be the most responsive and the task force commander usually places it in a support-by-fire role. Don't overlook the availability of a supporting Vulcan unit. Finally, the commander refines the exact route for the assaulting platoons. The route crosses as little of the fire sack as possible and seeks the likely flank of the nearest enemy platoon position. The commander's frag order to the key leaders includes control measures



"Don't overlook the availability of a supporting Vulcan unit..."

that are easily identifiable on the ground and a tentative dismount point for the infantry platoon. The commander strives for a large volume of indirect and direct fire to achieve fire superiority. If indirect fires are not available, the attack will rapidly become a multiple-arms fight instead of a combined-arms fight. The absence of indirect fire support will reduce the chances of success and will require very responsive supporting fires.

Before the assault force begins to move, the commander issues a support-by-fire command to the supporting tank platoon, and adjusts indirect fire. For example, the command, "Sierra 11, support-by-fire, 2 and 3, checkpoint A12," orders the platoon to support-by-fire with two rounds main gun per tank and three bursts of automatic fire per tank, per minute at checkpoint A12. However, if the tank platoon sees another target, it may engage it with the most appropriate weapon. The tank platoon leader confirms the target by using a white phosphorus round or any type of tracer ammunition that will reach the target reference point. The commander adjusts this as necessary. The assaulting platoon leaders will be keenly interested in this process. The supporting platoon commences firing and continues to fire until the assault element masks its fire. The platoon leader continues to reposition his platoon to support the assault. The support-by-fire platoon sergeant reports ammo levels, by 10 percent increments, over the company nct. At a predetermined ammo level — for example, 40 percent — the platoon leader questions the commander about continued ammo expenditure rates. At this point, the first sergeant begins emergency Class V resupply for that platoon, and the commander ad-

justs the rate of fire. The FIST attacks the team objective with artillery before the team reaches the fire sack, and uses mortars for assaulting fires. He continually adjusts the mortar fires to move 600 meters in front of the lead platoon. Six hundred meters from the first enemy position, the lead platoon leader calls for the artillery to lift and to shift to the closest mutually-supporting platoon.

The assaulting tank platoon leads, firing coax at all likely positions. The platoon leader reserves main gun fire for actual infantry positions and likely armor vehicle fighting positions. The infantry platoon moves mounted until the tank platoon encounters a position that it cannot destroy, or reaches terrain it cannot traverse. The infantry platoon then dismounts and assaults.

To distinguish between enemy and friendly infantry at distances over several hundred meters is difficult. Consequently, the commander must continue to designate control measures (no fire areas, engagement areas, and target reference points) in order to shift fires away from friendly forces as they advance.

Once the infantry dismounts, he may order support elements to cease engaging all infantrymen, unless attacked or requested by the infantry platoon leader for a specific area. The dismounted infantry leaders mark their positions. The infantry can use colored smoke, aircraft recognition panels, tracer fire, and relationships to terrain.

The infantry platoon destroys enemy infantry and pressures enemy armored vehicles to displace. The enemy vehicles now have a choice to either stay to die from a Dragon round, or to withdraw. The enemy

"Infantry fighting vehicles lack the necessary firepower and protection to survive the initial actions on contact and to rapidly kill all types of enemy armor. Therefore, tanks should lead unless the commander's need for security requires the use of dismounted infantry."



vehicles will probably displace. During the time the enemy vehicles are moving they are most vulnerable to the supporting tank's fire. This "bird dog and shotgun" routine enables the infantry to flush the enemy and the tanks to kill them. Although the infantry will be doing most of the work, the tank cannon will kill the bulk of the enemy armor.

The commander now designates control measures for consolidating the enemy position. The designated target reference points identify mutually-supporting enemy positions on the flanks, likely counterattack routes, and the most likely route for continued team movement. The executive officer announces the location for the company combat trains and decides whether he will require the platoons to evacuate casualties to the company combat trains or if he will "tail-gate" the trains to the line platoons. The first sergeant receives the personnel and equipment status from each platoon sergeant in order to direct cross-levelling of people and equipment and request urgently needed items.

Hasty Breach

The lead platoon detects an obstacle and immediately begins contact drill actions. This drill assumes that the enemy will cover his obstacles with fire. The initial report describes enemy activity and the obstacle type.

The first vehicle turns left, the second vehicle turns right and both

reconnoiter the obstacle. The two crews seek the following information:

- Feasibility of forcing the obstacle
- Location of bypass, if any
- Likely breach site (one with most dead space)
- Location for support-by-fire position

The remaining vehicles of the lead platoon also identify near-side security positions (support-by-fire positions). The FIST requests indirect fires that will obscure enemy observation of the team's hasty breach and fires that will suppress known and likely enemy positions that can place direct fires onto the team. The closer he can place the smoke to the enemy, the better. The FIST avoids placing smoke on the team and on the obstacle. The infantry platoon leader moves forward, selects a place to dismount his far-side security force. This element, led by the platoon leader, clears a footpath, using wire cutters and grappling hooks. This force moves to those positions that can place direct fires on the obstacle. The far-side security force maneuvers with all of the platoon's Dragons.

The far-side security force places suppressive small arms fires and antitank fires on those enemy forces that can disrupt the breaching and assault force's operations. The far-side security force communicates with the near-side security force in order to adjust the near-side security fires onto positions the tank

platoon may not have identified. As a result, the far-side security force may have to move as far as two kilometers in open terrain. Under no circumstances does the far-side security force breach a footpath and just flop down on the other side of the obstacle. The near-side security force can already cover that far. The remaining squad-sized force conducts a hasty breach using explosives or grappling hooks to physically move surface-laid mines. If the mines are buried, the breaching force must use mine detectors and probes to locate and destroy (or remove) the mines. The breaching force then marks the breach site using smoke, engineer tape along the boundaries of the lane, or aircraft recognition panels elevated on long pickets near the entrance of the lane. The assault platoon moves through the lane, proofing it, and continues the mission.

Movement Drills

Although there are a large number of possible formations, consider limiting the team to five basic formations: column of platoon wedges, team diamond, staggered column, column, and the line formation. The keys to security during movement are good target acquisition skills, overwatch elements, platoon leaders alert to changing requirements for dispersion, and making contact with the smallest enemy force possible. Consequently, do not shortchange unit alertness for the sake of a tidy appearance. Infantry fighting vehicles lack the necessary firepower and protection to survive

the initial actions on contact and to rapidly kill all types of enemy armor. Therefore, tanks should lead, unless the commander's need for security requires the use of dismounted infantry.

The platoon wedge should rarely exceed 200 meters in width. The platoon is not the element we want to spread out. The commander should consider the diamond or column of platoon wedges when his estimate dictates greater dispersion. Except during a movement to contact, most company/team formations should not exceed 800 meters in width. Distances greater than 800 meters make it difficult to achieve mass, and strain the command and control functions. This becomes more obvious once the entire battalion or brigade is viewed, rather than the company in isolation. The company combat trains, executive officer's tank maintenance track (with the first sergeant onboard), medic track, and the recovery vehicle follow as a fourth platoon in a like formation equidistant from the other platoons. None of the formations include wheel vehicles; due to their vulnerability to small arms and indirect fire.

If speed is important, and forward units provide security, then the commander may elect to use the column or the staggered column. Periods of low visibility may also force the use of a column formation.

Finally, the line formation can quickly posture the team for a support-by-fire mission or a hasty defense. The unit staggers the line formation to achieve some depth and flexibility.

Regardless of the type of formation, the lead platoon routinely dismounts crewmen before crossing danger areas. Each crewman dis-

mounts with essential equipment (weapon, binoculars, and protective mask).

The commander gives specific responsibilities to the platoon for scanning; for example, "Lead platoon to the front, second platoon to the left, third platoon to the right, and keep the team aligned with Bravo Team. The combat trains will maintain air guard and alignment with Co C to our rear."

Hasty Defense

Often, we use the hasty defense to assume a support-by-fire role or a counterattack-by-fire mission, rather than for a defense. Calling the drill a hasty defense places attention on the necessity to mass fires on TRPs along avenues of approach. The commander's frag order addresses the threat size and direction, the avenues of approach designated by his control measures, the indirect targets with their trigger points, likely air approaches, and the surveillance responsibilities for each platoon.

Reaction To Indirect Fire

The commander must cover the indirect fire threat in his instructions. He should template the maximum engagement lines for artillery and mortar fires. The team needs a good idea of where to expect fires, the typical sheaf dimensions, and when vehicles must mask during the operation if attacked with indirect fires. The unit must move out of the impact area as quickly as possible



"Under no circumstances does the commander permit the Stinger crew to fight from the assigned wheel vehicle...Since there is not enough room in a tank, the commander selects an infantry vehicle, the maintenance track, or the recovery vehicle, for inside protection for the two-man Stinger team."

while maintaining command and control. When under indirect fire, the unit cannot accurately return fire and cannot observe. If the unit does not move, all it can do is remain suppressed and become casualties.

If the team has not yet engaged, then it moves at an increased speed along the direction of march. If within range of direct fires, and not overwatching another element, it moves back 400 meters. If defending, it moves to alternate positions. When supporting-by-fire, the team moves forward 400 meters and then moves back as soon as the fires lift. The support-by-fire unit's overriding concern is its ability to continue to provide fires.

Reaction To Air Attack

Under no circumstances does the commander permit the Stinger crew to fight from the assigned wheel vehicle. The supply sergeant supervises the movement of the Stinger

wheeled vehicle to a more suitable area. Since there is not enough room in a tank, the commander selects an infantry vehicle, the maintenance track, or the recovery vehicle for inside protection for the two-man Stinger team and its missiles. Place half of the missile load on another vehicle.

Passive: If not attacked, the air guard platoon announces, "Bandits, East. Freeze," and the team immediately stops. The Stinger gunner dismounts and prepares to engage.

Active: When attacked, the unit returns fire and disperses. The air guard platoon announces, "Bandits, East. Fire." The air guard platoon acknowledges any early warnings relayed by stations monitoring other nets. Due to the rapid nature of air strikes, each shooter judges when he should fire. Massed fire commands, while desirable, are usually impractical. All weapon systems, except tank cannon, engage attacking fixed-wing aircraft that close within one kilometer. Crews use tank cannon against rotary wing aircraft.

After each Stinger engagement, the gunner reports the number of missiles fired and the number remaining. At the 50-percent point, the first sergeant obtains emergency resupply of Stinger missiles. Each platoon leader reports the number of automatic weapon engagements from his platoon.

Conclusions

Based on experience at the NTC, battle drills do not lend themselves well to a defensive operation. The uniqueness of each avenue of approach and the resulting engagement areas, TRPs, siting of obstacles, and selection of fighting positions require original thought. Nor do battle drills appear to work

"Many units training at the NTC do not survive the initial actions on contact simply because the team lacks a rehearsed battle drill.

An appropriate battle drill enables the unit to react quickly and devote attention to the unique aspects of each combat situation."



well at the task force level for more than a movement to contact because of the greater spectrum of options and uncertainties present in larger formations. These battle drills do not cover every aspect of offensive operations. However, they do cover the most important actions a unit will encounter during most offensive operations. Commanders can use these drills as a starting point and modify them to fit their theater of operations and their unit's mission essential task list.

Many units training at the NTC do not survive the initial actions on contact simply because the team lacks a rehearsed battle drill. An appropriate battle drill enables the unit to react quickly and devote attention to the unique aspects of each combat situation.

Captain Ed Smith was commissioned in Armor from West Point in 1977 and served as a company commander with the 1-68 Armor in West Germany. He also served as high school ROTC liaison officer in the 1st ROTC Region. Since 1985, he has been assigned to the National Training Center, where he has taken part in more than 37 rotations. He is presently assigned as the NTC's mechanized infantry task force battle staff analyst.

Calibration Vs. Zeroing



by Captain Mark T. Hefty

The M60A3 main battle tank has a complex fire control system. The current method of calibrating the M60A3 is to conduct an accurate boresight, then fire a round at a 900-meter target panel. If the round hits the target, the tank then fires a confirmation round at a 1,500-meter target panel. If that round hits, then the tank is calibrated. If the first round hits and the second round misses, a third round is fired at a 1,250-meter panel. If that round hits, the tank is calibrated.

If the tank misses the first round at the 900-meter panel, it is not calibrated, and the crew must check several items, such as boresight and knob settings on the gunner's control unit (GCU). The GCU feeds data into the computer, including gun tube wear, air temperature, and elevation.

The crew follows the same procedure if it hits the 900-meter panel, but misses both the 1,500-meter and 1,250-meter panels.

Normally, the company master gunner is in the calibrating tank, and the battalion master gunner is in the range tower. They are checking the elevation output reading from the elevation actuating arm and comparing the reading to the solution in the ammunition tables, which gives a mathematically calculated output reading and a small tolerance. If the tank's output reading is outside the given tolerance, the tank does not fire, and the turret mechanics check the entire fire control system for malfunctions.

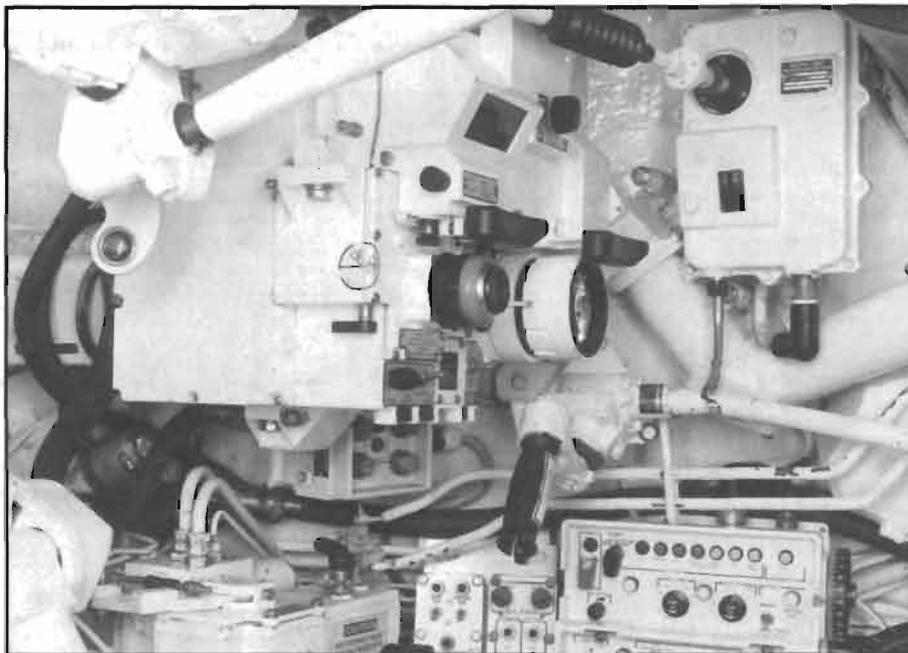
Inside the GCU are four very special jump knobs. Two of them control azimuth and elevation for HEAT ammunition and two control azimuth and elevation for SABOT. The knobs allow manual input of correction data to the computer.

Currently, the only authorized knob adjustment is a -.8 mil elevation for HEAT ammunition. That number is derived from historical data indicating that HEAT consistently shot high.

After a particularly disappointing Level I gunnery, my battalion commander looked for a solution. He asked the few (about 10) tank commanders who had qualified what they had done to be successful. Some of them said that they had adjusted their jump knobs after calibration to bring the strike of their rounds closer to center of mass of the target.

The battalion commander also heard that another battalion in the division had allowed its personnel to adjust their jump knobs, and they had shot very well. Using this information, the commander came up with a plan to qualify more tanks at gunnery by making adjustments to jump knobs in a "controlled" manner. He authorized adjustments based on a two-round shot group at the 1,250-meter panel. The adjustments brought the strike of the round within a three foot radius of center mass. The tank fired a third round at the 1,250-meter panel to verify the adjustment. If the round struck within the target circle, the

"Using the 'old' way of calibrating, even if the round struck only the edge of the panels, we made no adjustments. Then, during a hasty reticle lay, if the gunner layed slightly off center of mass, the round could miss the target."



tank fired a fourth round at the 1,500-meter panel. If the round hit the panel, the tank was calibrated for that type ammunition. If the third round did not hit within the target circle on the 1,250-meter panel, the commander determined if a further adjustment was feasible, based on how the first adjustment moved the strike of the round. The battalion commander listened to recommendations from the respective platoon sergeant, master gunner, and company commander.

The results of this gunnery were astounding. The battalion qualified about 44 tanks out of 58 on their first run on Tank Table VIII. That was about four or five times better than previously.

I was the tower/range officer in charge (OIC) for the entire battalion's calibration, and became very familiar with the sequence. I was also the range OIC at a subsequent gunnery, when the battalion qualified 54 out of 58 tanks on their first run on Tank Table VIII, the

best M60A3 tank battalion qualification rate in USAREUR.

One area of concern was the number of rounds allocated for calibration. The normal allotment was three HEAT and three SABOT. The modified version required four, or sometimes five, rounds per tank, per ammunition type. We found that most tanks only needed two rounds of SABOT because of the round's accuracy. The HEAT was more difficult to balance, though. We diverted some of the Tank Table VI rounds to make up the difference.

Benefits were that the crews had more confidence in being able to hit targets, and it also started the gunner closer to center mass of the target. That is to say, the strike of the round is closer to the gunner's lay.

Using the "old" way of calibrating, even if the round struck only the edge of the panels, we made no adjustments. Then, during a hasty reticle lay, if the gunner layed slight-

ly off center of mass, the round could miss the target.

There is a direct relationship between our use of adjusting jump knobs and our battalion's success. Keep in mind that not every tank needed to make any adjustments, and after two battalions-worth of jump knob adjusting, the effects on round impact were very consistent.

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When Will We Ever Learn?

by Captain Andrew F. DeMario

Are we losing sight of the realities of offensive armored warfare?

History tells us that in Europe, combat in cities and forests will be the rule, not the exception.

Why aren't we training for this possibility?



The Huertgen Forest after a bombardment in 1945.

"The most skillful strategic offensive leads to a catastrophe if the available resources are insufficient to have the good fortune to attain the final goal which ensures the peace for us." — A.A. Svechin.¹

"Ponder and deliberate before you make a move..." — Sun Tzu.²

"We disregard the lessons of history." — George S. Patton, Jr.³

"The Russians systematically exploited all difficulties which their country presented to the enemy. In villages, woods, and marshes... the Russians combined the tricks of nature with their own innate cunning in order to do the greatest possible harm to the enemy." — DA PAM 20-30, Russian Combat Methods In World War Two.

Given that U.S. strategy today is concerned with offensive maneuver as a primary counter to enemy aggression, let's address some of the concerns about our preparatory phase in carrying out such a doctrine in Europe.

Before setting out to attack, a commander must take into account many considerations; among them, that he has a thorough knowledge of the battlefield; that he recognizes the expenditure rate of munitions and fuel in an offense; that he selects correct types and quantities of weapons and other equipment; that he ensures he has enough soldiers, and that they have the skills needed to carry out the mission; and, in addition to all this, that he correctly anticipates enemy responses to his projected moves.

Let's look at the potential battlefield. Examine a terrain map of Central Europe and you will see large areas of urban sprawl surrounded by vast woodlands and checkerboards of relatively open cultivated areas — each dotted with small to medium-size towns or villages at virtually every road junction. To a skillful defender, such ter-

rain offers many advantages. Indeed, in an era of vastly-improved target acquisition capability, enhanced weapon accuracy, and target effects of improved munitions, any combat leader worthy of the name who does not take advantage of the cover and concealment that forests and/or urban areas provide, will soon pay a heavy price for his lack of insight.

The history of European warfare, especially during the two World Wars, is one of fighting through city after city, town after town, village after village, forest after forest. There is absolutely no reason to expect that another war in this area will be any different; in fact, the Germans acknowledged the Soviets as masters of defense in such areas.

Consider the following testimony from some of those Germans:

"If defensive or offensive actions cost the Germans about the same toll of casualties as the Russians, the result in the long run had to be an exhaustion of Germany's war potential merely in terms of human lives. All the more inevitable was that final

result if Germany's quantitative inferiority in manpower could not be offset by a qualitative superiority in materiel. The Russians appeared to be well aware of these considerations. They chose for their most determined efforts swampy, forested, terrain where superiority in materiel was least effective." — DA PAM NO. 20-290⁴

"By unscrupulous use of the civilian population... he created well-developed zones in depth... If, because of the terrain, he expected tank attacks, the enemy developed points of main effort. He was very adept at using villages as strong points. Wherever he could, he set up flanking weapons..."

"The Russians were very adept at preparing inhabited places for defense. In a short time, a village would be converted into a little fortress..."

"It was Russian practice to allow the enemy to draw near, and then to fire at him unexpectedly. In order to prevent heavy losses of personnel and tanks, the Germans had to cover the outskirts of inhabited places with artillery, tanks, or heavy weapons during the approach of their troops..."

"The Russian practice of raiding inhabited localities during mobile warfare, or of converting them into strong points for defensive purposes, was responsible for the destruction of numerous populated places during combat..."

"The Russians... led their main line of resistance right through the center of their villages..."

"In an attack across open terrain, with only occasional patches of forest, the Russians endeavored to reach those patches in the shortest possible time. The Germans found that forests had the same magnetic attraction for the Russians as had in-

habited places..." — DA PAM NO. 20-230⁵

Swap WWII Germans for U.S forces on an offensive; then, visualize Russians defending against our attacks, however temporary that might be, and you see reality staring you in the face — assaults through forests, towns, villages, and cities, precisely as in WW II.

We must ask ourselves, have we prepared to do that?

How often does one hear of U.S units training and provisioning for a large-scale, combined-arms assault on a complex urban target, or a densely-forested area? Do we not tend to avoid such areas like the plague, telling ourselves that such areas are strictly no-go mobility-wise, and thus will not be used by either Soviet or NATO forces? What about the classic German attacks through the "impassable" Ardennes in 1940 and 1944? I contend that if, in the process of an attack, we bypass Warsaw Pact forces simply because they are defending from positions we do not care to assault, then the enemy has won. I do not

believe that those enemy units are going to remain in exposed areas inviting acquisition and attack. Rather, they will make use of the cover and concealment offered by urban areas and forests along their way, exactly as we would. If we merely cut off and surround, or bypass, enemy forces — especially early in the war — then we will have accomplished nothing, because enemy follow-on forces will soon be on the way and our attacking force can quickly and easily find itself surrounded.

If we manage to stop Warsaw Pact forces cold, will they give up and leave, or will they hold onto every bit of territory they have won, in the hope of a favorable political settlement? Shouldn't we expect to have to throw them out of every town and forest they will be sure to defend?

Too many soldiers believe that warfare is going to consist of great waves of combat vehicles confronting each other in mobile battles, where the superior speed and accuracy of our vehicles will outclass our adversaries, who will soon be



A small garrison of SS troops, fighting house to house, held up the Allied advance on Aachen, Germany, in 1944. Here, an antitank gun crew unlimbers to soften up a German strongpoint in the city.

forced to retreat. That erroneous concept is a product of the desert environment at the National Training Center and of our frequent fixation of imagining ourselves as Israelis on the Golan Heights, confronting massive waves of enemy combat vehicles neatly aligned in rows in a great valley below us. Such visions have very little applicability to a European battlefield where the technological advantages of modern combat vehicles can be readily degraded by skillful use of the prevailing terrain.

Yes, some U.S. units in Europe do train to fight in restrictive environments. However, they are too few, do not do it frequently enough, and, when they do, they do it on too small a scale.

To be sure, we must consider the realities of peacetime resource restrictions when it comes to executing combat maneuvers in urbanized terrain and forests. Despite those constraints, we cannot ignore reality; we must not place combat in urban and/or forested terrain in the same compartment that we habitually place NBC operations and other distasteful or difficult-to-arrange types of training. It is in such oversights that the seeds of defeat may lie. We must ensure that our soldiers clearly understand that combat in forests and urban areas will likely be the norm, rather than the exception. Our planners and trainers must prepare and execute training that highly approximates what has been historically characteristic of such battles, i.e., greatly decentralized action, reconfiguration of units to include such things as single tanks supporting squads of dismounted infantry, extreme curtailment of command, control, and target acquisition capability, heavy losses of manpower and equipment in short periods of time, high incidence of battle fatigue to include

whole units knocked out of action from exhaustion, and unaffordable rates of ammunition consumption from frightened soldiers firing at an enemy they will seldom see, but will often feel.

Let's think about the realities of bullets and fuel in offensives.

Here's what a man of experience — General Patton — had to say about bullets in an attack: *"The necessity for using all weapons to their maximum fire capacity during our attacks cannot be too strongly impressed on the soldiers. Any gun that is not firing is not doing its job... violent and rapid attack with marching fire is the surest means of success in the use of armor."*⁶

Assault, then, requires a tremendous expenditure of ammunition in order to produce the winning shock effect.

That being so, what were we thinking about when we cut down the ammunition storage capability of our newest tank, the M1A1, to a mere 40 rounds? It is astonishing to read in our bible on tank gunnery, (FM-17-12-1, *Tank Combat Tables*, 3 Nov. 1986) that, *"The T-72, for example, has a basic load of 40 main gun rounds, 15 fewer than M1. This can be a decisive advantage for U.S. forces if our additional rounds are used wisely and effectively."*

Does this mean that we have lost a potentially decisive advantage? Generally speaking, regardless of the M1A1's increased lethality and accuracy, we can best compensate for fewer bullets on the defense, where a defender, from the relative security of his position, can expect to have some time for clear, measured, shooting. In the offense, you seldom see your enemy until he strikes, and it is virtually impossible to pin him down and destroy him in

an assault by using your bullets sparingly. As Patton said, you must go in with all guns blazing in order to dissuade an enemy from exposing himself to shoot back at you. Otherwise, it is doubtful that you will ever reach that enemy's positions. Forty rounds go very quickly in an assault; and, unlike defense, where one can generally stockpile ammunition near the action, one can seldom be assured of prompt resupply during an extended attack.

Russians can compensate their slim basic load with the number of tanks they can throw into the fight. We cannot. Do our potential opponents understand the realities of offensive warfare in Europe? (FM 100-2-0, *The Soviet Army-Troops, Organization and Equipment*, 1984), says that the 40-round basic load of a Soviet T-64 tank would typically include 12 HVAPFSDS rounds, 6 HEAT rounds, and 22 HE rounds. The fact that Soviet tanks tend to have a large proportion of shock-producing high explosive rounds on board, and also that they push direct-fire SP howitzers to the forefront of an assault, seems to indicate that they do. The Russians knew that they would have to blast their way through hundreds of enemy towns on their way to Berlin in the last war — much as we did when we pushed our way across Germany from the other direction. I am certain that the Soviets expect to do no less today, neither should we.

Let's talk about fuel.

The whole world knows that our M1A1 tanks have a higher fuel consumption rate than most of the rest of the world's tanks. What does that do to our strategy of deep attacks, when it includes an incursion of ground forces? Need it be said? The long, fragile line of fuel trucks strung out for miles behind the un-

"Lack of infantry is perhaps the single most damning proof of our force planners lack of insight, or their acceptance of the realities of actual combat."

protected flanks of such daring attacks is any commander's nightmare.

Another indicator that we may have lost sight of the realities of offensive armored warfare is in the area of smoke. Consider the following statement from Patton in his book *War As I Knew It*: "When tanks are taken under surprise fire by antitank guns, or by other tanks, they should immediately fire several rounds of white phosphorus short of the target and then maneuver to get a telling shot when the smoke clears, or when the enemy emerges from it." Once again, a man of experience has spoken to us and we have elected not to hear him. Yes, we have smoke grenade launchers on our tanks and, yes, we can produce great clouds of smoke behind and around our vehicles with fuel injected onto hot exhausts; but these are defensive, rather than offensive, capabilities. When we had white phosphorus (WP) rounds in our tank basic loads, we could shoot them at the enemy, forcing him to move to get a shot at us, or we could maneuver somewhat more safely to get a shot at him. Now, all the enemy has to do is wait for us to emerge from our protective envelope, then blast away. Also, WP is most useful in an attack to force an otherwise reluctant enemy to abandon his defensive positions, or to mark such positions for destruction or suppression by other means. Why did we abandon such a wonderful offensive combat multiplier? The modern battlefield is many more

times lethal than it was in Patton's day; it will require that much more versatility on our part to win.

In conclusion, let us look at an issue that has already been covered extensively in recent professional journals: our pressing need for more foot soldiers.

Given the type of combat that is to be expected in a Central European scenario, in an appallingly short time our fighting forces will consist of nothing but combat vehicle crewman; common sense tells us that within the first few hours of battle in woodlands and/or built-up areas, there will remain but a handful of infantryman to carry on the close-in battle.

Lack of infantry is perhaps the single most damning proof of our force planners lack of insight, or their acceptance of the realities of actual combat. The hellholes of Stalingrad, Kiev, Huertgen, Aachen, and Hue, to name just a few, easily show that the mere thousand soldiers we can — on a good day — dismount for combat from our armored and mechanized divisions can vanish as quickly as a snowball in a roaring fireplace. Perhaps we believe that such battles will never occur again? Is Beirut but a dream?

Since our strategy includes combined arms assaults, then let us realistically man, provision, equip, and train ourselves for battle against an enemy who has throughout history excelled in the defense and who can be expected to give us no advantages whatsoever.

In his famous *Instructions To His Generals*, Frederick the Great said, "The best battles are those where we force an unwilling foe to accept them."⁷ The Russians read history, and they will force us to do battle under the most disadvantageous cir-

umstances possible. We cannot do less than assume that they know our weaknesses and how to best exploit them.

So, when will we ever learn?

Notes

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⁴DA PAM NO. 20-290, *Terrain Factors In the Russian Campaign*, DA, July 1951.

⁵DA PAM NO. 20-230, *Russian Combat Methods In World War II*, DA, Nov 1950.

⁶Patton, G.S. Jr., *War As I Knew It*, Bantam Books, Inc. NY, 1981.

⁷Frederick the Great, The Instruction of Frederick the Great for his Generals, 1747, *Roots of Strategy*, edited by BG T.R. Phillips, Stackpole Books, Harrisburg, PA, 1985.

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Human Factors Challenges in Armored Vehicle Design

by Captain R. Mark Brown

Countless examples of "human factors" engineering problems, or challenges, exist in the world today. I suppose that any time a human is in the loop in any way, there are human factors concerns that range from the simple to the complex, but this is particularly true of military systems.

Three human factors challenges now face the U.S. Army in the design evolution of armored vehicles. The tank, like the fighter aircraft and the capital ship, is the major challenge facing the engineers who design U.S. Army land warfare equipment.

Problem 1: Weight Versus Survivability

The first problem is weight versus armor protection (or survivability). As in all military systems, the Threat drives the design parameters for the tank. We design our systems to survive, or defend against and defeat, what we believe the enemy can do. In terms of tank technology, the lethality of kinetic energy (KE) projectiles that travel in excess of one mile per second has driven the armor protection requirement to become increasingly heavy to provide an acceptable level of crew survivability.

Aside from the survivability issue, should a KE round impact — which is a human factors concern in its own right — a more interesting human factors issue has risen. Tank crews have traditionally contained

four to five crewmen. Yet, to retain the same weight, size, and protection levels, the armor has demanded a greater space and weight claim in the tank design.

The Army is now faced with an interesting dilemma: do we go to an ever larger, heavier tank, with the attendant logistical problems, in order to maintain a four-man crew? Or do we select smaller soldiers as armored vehicle crewmen? Should we reduce the number of crewmen from four to three, or two, and use technology to allocate more functions to machines?"

The answer is, "The jury is still out." There are some interesting arguments for each approach. For some time, the Soviets have selected shorter soldiers as tankers in order to keep down the size and weight of their tanks. The cramped interior has reduced combat effectiveness. By using automatic loaders on newer tanks, the Soviets have been able to reduce the crew from four men to three, unlike the crews on their NATO counterparts. The Future Soviet Tank I (FST I) may have only a two-man crew..

The U.S. Army Armor Center, the responsible agency for establishing armor requirements, has argued against selecting crewmen by size, and not without good reason. First, the average American soldier is larger; to take this tack would reduce the available crewmen from an already shrinking manpower pool. Second, they argue that to

reduce the number of crewmen would adversely effect human endurance and combat effectiveness, especially if the crew must fight "continuous operations" 24 hours a day, seven days a week until the war is over.

An argument against fewer crewmen is that duties such as crew maintenance, security, communications, vehicle operations, and crew rest, which are now split between four crewmen, would still have to be accomplished with three or two crewmen, no matter how many functions were allocated to machines. Sadly, both arguments are correct. The ultimate determinant is, can the tank be fought effectively under combat conditions?

This leads to the conclusion that there are no easy answers short of a breakthrough in armor plate technology.

Problem 2: Worldwide Adaptability

The second human factors problem is that U.S. contingencies call for the Army to fight in extreme or desert environments, possibly under nuclear or chemical attack. Use of chemicals in the current conflicts in the Persian Gulf and Afghanistan suggest this possibility may become reality.

In hot climates, a tank is like a furnace, with temperatures as high as 120-135 degrees Fahrenheit. Such conditions are encountered every day of the summer at many Army posts in the western and southwestern U.S. Tough physical training and conditioning can help the soldier cope with these tempera-

tures, at least until the battlefield becomes "dirty." Then the soldier must put on his chemical protective suit to survive. The thick suit is hot and adversely affects human endurance, effectiveness in operating system displays and controls, and — in the extreme temperatures mentioned above — survivability.

Because of the soldier's reduced combat effectiveness, he is more vulnerable both to the enemy's actions and to the elements.

Having worn these suits in such environments, I can personally attest that the soldier can only be effective for an hour, at most, and probably much less time under actual combat conditions. The Army has many studies to corroborate this statement.

Again, there are no easy solutions. The Army is investigating suits and protective masks made of different, more hospitable, materials that still protect the wearer from toxicants. In addition, the Army is investigating air conditioning for tanks, or cooling suits, along with overpressure systems that keep the air pressure inside the tank higher than atmospheric pressure so that contaminants can't enter.

But once again, the old space trade-off bugaboo surfaces for the last two solutions. Air-conditioning or overpressure systems are both large and heavy, thus they impact on the first human factors problem — the size and weight of the tank.

Much work is being done on this problem at the U.S. Army Human Engineering Lab at Aberdeen Proving Ground, MD, and at the U.S. Army Natick RDE Center in Massachusetts. Again, success has been evolutionary rather than revolutionary.

"...As motivated and as excellent as are today's young soldiers, it is still an enormous task to make the machine work for, and with, the man as a synergistic unit."

Problem 3: Information Overload

Finally, armor crewmen are starting to experience information overload problems much as fighter aircraft pilots have known for years. As my unit fielded our new M1 tanks and Bradley Fighting Vehicles in 1981, my battalion commander was fond of saying, "You must train your men in switchology!" He was referring to the increasing proliferation of displays, gauges, and switches on our vehicles. As a qualified helicopter pilot, he knew that repetitious training would make performance a matter of reaction, rather than one depending on conscious thought. The situation is getting more complex. New information systems are being added to the vehicles for capabilities such as night fighting, command and control, built-in test, and built-in training, to name but a few.

Can the human perceive and code this information and still fight the tank? The challenge is not new to those involved with aircraft design.

Conclusions

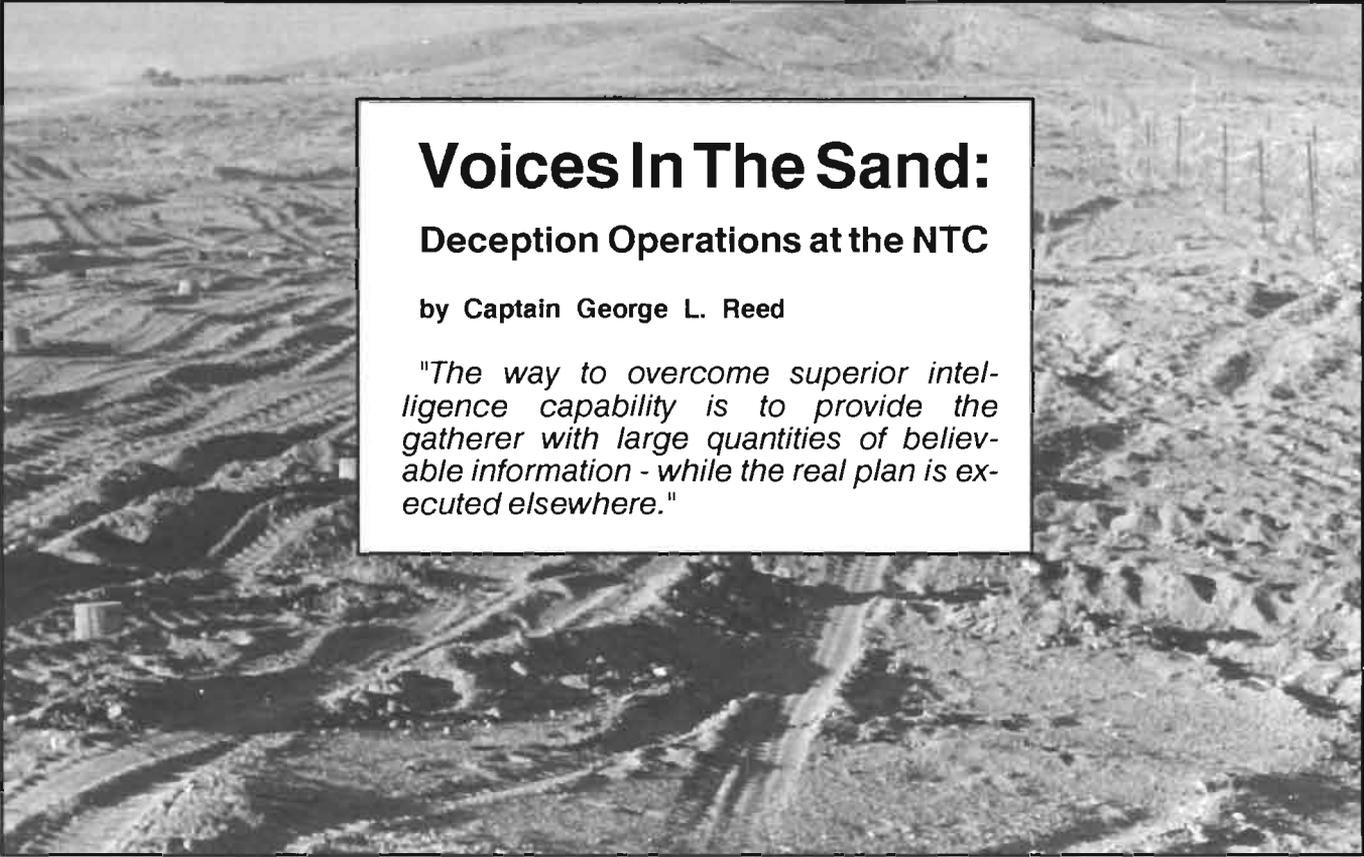
As motivated and as excellent as are today's young soldiers, it is still an enormous task to make the machine work for, and with, the man as a synergistic unit. This can only occur when our human factors

engineers and MANPRINT (Manpower and Personnel Integration) specialists are included from the earliest stages of system design.

In summary, human factors concerns play a major role in the design of armored vehicle systems. The aforementioned problems are not the only ones facing those responsible for the design and production of the next generation of armored vehicles. For example, how does the soldier wearing glasses use the sophisticated optics now available to maximum advantage? How does the tank crew, moving at rapid ground speeds while fighting the vehicle under conditions of impaired visibility, maintain orientation? This is extremely important because the crew has to engage and kill the enemy and not engage and kill their own fellow soldiers (fratricide).

The list is endless, and confronts the designer at every level and phase of the design process. Only when the design of the system is approached with a focus on the human — the key element of the system — can acceptable tradeoffs and solutions be reached.

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Voices In The Sand:

Deception Operations at the NTC

by Captain George L. Reed

"The way to overcome superior intelligence capability is to provide the gatherer with large quantities of believable information - while the real plan is executed elsewhere."

The U.S. Army has gathered a significant treasury of lessons learned from the many rotations at the National Training Center (NTC). With experience and study, these lessons have developed into refined skills — in gunnery, command and control or, in more recent times, intelligence gathering.

The employment of new equipment and internalization of proven doctrine has greatly increased the amount and detail of intelligence data available to maneuver commanders. The ability to monitor numerous enemy radio nets and to see far behind enemy lines has given task force commanders a rather devastating weapon to add to their arsenal of combat multipliers. But, as is the case with many lethal weapons, this sword cuts both ways.

The ability to acquire, transmit, and use intelligence data stopped being original after the battle for the Marathon Plains. Since then, we

have evolved the system, but the tenets remain the same: the way to overcome superior intelligence capability is to provide the gatherer with large quantities of believable information — while the real plan is executed elsewhere. Hence comes deception, "the art of the possible."

The stated doctrine for diversionary brigades, PSYOP battalions, and deception platoons, as discussed in the 100-series FMs and many other sources, is that the opposing forces (OPFOR) at the NTC focus deception activities on a Blue unit's failure to adhere to a basic precept of intelligence gathering. That grain of sand, not yet polished into a diamond, is that *you must always confirm your intelligence.*

A discussion of deception operations at the NTC, and their value and applicability to U.S. operations, can be conducted in a manner as simple as the "illusions" themselves, by explaining what, how, and why.

The "what," of course, is the use of minimal internal assets, and/or deception sections from division or combined arms army-level, to attrit the enemy's combat-effectiveness by accomplishing three major tasks: confuse, deceive, and weaken his forces.

Confuse the enemy by:

- **Drawing simultaneous attention to several areas.** An effective deception will show several major actions occurring in several locations. This will spread out the enemy's intelligence assets and make confirmation more difficult. The enemy will now have less room for error, and his intelligence personnel will be under greater pressure to correctly analyze the situation.

- **Make the enemy attend to details he thought had been completed.** This is done through radio deception discussing the clearing of enemy obstacles, securing of terrain

features, and other such actions that will lead the enemy to waste time rechecking details he has already spent precious time completing. The benefit of this is that time spent reconfirming known data is not spent detecting the rest of the deception plan.

- **Make OPFOR available forces appear larger than they are.** The enemy will probably have visual confirmation or reports from higher intelligence sources that tell him where the actual OPFOR elements are located. Visual and radio deceptions can make it appear that other elements of comparable size are also located in the sector. This action leads the enemy to be over-cautious in his planning, thinking he is up against a much larger force than really exists.

- **Make enemy intelligence sources conflict with each other.** This is easily done by providing his electronic warfare elements with large quantities of false radio traffic. The next step is to hinder other, less "foolable" assets, such as scouts and ground surveillance radars, by screening the sector with smoke and jamming radio capabilities. The end result is a confusing barrage of intelligence that does not make sense.

Deceive the enemy by:

- **Causing him to anticipate attacks and/or counterattacks from fictional locations and keeping his attention devoted to areas other than where we want to operate.** As the enemy watches and listens with EW assets to preparations for false attacks and counterattacks, he will begin to "lean forward" by moving forces to positions of advantage against the movement he anticipates. If this is accomplished, the real attack may find little resistance

in its path on the side of the sector opposite that of the deception plan.

- **Causing him to believe the OPFOR has made massive repositioning maneuvers since his last confirmed intelligence.** Enemy artillery barrages are a significant threat to OPFOR maneuver commanders, often accounting for up to 50 percent of OPFOR losses. Enemy barrages will not be on target, however, if the enemy thinks he is shooting at where the OPFOR has "moved."

- **Causing him to believe he is under threat of imminent destruction by ambush, penetration, attack, or counterattack.** The adage that "haste makes waste" is applicable when an enemy commander hastily sends part of his combat power to guard a flank that his intelligence indicates the enemy will attack.

Weaken enemy actions by:

- **Causing early deployment of reserves and/or counterattack forces.** Command and control of a task force or brigade is a difficult thing to maintain in the heat of battle. Once a reserve or counterattack force is deployed, it is difficult to get it to change course and redirect its offensive into another area. Early deployment, at the very least, deprives the maneuver commander of a timely deployment when and where he really needs it.

- **Causing unnecessary repositioning.** If the enemy is repositioning against imaginary threats, he is not rehearsing in his chosen battle position, and he is not executing sleep plans. This will help to fatigue him, as well as attrit his preparations for the coming battle.

- **Diverting attacking forces from the main effort.** Such diversions are

the benefit of making the enemy believe he is about to be ambushed. Combat ratios in the actual fight change to the OPFOR's favor when the enemy commander sends teams off to guard against non-existent counterattacks. Thus, the OPFOR can defeat the enemy in detail at even or better odds.

- **Causing the waste of combat multipliers such as artillery, air defense, close air support and FASCAM fires.** A common response to unexpected "attacks" is to fire conventional artillery or FASCAM to slow the assault and attrit the attackers. This, if the "attack" was real, would allow the enemy time to ready himself for the "surprise attack." The end result is that the enemy wastes critical combat multipliers against empty ground.

- **Causing command and control elements to question the intelligence and spend needless time analyzing simple data and courses of action.** As the deception plan comes together, the enemy will spend long hours trying to figure out what is going on, and wondering why the "attack" that higher intelligence has reported as imminent never comes. Once the maneuver unit begins to doubt its intelligence sources, the value of the intelligence gatherers is compromised.

It is the general goal of deception operations to accomplish the above tasks in most phases of combat, including attacks, meeting engagements, defenses, reconnaissance activities, and night operations.

With the above description of the goal of deception planning, we can move to the methodology of how to plan and execute these operations. The key is to *depict a scenario that the enemy is willing, if not anxious,*

"Show the enemy what he expects to see; it will make him think he is in control of the situation...."

to accept as real. The success of the deception is directly proportional to the number of reliable intelligence sources that can be contaminated with the various forms of false data within the context of the deception plan. Put simply: What is seen and heard, again and again, becomes believable. (Incidentally, this is the favorite tactic of dictators; constant repetition creates belief.) Show the enemy what he expects to see; it will make him think he is in control of the situation. Few overconfident commanders take detailed precautions.

The preparation of the deception must be made at the tactical planning level, in the maneuver unit's operations order, thereby making the false operation an integral part of the real maneuver plan. This brings the deception plan into phase with all of the other combat multipliers at a maneuver commander's disposal, thereby ensuring that the illusory operation enhances the mission without hindering the commander's intent. It is unlikely that this would be accomplished if the deception was planned in the war room of a military intelligence battalion.

In common with U.S. doctrine, the OPFOR uses METT-T analysis as the core of deception planning. At the NTC, the OPFOR has developed different styles of deception for offensive and defensive operations. In offensive operations, mainly division and regimental attacks or meeting engagements, assets internal to the motorized rifle division and combined arms army are used, but parceled out to the

controlling headquarters. The main emphasis of deception in the offense is to deceive the enemy with false avenues of attack and false times when the attack will occur. This allows the regiment or division to retain surprise and momentum.

Many media provide the desired picture:

- **Sound:** Tapes of a MRR's vehicles in a combat line will provide both the straightforward audio presence of a "regiment" in the pre-dawn hours, as well as an excellent background for battle traffic on the radio. This can be accomplished with \$400 worth of used car stereo equipment and a few hours to fit the system to the BRDM-II.

- **Visual:** Test fires, MILES checks, heat signatures, covering smoke, and dust signatures will replicate a regimental-size march to the attack. As the enemy begins to see the "attack," he will react with security upgrades, indirect fires, and repositioning. After all, seeing is believing.

- **Artillery:** This can provide false illumination and false preparatory fires. Areas the "regiment" appears to be interested in will shortly be of interest to the enemy.

- **Radio:** Enemy intercepts of a "busy" command and control net are often the pivotal intelligence source. If the enemy hears "us" talking about doing what his people are seeing and hearing, he will believe it.

- **Flanking:** During meeting engagements especially, the enemy

is concerned about flanking actions, ambushes, and surprise attacks. If the deception (including FASCAM fires) can convince him to send elements off to the various flanks, the real combat ratio is significantly improved.

- **Misfires:** Misplaced or poorly-timed FASCAM and ICM fires can greatly assist the real maneuver element. As the other elements of the deception are completed and mis-fired enemy artillery occurs, the enemy maneuver elements on the ground will believe their headquarters is shooting at the real attack.

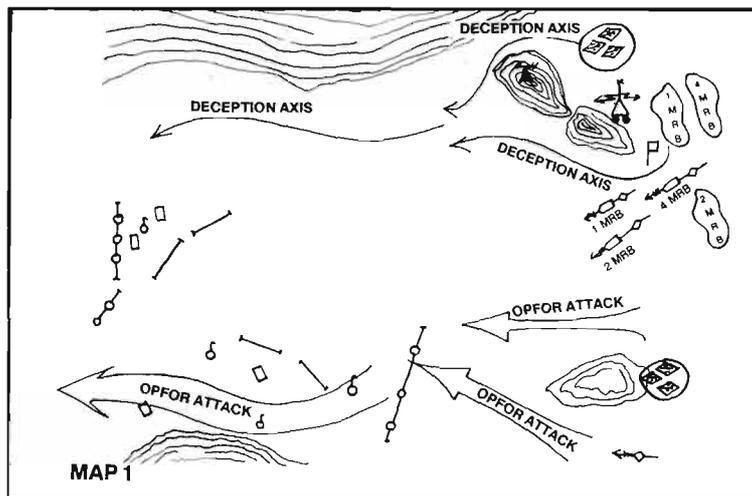
Putting It All Together

These techniques can combine to provide an excellent battlefield effect, as occurred in a recent MRR night attack against an M1/M2-equipped task force in the central corridor of the NTC maneuver area. The OPFOR conducted the attack from east to west with a line of departure at Hill 720 (See Map 1.)

Phase One: Radio traffic concerning rehearsals in the north end of the sector, as well as the clearing of defiles along the march route, cluttered the air all afternoon. As a result,

- The enemy expended about 4,800 rounds of enemy artillery in vain attempts to destroy the "forces" in the north.

- The enemy was convinced that two MRBs would attack in the north, with LD no later than 2100 hours.



- The enemy was out of artillery ammunition, pending resupply, when he tried to fire indirect at the OPFOR dismounted attack at 1900 hours.

Phase Two: At 2030, the "regiment" passed the LD *en masse* with smoke, sound, illumination, dust, chemlites, and prolific "battle traffic" on the radio. As a result,

- More wasted enemy artillery ammunition.

- The brigade informed the enemy task force to expect the main attack within 30 minutes.

- The task force cancelled sleep plans, bringing the task force to 100-percent security.

Phase Three: At 2300, the "regiment" conducted a second attack, with sound, smoke, illumination, chemlites, dust, heat signatures, fake battle damage, and heavy battle traffic on the radio. The results were that:

- Ineffective enemy FASCAM fires.

- The enemy task force came to 100-percent security again.

- The enemy brigade told task force that two MRBs were confirmed to attack in the north.

Phase Four: When the real regiment attacked in the south at 0100, the deception regiment attacked north. The end result was that enemy forces repositioned to the south too late, and an MRB(+) secured the objective. The task force was combat ineffective. The benefits of the deception were that the OPFOR retained surprise, initiative, and momentum, while depriving the defender of critical artillery assets and execution time.

Deception In the Defense

At company, battalion, and regimental levels, deception has a key role in the success of the defensive mission. The primary goal of deceiving the attacking enemy is to seize the initiative, thereby draining his attack's lifeblood. Also gained by a successful defense deception is protection from air and artillery barrages, as well as mounted and dismounted infiltrations. Such combat multipliers, if the attacker uses them effectively, can unseat a defender, however well prepared. The tasks involved with defense deception planning are to deceive the enemy about where the defensive positions, avenues, and routes for counterattacks and repositioning are, and where the reserve forces are. This can be done as low as motorized company level, but must be coordinated with higher com-

mand levels, as with any combat multiplier.

The following media can be useful in developing effective illusions in the defense:

- **Sound:** Tapes of repositioning and/or counterattacking forces, as well as vehicles idling in false positions, provide a deceptive radio picture. The same inexpensive sound system on the BRDM-II will suffice here.

- **Visual:** False barriers, vehicle and infantry positions, and artificial heat signatures, not to mention simulated battle damage (supposedly destroyed vehicles in flames, etc.) will paint an extremely believable tale of a main defensive belt forward. Flashbulb trip flares will add greatly to the reality of the ruse, and are relatively cheap and easy to make.

- **Artillery:** Smoke and guiding illumination, or special signal flares, will give a physical signature to a deception plan involving repositioning or counterattacking elements.

- **Radio:** Lengthy discussions of vehicle locations, rehearsals for counterattacks, and loose talk such as, "Are routes Green and Red clear for my Charlie-Alpha?" paint a picture of an overconfident defender with poor OPSEC.

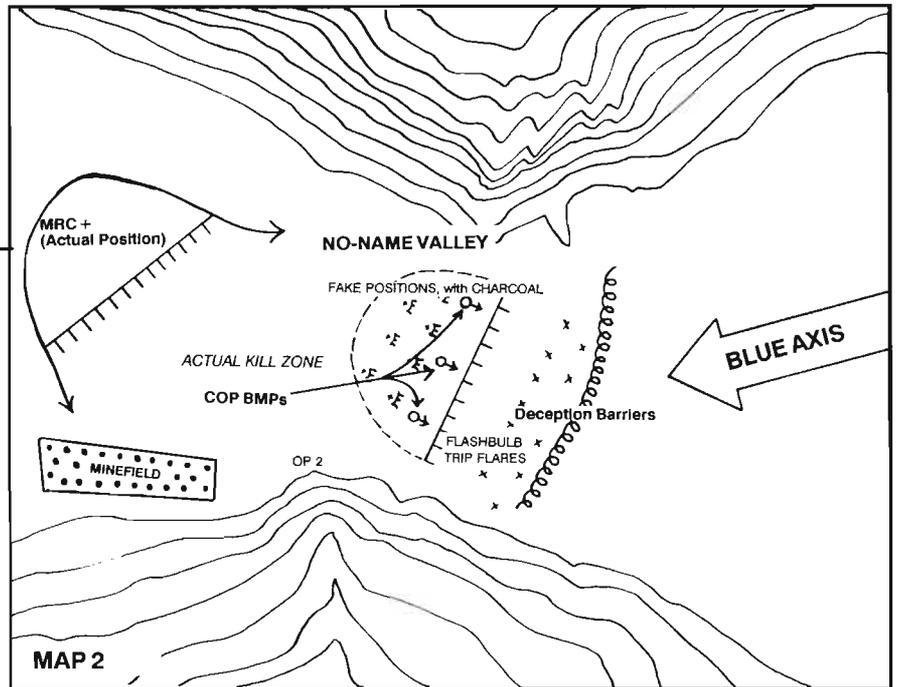
Combinations of these techniques can keep the enemy guessing for extended periods of time, as well as having the following effects:

- Misfired artillery preparation.

- Enemy wastes time probing and breaching empty positions, making himself a vulnerable artillery target.

- The enemy attack is hindered, forcing night attacks to take place in daylight.

- After the enemy has "overwhelmed" the bogus position, he ends up doing his reconsolidation in the main fire sack.



During a recent MRC defense, deception operations effectively helped defend the area known as "No-Name Valley" in the NTC maneuver area. An MRC(+) of six T-72s and 14 BMPs defended that terrain against a night attack from an M1-heavy task force with 41 tanks and 20 Bradleys (See Map 2).

Phase One: The MRB commander directed his MRC(+) to dig in at the western mouth of the valley, leaving the eastern end open, except for a COP consisting of three BMPs. False positions, obstacles, and vehicles went in three kilometers forward of the main defense belt. Initial laager of the MRC(+) was well forward of the defensive position. Heavy engineer activity was evident in the deception area.

Result: Enemy templated an MRC(+) forward, in the eastern end of the valley. Pre-planned artillery barrages were prepared against the "known" positions. Enemy reconnaissance went out in the late afternoon to probe the templated defense.

Phase Two: The MRB commander placed 100 flashbulb trip flares in

the deception battle positions and along the perimeter of the false barriers. COP BMPs were placed in three of the fake fighting positions, while the remaining positions were prepared with charcoal fires, iron-gratings, and simulated vehicle antennas. False OPSEC violations on the radio discussed feeding Class I to the 13 vehicles east of OP-2.

Result: The COP destroyed seven enemy scouts when the Bradleys began probing the initial barrier line. The scout's dying report was that they had been destroyed in the main defensive belt. The COP withdrew to the rear of the deception position until after the enemy artillery barrage that evening. As the barrage ended, the COP reoccupied and provided harrasing fires against the enemy main body as it moved to seize the battle position. The enemy main body set off numerous flashbulb trip flares and fired on the flare pits with 25-mm cannon, thinking they were tank signatures.

Withdrawing OPFOR reconnaissance vehicles, in conjunction with

the COP, destroyed the seven Bradleys near the first line of false positions.

Phase Three: Enemy tanks continued attacking the fake positions throughout the night, taking occasional casualties from the withdrawing COP.

End Result: The sun rose at 0545 as the task force was reconsolidating in the main OPFOR engagement area. The MRC(+) executed volley fire over the next two hours, destroying the confused vehicles. At change of mission, the enemy task force had lost all 41 M1s and 17 Bradleys. OPFOR casualties were one BMP by 25-mm direct fire and one T-72, an artillery fire casualty.

Throughout the course of the battle, the defender used deception to take initiative and momentum away from an enemy whose equipment was built for, and relied upon, speed and violent momentum.

As noted before, the assets required to execute effective deception operations at all levels are mini-

"...There is no reason why deception tactics cannot be used within tactical operations at the U.S. division and brigade levels. By so doing, the enemy would be forced to refine his own intelligence processes, confirming what he gathers."

mal. They include little more than the following.:

Organization & Equipment of OPFOR Deception Team

- One BRDM-II with tape deck and loudspeakers.
- One HMMWV command and control vehicle.
- Two RPG-7 launchers.
- About a hundred deception trip flares and 500 chemlites.
- Ten smoke pots and 10 false heat signatures (charcoal).

For every good plan there are drawbacks, and deception operations are no exception. The equipment listed above does not include protection against direct or indirect fires. Survival and vulnerability are a thorn in the side of a deception plan. If engaged, the deception team will be destroyed. It is not a true fighting force.

The good news, however, is that a successful deception operation has the enemy looking for at least an MRB-size element, not a lonely BRDM. During 15 deception missions conducted in recent months, NTC deception teams have sustained no casualties.

Recently, an M1 platoon drove within 15 meters of the OPFOR deception team's BRDM-II, but failed to engage it. They were looking for a regiment and disregarded the single vehicle. Perhaps the following quotation applies:

"When a man is searching for the source of the voices, he pays small heed to the sand in his eyes."

— Lawrence of Arabia



OPFOR troopers prepare to dismount after a successful NTC exercise.

Deception planning, within doctrinal framework, is an integral part of OPFOR mission execution at NTC. The operations are kept simple and require little manpower and few assets. More important, the operations work. In the offense, they allow the OPFOR to achieve surprise; in the defense, they disarm the attack and transfer initiative and momentum to the defender.

These are the benefits of good deception and the cost of failing to confirm intelligence, a failure that is not uncommon, although often difficult to avoid. When confirmation and effective evaluation are internalized into the intelligence process, the maneuver commander need not fear deception. He need only detect it, and then disregard the erroneous data.

On the other hand, there is no reason why deception tactics cannot be used within tactical operations at the U.S. division and brigade levels. By so doing, the enemy would be

forced to refine his own intelligence processes, confirming what he gathers. The simple deception techniques illustrated above can be and, indeed, have been used against the OPFOR. After all, sand can obscure the vision of any man whose eyes are unprotected — regardless of his uniform.

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Armor Takes Cologne

WWII armored doctrine was to stay out of cities, but there were good reasons to send the 3d Armored Division on this difficult mission .

by Major John M. House

Introduction

In late February 1945, as the U.S. First Army's VII Corps approached Cologne, MG J. Lawton Collins, corps commander, had to decide which division or divisions should seize the city.

His choice was the 3rd Armored Division (3AD) supported by the 104th Infantry Division (104ID). At first glance, this appears to be in opposition to doctrine. But the 3AD that attacked Cologne was not the armored division in the Army's manuals. The factors affecting this decision, and the battle results, provide lessons learned that apply to future combat.

Situation

By late January 1945, the German Ardennes offensive was over. VII

Corps rested out of contact in Belgium. On 5 February, VII Corps returned to Germany where it was positioned before the Ardennes battle near the Ruhr River.¹

VII Corps faced the Ruhr with the Ninth Army north and III Corps south. The 8th and 104th Infantry Divisions (8ID, 104ID) were forward. 3AD, the 99th Infantry Division (99ID), and the 4th Cavalry Group were in assembly areas.²

VII Corps' next mission was to attack across the Ruhr and advance northeast, protecting Ninth Army's southern flank as it attacked toward the Rhine. H-hour was 0330 on 23 February 1945.³ VII Corps attacked across the Ruhr with 104ID on the left (north) and 8ID on the right (south).⁴ By 27 February, VII Corps reached the Erft River.⁵

In photo above, M4s of the 3d Armored Division approach the outskirts of Cologne. The city's spires and tall buildings are visible along the horizon at upper left.

At the Erft, the German units opposing the corps were in poor condition. The corps estimated it faced remnants of five divisions totalling only 7,950 men and 40 tanks. The Germans were preparing positions west of Cologne and using villages as strongpoints.⁶ Cologne's defenders were a combination of army units, police, firemen, old men, and Hitler Youth.⁷

A February thaw damaged roads and reduced cross-country mobility.⁸ A 25-mile-long ridge called the Vorgebirge dominated

the terrain west and southwest of Cologne. Surface mines dotted its slopes. Northwest of Cologne, the terrain was relatively flat with scattered villages and towns.⁹

Collins now faced a decision. He had to protect the Ninth Army's southern flank. Cologne lay ahead and was a major city with bridges over the Rhine. VII Corps had to defeat the Germans in the city to protect Ninth Army. Doctrine and experience would guide Collins' decision.

Armor Doctrine

The Army's 1941 *FM 100-5, Operations*, stated that the armored division's primary role was offensive operations against hostile rear areas. The armored division was to avoid towns.¹⁰ This doctrine remained unchanged in the 1944 version of *FM 100-5*. Infantry operated with armor to create gaps, secure ground, or act as a base of maneuver. Infantry made opportunities for armor to exploit.¹¹ Armored infantry was a component of the armored division. Mobile infantry followed the armored division to support it.¹²

If armor had to attack a town, doctrine called for infantry to assault the town, supported by artillery and tank fire. Tanks would encircle the town to prevent reinforcement and escape.¹³ Tanks could not knock down rows of sturdy houses, which canalized them into streets. If a tank smashed through a house, there was danger it would fall into a basement.¹⁴

The tank's high mobility, protected firepower, and shock power made it an excellent weapon for surprise.¹⁵ If speed was important, doctrine called for using armored formations.¹⁶

Two types of U.S. armored divisions fought in World War II — heavy and light. 3AD was heavy throughout the war.¹⁷ The heavy armored division had two armored regiments (three battalions each), one armored infantry regiment (three battalions), and three armored field artillery battalions.¹⁸ The light formation was in the 1944 *FM 100-5*.¹⁹

Army doctrine emphasized using armor for exploitation. However, doctrine recognized that the situation might require armor to attack towns. Factors other than doctrine also influenced Collins' decision to send 3AD against Cologne.

Other Factors

The attack on Cologne was not the first time armored forces fought in towns or other fortified areas. The standard technique was to follow the prescribed doctrine, using tanks to encircle, and infantry to enter the town.²⁰

3AD had prior experience seizing urban and fortified areas. In August 1944, VII Corps seized Mons and cut off the German Seventh Army's retreat. 3AD led the corps attack.²¹ In September, 3AD successfully breached the Siegfried Line.²²

Another factor in 3AD's favor was the division commander, MG Maurice Rose. Collins had great confidence in Rose, who had assumed command of 3AD on 7 August 1944.²³ Rose knew his business.

3AD needed more infantry to seize Cologne. Attaching infantry to armored divisions was a standard practice.²⁴ Rose normally used an attached infantry regiment to form six task forces.²⁵ Collins had three infantry divisions to provide rein-

force. February infantry casualties were higher in 8ID and 104ID than 3AD, which meant 3AD was in good condition.²⁶

The terrain favored armor action in the northern part of the corps sector. Collins felt that the "checkerboard pattern of towns on the Cologne plain," defended by the Germans as strongpoints, "suited perfectly the organization and tactics employed by General Rose."²⁷ Through a series of carefully timed maneuvers and feints, 3AD surprised village strongpoints with massed armor and infantry.²⁸

VII Corps' primary mission was to protect the Ninth Army's southern flank. This argued for the corps main attack and strength to be in the northern part of the corps sector. To move quickly to prevent a German counterattack into the Ninth Army was essential. To concentrate in the north also focused the corps against the weakest German forces in the sector.²⁹

The Decision

Collins placed his main effort in the north. He sent 99ID on the left (north) to advance to the Rhine and protect the Ninth Army. He had 3AD (reinforced with the 13th Infantry Regiment from 8ID, the 395th Regimental Combat Team (RCT) from the 99ID, and the 4th Cavalry Group) attack on 99ID's right. 3AD was to attack northeast, prevent enemy forces in Cologne from attacking Ninth Army, and be prepared to attack southeast.³⁰

Collins ordered 104ID to attack southeast on order. 3AD's and 104ID's attacks southeast would send them into Cologne. Collins had 8ID attack eastward to protect the corps' right (southern) flank.³¹ This plan sent 99ID and 3AD

through the better armor terrain. 8ID and 104ID attacked through the Vorgebirge mining area. Collins left the corps' southern flank open,³² which allowed a concentration of effort in the north.

These factors argued for sending a fast, strong unit northwest of Cologne. The reinforced 3AD fit the requirement. Initially, it was infantry heavy. By the time 3AD reached Cologne, Collins detached the 395th RCT, making 3AD a balanced infantry-armor force. A rapid advance provided the opportunity to seize Cologne before the Germans organized a strong defense.

The danger was that a 3AD failure would mean VII Corps would lose a large amount of its combat power and its exploitation force. The corps field order makes no mention of a reserve. Therefore, Collins apparently gave up the doctrinal advantages of having a reserve to influence the course of attack.³³ Collins was a strong believer in flexibility, as he showed during the attack by shifting units between 3AD and 99ID as the divisions advanced.³⁴ Leaving the corps southern flank open was a risk worth taking, because the Germans were unable to react effectively.

Results

The VII Corps' attack at 0300 on 1 March worked.³⁵ The lack of depth in the German defenses ensured success.³⁶ At 0420 on 4 March, patrols from 3AD reached the Rhine at Worringen.³⁷ On 4 March, Collins ordered 3AD to attack



Scouts of the 4th Cavalry Group, mounted on M24 Chaffees, consolidate at the newly-captured German village of Broich in early March 1945.

Cologne from the northwest.³⁸ At 0710 on 5 March, 3AD entered Cologne from the northwest, followed by 104ID at 0923 from the west. Resistance in the city was generally light except at crossing sites held as escape routes. At 1800, First Army enlarged the corps sector southward to facilitate 8ID clearing the west bank of the Rhine.³⁹

The 104ID reached the Rhine at 1400 on 6 March. By 1845, 3AD reached the demolished Hohenzollern Bridge over the Rhine. Three-fourths of the city was clear of resistance. VII Corps eliminated all resistance west of the Rhine by 1000 on 8 March. First Army enlarged the corps sector on 8 March to include the 1st Infantry Division's attack against Bonn.⁴⁰ The Remagen bridgehead caused this decision.⁴¹

Conclusions

MG Collins' employment of 3AD to seize Cologne was not the doctrinally preferred mission for an armored division. However, Army doctrine acknowledged the poten-

tial for such a mission and addressed it.

Even though there may be some question as to the doctrinal soundness of MG Collins' decision, the decision was a good one. The 3AD that made the attack was a mix of infantry and armor. February casualties, 3AD's strengths, the terrain, reduced German resistance, and the mission supported sending 3AD northwest of Cologne. Speed and VII Corps' flexible approach to combat reduced the need for a division in reserve.

VII Corps' actions in this battle point out several lessons:

- Combat requires combined arms operations. Infantry and armor must work together to use each other's strengths.

- Tanks have utility in urban terrain. They are protected firepower and provide large-caliber direct fire.

- Infantry must accompany tanks into urban terrain. Infantry can go places tanks cannot.

● Commanders and subordinates must be flexible in thought and execution.

● Doctrine must be flexible so that a unit can perform a mission that is not its primary one.

Endnotes

- ¹VII Corps, Mission Accomplished, pp. 48-49.
- ²*Ibid.*, pp. 51-52.
- ³VII Corps, "Field Order 15," p. 1 and Amendment 1, p. 1.
- ⁴Collins, Lightning Joe, pp. 298-299.
- ⁵MacDonald, The Last Offensive, pp. 165, 169, 186-187.
- ⁶VII Corps, "Field Order 16," Annex 2, Intelligence, pp. 1-2.
- ⁷MacDonald, The Last Offensive, p. 190.
- ⁸*Ibid.*, p. 186.
- ⁹*Ibid.*, p. 187.
- ¹⁰FM 100-5, 1941, pp. 263, 270.
- ¹¹FM 100-5, 1944, pp. 306, 309, 311.
- ¹²FM 17-100, p. 3.
- ¹³FM 100-5, 1944, pp. 311-312.
- ¹⁴FM 17-100, p. 91.
- ¹⁵*Ibid.*, p. 21.
- ¹⁶FM 100-5, 1944, p. 111; US Forces, ETO, Organization, Equipment, and Tactical Employment of the Armored Division, pp. 5-6.
- ¹⁷Army Field Forces, Tank Panel Final Report, Tab B, p. 1.
- ¹⁸*Ibid.*, p. 2.
- ¹⁹VII Corps, "Field Order 15," p. 62; FM 100-5, 1944, p. 305.
- ²⁰1st Army, Combat Operations Data, p. 50.
- ²¹The Armored School, Exploitation by the 3d Armored Division, pp. 30-31, 54.
- ²²The Armored School, Armor in the Attack of Fortified Positions, pp. 25, 28, 55.
- ²³Collins, Lightning Joe, pp. 243, 246, 314.
- ²⁴*Ibid.*, p. 301; VII Corps, "Field Order 14," pp. 1-2; US Forces, Organization, Equipment, and Tactical Employment of the Armored Division, p. 24.
- ²⁵Collins, Lightning Joe, p. 301.



Infantrymen pass a burned out Bergepanther recovery vehicle as they move through a forest near the Rhine River in March 1945.

- ²⁶During February 1945, VII Corps sustained 2357 casualties. 8ID had 1167, with 1111 of them in its infantry regiments. 104ID had 746, with 499 of them in its infantry regiments. 3AD had 260, with 80 in its infantry regiment. Even with the losses, 3AD's infantry regiment's strength rose from 2529 to 2600 during the month. 99ID remained out of action so had no casualties. Corps troops had 184 casualties. VII Corps, "History, 1-28 February 1945," Daily Battle Casualties Annex, p. 1; 8ID, "Report After Action, February 1945," p. 1; 36 AIR, "Action Against Enemy," p. 1; 104ID, "After Action Report, 1-28 February 1945," p. 5.
- ²⁷Collins, Lightning Joe, p. 301.
- ²⁸3AD, "Narrative Battle Report, March 1945," pp. 2-3.
- ²⁹MacDonald, The Last Offensive, pp. 169, 186-187.
- ³⁰VII Corps, "Field Order 16," p. 2.
- ³¹*Ibid.*, p. 1.
- ³²Macdonald, The Last Offensive, pp. 187-188.
- ³³FM 100-5, 1944, p. 38.
- ³⁴US Army Combat Studies Institute, Conversations, p. 6. VII Corps attached the 4th Cavalry Group to 99ID at 1800 on 1 March. The day before, VII Corps ordered the 395th RCT to revert to 99ID control (0001, 3 March), and 4th Cavalry Group to again be attached to 3AD (1800, 3 March). VII Corps, "History, 1-31 March 1945," pp. 1, 7-21.

- ³⁵VII Corps, "History, 1-31 March 1945," p. 1.
- ³⁶MacDonald, The Last Offensive, p. 188.
- ³⁷VII Corps, "History, 1-31 March 1945," p. 21.
- ³⁸VII Corps, Operations Memo 167," p. 1.
- ³⁹VII Corps, "History, 1-31 March 1945," p. 26.
- ⁴⁰*Ibid.*, pp. 33-44.
- ⁴¹Collins, Lightning Joe, p. 305.

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Medical Evacuation:

When played realistically, the problem of casualties becomes a war of movement in itself...

by CW3 William L. Tozier



ARTEPs in the 1st Armored Division (1AD) took on a new realism when full battlefield play with MILES gear transferred from the NTC to Hoehenfels, Germany. This became the first opportunity for many medical personnel in armored battalions to train in a complete medical evacuation situation. Each casualty the battle generated had to be evacuated to the battalion aid station (BAS) and "reconstituted" before returning to the battle.

By doctrine, the medical platoon of an armored battalion consists of one surgeon, one physician's assistant, one Medical Service Corps (MSC) officer, one platoon sergeant, and 27 medics. The latest TOE authorizes one HMMMV, two M577s, two 2-1/2-ton trucks, and eight M113 armored personnel carriers (APC). For communication,

the platoon is authorized 11 radios and 11 secure speech devices (VINSON). Normal configuration teams up two medics with each APC, one as driver, and one as track commander (TC).

Each line company receives one such team. The four remaining APCs and medics remain at the BAS with the evacuation (Evac) section. Each APC has its own radio and VINSON. The BAS consists of the two M577s, two 2-1/2 tons, and a 1/4-ton in lieu of the HMMWV. The M577s can be used for either patient treatment or command and control centers, and the 2-1/2-tons can be used for hauling either cargo or patients. The remaining medics support the BAS, its equipment, and missions.

There are currently no surgeons and very few MSC officers in the

battalion positions, so the physician's assistant accomplishes the platoon leader and medical officer duties. The medical platoon sergeant (E7), the aid station NCO (E6), and the evacuation NCO (E6) lead the medical platoon. The BAS and Evac sections are normally collocated with the administrative and logistical operations center (ALOC) in the combat trains.

Battalion-level evacuation of a casualty begins at the time and place of injury and proceeds to the BAS. Normal casualty flow starts with a radio call on the company net to the assigned company medical team, although medics may see a damaged tank and move to evaluate. At this point, the medics triage the casualties, then treat and return as many to duty as possible. Other soldiers may also give initial treatment.

Common skills training and other programs, such as buddy aid and combat casualty lifesaver, teach medical skills to non-medical personnel. After initial medical treatment, aid personnel arrange evacuation for those patients requiring further medical care. The evacuation is in stages, moving from the initial treatment area to an intermediate point, a patient collection point (PCP). This initial move is the responsibility of the company, which may use the medical APC, or any other vehicle, but an armored vehicle is preferred, because it provides better protection to the patient in the forward combat areas and greater mobility in rough terrain. Air evacuation is not a consideration at this point, due to the assumed lack of an air umbrella and aircraft vulnerability to surface-to-air missiles in the forward sections of the battlefield.

Once the casualty arrives at the PCP, the Evac section moves forward to bring the casualty to the BAS. The Evac section may use one of the four APCs (each with four-litter capacity) and/or one of the two 2-1/2 tons (each with 12-litter capacity). Again, any vehicle returning from the PCP to the BAS may carry casualties.

Communication may be either directly by radio with the BAS, or routed through the ALOC. No prior communication is needed if there is a vehicle at the various staging points ready to proceed.

Standard Operation Procedures (SOPs) and operations/orders can help simplify casualty flow and make it almost automatic. To use empty vehicles returning to the rear eases the load of the Evac section. Unit SOP should alert all support

platoon and maintenance personnel, as well as any vehicle drivers, to this need. Prior designation of PCPs, perhaps in conjunction with logistical resupply points (LRPs), allows for casualty transfer in the event of crippled radio communications.

The requirement to evacuate and treat casualties during an exercise provided not only realism, but also an insight into our readiness and the adequacy of our evacuation system under the present TOE. Equipment and personnel shortages caused varying degrees of deviation from the standard plan of evacuation. These shortages reflected what could be expected in a real call-out. None of the battalion medical sections had an assigned surgeon. Only one medical section had an MSC officer. Most sections had only 20-22 medics. Only one platoon had both M577s, and fewer than half had both 2-1/2 ton trucks. APCs ranged from five to eight. Although all M577s and APCs had a radio, few had VINSONs.

At the first level of medical care, initial treatment is critical to the survival rate of casualties. Casualties receiving serious wounds (not immediately causing death) must have stabilizing treatment, such as cleared airways, controlled bleeding, dressings, and fluid replacement (IVs) within a matter of minutes. Due to distance and terrain, the medics were rarely able to provide this immediate care on the battlefield. Periods of time ranged from 30 minutes to two hours before professional medical care was available.

Once the casualty was identified and/or treated, evacuation became paramount. Any particular battle would usually generate far more than the four patients that can be



carried in the medical APC. Many battalions looked to the medical APC as their sole means of evacuation. Others had anticipated or were quick to recognize that they had to use other means to carry casualties, such as partially disabled vehicles returning for repairs.

A serious factor complicating the medical mission was the first sergeant's use of the medical APC as his command and control vehicle. This limited the number of litters that could be carried, and caused a conflict in mission for the APC, as the 1SG attempted to accomplish his tasks. In all of these instances, medical care of the troops at the front lines was compromised.

Almost all battalions used a PCP. Some were included in the operation order; others were organized as the battles flowed. In most cases, the PCP located with a maintenance collection point or LRP. Usually, these were identified by using reference points on tactical map overlays. The use of reference points as identification allowed for ease in communicating PCPs when no secure means of radio transmission was universally available.

Organization of the PCPs varied drastically, and little or no organization was often evident. An NCO or

officer was rarely in charge to provide further direction in the evacuation chain. Medics were able to provide medical treatment, but evacuation from the PCP depended on the BAS's knowledge of the situation and coordination of the evacuation.

Lack of vehicles complicated evacuation to the BAS. Although most battalions had almost their full authorization of APCs, many of them had been reassigned to other sections. On the average, three of the medical APCs in all battalions had the red cross covered. The battalion commander or the company first sergeants used them as command and control vehicles, which left most Evac sections with only one APC and a 2-1/2 ton. The remaining 2-1/2 ton was usually uploaded with the BAS's equipment and therefore was unavailable for casualty transport.

In most battles, the PCP processed 50-100 casualties, and reliance on non-medical vehicles became heavy. Transportation of casualties from the battle to the BAS averaged from 4-6 hours, with some taking two hours and some taking as long as 12 hours or more.

The experience of this type exercise provided realistic training for armor battalion medical sections. It demonstrated that armor battalions in battle will generate large numbers of casualties requiring evacuation over fairly long distances to get definitive medical care. Recommendations for planning, given the existing strengths of equipment and personnel, should include the following:

- Crewmembers must have more medical training and the decisive-

"Although most battalions had almost their full authorization of APCs, many of them had been reassigned to other sections. On the average, three of the medical APCs in all battalions had the red cross covered. The battalion commander or the company first sergeants used them as command and control vehicles, which left most Evac sections with only one APC and a 2-1/2 ton."

ness to use it. They cannot save their wounded companions by yelling, "Medic!" They are the ones who must establish the airway, control the bleeding, and start the IVs. It may be an hour or more before the casualty can receive medical care, and evacuation to the BAS may take the better part of a day, or more. Traumatic injuries must receive treatment in the first few minutes, if the casualty is to survive. Courses such as buddy aid and the Combat Casualty Lifesaver Course can provide the needed training, and small packets of dressings and IV materials could easily fit into the "stuff spaces" in a tank.

- Awareness of the use of non-medical vehicles for evacuation must be stressed all the way down to the individual soldier. Battalion-level SOP must integrate the resources of the support and maintenance platoons to include loading casualties on returning vehicles.

- Every leader must know the stages and routes for casualty movement. PCPs should be planned so that the system does not require radio coordination. The use of tacti-

cal overlays with reference points eliminates the dependence on secure radio communications.

- Medical platoons must retain control of all their assigned APCs. The best vehicle for transporting a litter casualty is the medical APC; if medics do not have these vehicles, they cannot effectively meet evacuation demands. Assignment of other tasks compromises the mission of the medical APC, detracts from the scant medical resources available — and violates the Geneva Conventions.

Exercises in which casualties must be evacuated provide realistic combat training that involves all elements of an armored battalion. Commanders are able to see how the large number of casualties generated by battles would cripple their mission.

To provide must take an important role in future training.

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The Search for Safer Combat Vehicles: How Close Are We Getting?

by Donald R. Kennedy

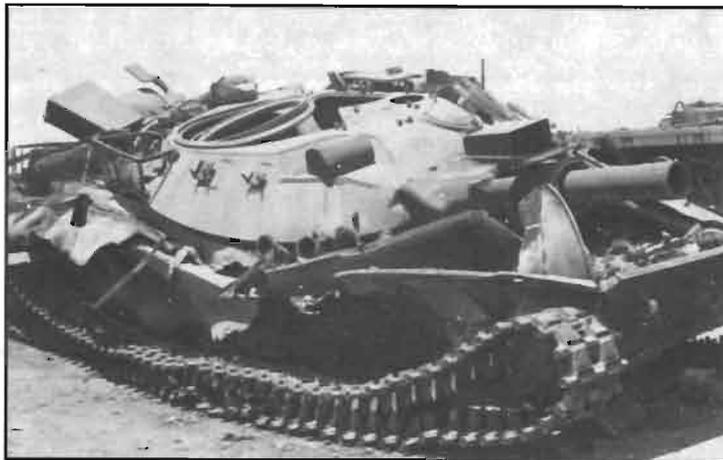
The author's consulting firm, D.R. Kennedy & Associates, of Los Altos, Cal., has done extensive work in the area of combat vehicle survivability for the Defense Department.

Much of the threat to armored fighting vehicles comes from within — the propellants, explosive warheads, and fuel carried inside. When hit by a penetrating shot, they explode or burn, causing injury or death to the crew and destruction of the vehicle.

While designers have made some progress in recent years to limit vulnerability through better vehicle design, propellants and on-board explosives - by their very nature - continue to challenge designers.

Fuel fires are less of a problem than they were in WWII. The widespread use of diesel engines, rather than gasoline-fueled power plants, lowered the fire risk. More recently, the addition of automatic fire-extinguishing systems, like the Halon® systems in U.S. tanks and APCs, greatly reduced vulnerability to fuel fires. These systems work almost instantly to snuff out a developing fuel fire by depriving it of oxygen.

This approach doesn't work with propellants, explosives, and pyrotechnics: each contains its own oxidizer. Once the explosive reaction begins, usually from heat or impact, the materials will burn or detonate, even in the absence of atmospheric oxygen. Materials vul-



This M151 Sheridan AR/AAV, seen in a salvage yard in Vietnam, was destroyed by an antitank mine and the secondary explosion of its own ammunition. Current research is directed at preventing secondary fuel and ammunition fires.

nerable to this sort of catastrophe include large-caliber tank gun ammunition, small arms cartridges, antitank guided missiles, shoulder-fired rockets, mines, and pyrotechnic signal and smoke devices.

At high pressure or high temperature, propellants and explosives rapidly produce large volumes of gas. If this chemical transformation happens rapidly enough, a shock wave develops, creating an explosion. The grain size of the propellants and the degree to which the material is confined help determine how rapidly the transformation occurs.

Nearly 50 percent of the vehicles lost in combat succumb to weapons-induced fuel or ammunition fires. If the ammunition burns, there is a high probability of crew deaths and loss of the machine.

Propellant Fires

Of all the materials stored on board combat vehicles, the propel-

lant in gun ammunition and rocket motors is the most vulnerable, not only because there is so much of it, but also because it is the most vulnerable to KE penetrators, spall fragments, and the jets of HEAT charges.

Designers have been able to limit propellant-fueled explosions by using two techniques. One is to limit the confinement of the material so that pressure cannot build up.

For example, a caseload of propellant will continue to burn, but not explode, if the case is breached, relieving pressure. Another approach is to deluge the developing fire with water, which cools the fire, preventing further heat buildup. In light of bitter, hard-won experience during WWII, this approach increased the survivability of the British Sherman Firefly (but not the U.S. version of the M4). Main gun ammunition was stored in water jackets. When the jackets were penetrated, the water escaped and quenched the fire.

Some other approaches include:

- Arranging the vehicle stowage to minimize the possibility of penetrators hitting ammunition. Ammunition in ready racks above the turret ring was particularly vulnerable, judging by the battle experience of T-62 crews in the Arab-Israeli wars.

- Adding local protection, such as ballistic blankets, to keep hot frag-

ments from reaching heat-sensitive propellant materials.

- Cartridge cases that readily fail when subjected to high temperatures or pressures when unconfined. One way of doing this would be to pre-fragment the cases — perhaps by grooving them longitudinally — so that they break up into strips when the charge is ignited outside the gun breech.

Explosives Vulnerability

Explosives present a paradox: compared to propellants, they are less likely to explode or burn when exposed to hot fragments or heat, but once the detonation process begins, vehicle and crew loss is virtually certain.

Like propellants, the degree of confinement makes explosives more or less vulnerable. In addition, some explosives are more sensitive than others. Finally, vulnerability depends on the amount of energy acting on the explosive.

There is substantial research concerning the vulnerability of both cased and uncased explosives and propellant materials to fragment, bullet, and both KE and CE (i.e., shaped charge) impact. Researchers have developed several tests to determine explosive sensitivity, including both large- and small-scale gap tests, drop hammer tests (five difference types), "Susan tests," and bullet impact tests. These, and other considerations, help rank potentially usable military explosives from "most hazardous" to "safest." Recently, one of the U.S. Navy's several explosive development facilities ranked 69 explosives. Most of the explosives in widespread use today, rank as "hazardous" and "very hazardous." Lower power explosives such as TNT, DNT, and Explosive D (Picric acid) rank among the "safer" explosives, yet these are rarely employed in modern anti-armor munitions because of their comparative lack of power, and such physi-

cal problems as too low melting point, exudation, poor strength, poor long-term storage, etc. Thus, we presently face either having very high performance but very hazardous explosives, or safer and much lower-performance explosives that are not suitable for modern high-performance explosive munitions operating in today's more severe environments.

The Army continues to study low-vulnerability explosives and propellants in the Low Vulnerability Ammunition (LOVA) program. A 1985 report indicates good results with a formula known as NOS-365, a liquid propellant. Typical 105-mm cartridge cases filled with this material did not detonate even when both shaped-charge jets and hot fragments penetrated.

Certain other newly-developed explosives show a high tolerance to both heat and ballistic impact, but they tend to be very expensive, difficult to ignite, and have a poor energy output compared to common existing formulas.

Although LOVA solid and liquid propellants show promise, it will be years before such materials are in general use. For the near term, we must still be concerned with the vulnerability of the present large inventory of M-30 and other high-vulnerability propellants.

Over the past 10 years, armored vehicle experts have made many suggestions to improve survivability. Some of their conclusions include:

"Tank Innovations," by Joe Williams (May-June 1975 *ARMOR*).

- Non-explosive, liquid bi-propellants.
- Non-burning, heat-resistant fuel.
- Compartmentalization of ammunition.
- Heavily protected, encapsulated crew compartments.

"Closing the Survivability Gap," by Brigadier Richard Simpkin (November-December 1981 *ARMOR*).

- Carry fuel in jettisonable tanks within externally vented compartments, except for a small emergency reserve. Try to incorporate the fuel into the tank's protective system.

- Replace metal-cased main gun rounds with semi-combustible cases. Design extinguishing containers for individual rounds or small groups of rounds. Vent the magazines and make them jettisonable.

- As a "far-out alternative," leave the ammunition partially exposed, but reasonably well spaced, in skeleton ready racks that are partially shielded by other elements, like the gun or running gear.

"Israel's Chariot of Fire," by Peter Hellman (March 1985 *Atlantic Monthly*).

- The Israeli Merkava uses every possible component as a buffer for the crew. Fuel tanks incorporated in the hull armor help break up shaped-charge penetrations. Machine gun ammo belts are part of the armor protection of the hull.

- Isolate main gun ammunition in a heat-resistant container set low in the hull. This system protects ammunition for as long as 40 minutes in a fire.

Richard M. Ogorkiewicz, analyzing the Merkava in an article in *International Defense Review*, notes that locating the engine in the front of the hull acts to protect the crew, as does the fuel cell in the hull floor, which helps limit mine damage to crew and ammunition. Another tank in the roof, used for drinking water, adds a layer of protection against top attack. The glass-fiber reinforced plastics used in the fire-resistant main gun ammunition magazine also act as a spall shield.

Joseph E. Backofen's article in the January-February 1984 issue of *ARMOR* calls for all main gun ammunition stowage below the turret ring and as low as possible in the hull. Blast doors should separate

crew from ammunition. Ammunition racks should provide wet stowage for main gun ammunition.

Backofen also noted that bagged charges, as used by the British, did not explode immediately when hot projectiles or fragments hit them. In the few seconds before ignition, water jackets could suppress the progress of a fire or explosion.

A study of U.S. armored vehicle losses in Vietnam by the Ballistic Research Laboratories came to these conclusions:

- Diesel and gasoline-powered APCs burned with about the same frequency.

- In vehicles lost to shaped-charge attack, two-thirds involved fires, and of those that burned, two-thirds involved fires that reached the ammunition.

- Mines more often led to diesel fuel fires, probably because of the location of the fuel tanks.

- When a loss was accompanied by fire, personnel casualties were 50 percent higher.

The late Brigadier Simpkin and other experts have been showing an increased concern about the vulnerability of lighter armored vehicles, especially against top attack by helicopters and cannon-firing aircraft. Protection of the turret is essential because of the large quantities of automatic cannon ammunition present, but too much armor high on the vehicle leads to stability problems. Simpkin suggested the possibility of storing cannon ammunition in turret bustles to isolate it from the crew and to act as a sort of reactive armor. This is similar to M1 tank practice.

Pulling Ideas Together

From these experts and others, we can come to a consensus of techniques that will limit or eliminate catastrophic ammunition fires:

- Provide external, jettisonable ammunition containers.

- Limit internal stowage, and locate it low in the hull, but not too low to be vulnerable to mines.

- Water-jacket rounds stowed inside the crew compartment.

- Use small caliber ammunition to protect larger caliber rounds.

- Use drinking water stores to protect internally-stored ammunition.

- Employ external fuel tanks as armor.

- Isolate crew from ammunition with blast-proof doors. Employ water jacketed magazines and deluge cooling when this is not possible.

Several of these suggestions require additional research. In attempting to use small caliber ammunition to protect larger rounds, some sources report detonation of the small arms ammo. Additional tests, including HEAT penetrations, would verify or disprove this.

The first recommendation - that ammunition be stored in jettisonable external containers - dovetails with another requirement long delayed, the need for a rapid rear capability for main gun ammunition. Perhaps pods of ammunition, representing a daily basic load, could be delivered to a tank or APC's armored, external magazine compartment, allowing rearming during NBC conditions. Crew access to the ammunition would be through a sealed, blast-proof door. The pod could be water-jacketed, so fresh water would be delivered to the tank along with the ammo, and it might even be possible to include crew rations with the package, or additional fuel. The pod would act as spaced armor and would separate from the vehicle if penetrated. Under normal conditions, the pod would be used to collect used brass, crew waste, and NBC-contaminated material.

The pod-rearming concept would also dovetail with any external-gun/autoloader concept in a future

tank. Both gun and magazine pod would be isolated from the crew.

Finally, the crew should be clothed in garments that protect from flash fires, smoke, small fragments, and NBC effects, especially the facial area and other exposed skin. The uniform should also provide breathing air, cooling and heating, and communications. In this way, even if the ammunition caught fire, the crewmen would have enough time to evacuate, while deluge systems and other improvements worked to delay the fire's progress.

While low vulnerability explosives and propellants are still being developed in the laboratories, we have the necessary technologies to greatly reduce catastrophic losses from fire, and recognized experts in the armor field have told us how to use them. The time has come for us to heed their advice.

Donald R. Kennedy is a 1948 graduate of San Diego State University with Distinction in Engineering and in 1978 established D.R. Kennedy & Associates, Inc., an internationally recognized consultant firm in the field of non-nuclear ordnance, particularly in the field of armor/antiarmor technology.

A veteran of Pearl Harbor, Kennedy's armor experience began in 1941 with tests of .50-caliber machinegun ammunition against M2A3 armor. Since then, he has investigated the problems and properties of shaped charges, behind armor effects of explosives, spall protection for armor crews, etc. to name a few of his areas of expertise. He has contributed to ARMOR on such subjects as shaped charges and spall liner protection for APCs.

Initial Training of Armor Crewmen

by Captain Mike Benver

One of a commander's most valuable resources is the men he leads. The level of training of soldiers entering his unit is a matter of interest, and can be a matter of concern. The 1st Armored Training Brigade at Fort Knox, Kentucky trains all 19K, 19E, and 19D soldiers who enter the Armor Force. If commanders, platoon leaders, and senior NCOs in the field do not know what training their new soldiers have received, they waste resources training subjects already taught, and don't expand on the soldier's training base.

My intent is to discuss the training the entry-level armor and cavalry soldier receives. I will touch upon philosophy, constraints, resources, and areas in which the new soldier will need additional training.

I base this article on my observations as an OSUT company commander in a M1 training company, so it is oriented toward 19K10 trainees. But, most of what I discuss is also applicable to 19E10 and 19D10 trainees.

TRADOC Reg 350-6 contains U.S. Army Training and Doctrine Command (TRADOC) guidance, policies, and responsibilities for managing and conducting IET (initial entry training). This consists of basic combat training (BT), one station unit training (OSUT), advanced individual training (AIT), and any other formal armor training received before the award of a military occupational specialty (MOS).

The objectives of the IET program, as stated in 350-6, are to –

- Promote and instill in the new soldier the highest degree of individual responsibility and self-discipline.

- Establish the pride and dignity of being a soldier in the United States Army.

- Promote and accelerate the transition from civilian to soldier.

- Develop in the new soldier an understanding of the Army system and the role of the individual in accomplishing the Army's mission.

- Develop in the new soldier knowledge and understanding of Army customs, heritage, and traditions.

- Provide the new soldier the knowledge, skills, and task proficiency so that the soldier can immediately contribute the unit's mission and survive on the battlefield.

- Provide the Army with soldiers who are physically fit.

Soldiers completing IET will demonstrate the attainment of the above listed objectives when they –

- Demonstrate the strength, stamina, and agility to perform the common skills and MOS tasks trained in IET.

- Demonstrate the desire and accept the need to apply themselves to accomplish assigned tasks.

- Understand and adhere to their enlistment obligation, including the

Oath of Enlistment, and their roles as soldiers.

- Be devoted to the Army in its defense of the United States and the principles embodied in the Constitution.

- Know and abide by the Uniform Code of Military Justice and other statutes and applicable rules and regulations.

The above objectives and standards are literally part of the regulation.

The 19-series IET soldiers are trained with the One Station Unit Training (OSUT) method. They report to the 46th Adjutant General Battalion (Reception), are in-processed and then go to their OSUT company. The M1 and M60A3 OSUT companies train these soldiers (19K10, 19E10) for 14 weeks. The Cavalry Squadron (19D10) trains its soldiers 13 weeks, or 14, if the soldier receives one week additional training on the M3. Once training is completed, the newly-trained soldier goes to his initial assignment in a line battalion/squadron.

1st Armored Training Brigade has four training battalions, two training squadrons, and a H&S company. Each battalion consists of three or four line companies and a headquarters company. Two battalions train 19Ks, two battalions train 19Es and two squadrons train 19Ds. H&S supports the entire brigade. Each battalion/squadron has three or four OSUT companies and a headquarters company.

An OSUT company is a lean organization: company commander, executive officer, first sergeant, training NCO, supply sergeant, clerk, and 10 drill sergeants. Depending on the fill, you will have 130-165 IET soldiers. The fill varies from cycle to cycle, and the OSUT company can have four or five platoons. Normally, cycles picked up during the summer, fall, and early winter have large fills. Mid-winter and early spring fills are smaller.

The goal of 1st ATB is to train soldiers to basic-level standards. Their initial assignment should bring them up to journeyman-level standards. When soldiers leave Fort Knox, they are trained drivers, and loaders, and are familiar with the gunner's station. To ensure quality training, soldiers take five different tests. There are three Graduated Armor Test and Evaluations (GATE), and an end-of-cycle Military Stakes Test.

In addition, all soldiers must pass the APFT before graduation. To ensure quality control, Testing and Evaluation, a Fort Knox organization independent of 1st ATB, tests the soldiers.

The GATE test consists of the skills to the right. There are many more skills not on the GATE tests that drill sergeants and tank commanders test.

When the soldier arrives in the unit, he has been in the Army for three - five days. He has been in-processed, received his initial shots, some initial classes, and a uniform. His first four weeks of training are all basic soldier skills: D&C, First Aid, Basic Rifle Marksmanship (familiarization for 19K10 and 19E10, and qualification for 19D10), NBC (to include a chamber exercise), M9 pistol, mines,

GATE – Graduate Armor Test and Evaluation

Task Number	Task/Subject	Type Test
031-503-1007	Decontaminate Your Skin and Personal Equipment	Gate 1
031-503-1012	Put On, Wear, Remove, and Store the M24, M25 or M25A1 Protective Mask With Hood	GATE 1
031-503-1018	React to Nuclear Hazard	GATE 1
031-503-1021	Mark NBC Contaminated Area	GATE 1
051-191-1361	Camouflage Yourself and Your Individual Equipment	GATE 1
071-331-0050	React to Inspecting Officer	GATE 1
071-331-0051	Summon Commander of Relief	GATE 1
071-331-0052	Challenge Unknown Persons (night)	GATE 1
071-331-0801	Use Challenge and Password	GATE 1
081-831-1000	Evaluate a Casualty	GATE 1
081-831-1005	Prevent Shock	GATE 1
081-831-1016	Put on a Field Or Pressure Dressing	GATE 1
081-831-1030	Administer Nerve Agent Antidote to Self	GATE 1
081-831-1034	Splint a Suspected Fracture	GATE 1
081-831-1035	Protect Yourself Against Heat	GATE 1
081-831-1036	Protect Yourself Against Cold	GATE 1
081-831-1042	Perform Mouth-to-Mouth Resuscitation	GATE 1
113-571-1016	Send a Radio Message	GATE 1
	Drill and Ceremony (Marching)	GATE
	Execute Drill Movement Without Arms	GATE 1
071-329-1001	Identify Terrain Features on a Map	GATE 2
071-329-1002	Determine the Grid Coordinates of a Point on a Military Map Using the Military Grid Reference System	GATE 2
071-329-1003	Determine a Magnetic Azimuth Using a Compass	GATE 2
071-329-1008	Measure Distance on a Map	GATE 2
071-331-0803	Collect/Report Information - SALUTE	GATE 2
113-587-2043	Prepare/Operate FM Radio Sets	GATE 2
113-622-2011	Operate Intercommunication Set AN/VIC-1 on a Tracked Vehicle	GATE 2
171-122-1015	Clear an M240 Machinegun to Prevent Accidental Discharge on an M1/M1A1 Tank	GATE 2
171-126-1001	Start/Stop the Engine on an M1/M1A1 Tank	GATE 3
171-126-1007	Prepare Driver's Station for Operation on an M1/M1A1 Tank	GATE 3
171-126-1008	Secure Driver's Station on a M1/M1A1 Tank	GATE 3
171-126-1012	Troubleshoot the M1/M1A1 Tank Using Driver's Control Panel Warning and Caution Lights	GATE 3
171-156-1041	Extinguish a Fire on an M1/M1A1 Tank	GATE 3
171-126-1052	Operate the Gas Particulate Filter Unit on an M1 Tank	GATE 3
171-122-1011	Install/Remove an M240 Coax Machinegun on an M1/M1A1 Tank	GATE 3
171-122-1017	Install/Remove the M240 Loader's Machinegun on an M1/M1A1 Tank	GATE 3
171-126-1023	Prepare Loader's Station for Operation on an M1/M1A1 Tank	GATE 3
171-126-1024	Load/Unload the 105mm Main Gun on an M1 Tank	GATE 3
171-126-1027	Load/Unload a M250 Grenade Launcher on an M1/M1A1 Tank	GATE 3
171-126-1029	Prepare Gunner's Station for Operation on an M1/M1A1 Tank	GATE 3
171-126-1030	Secure Gunner's Station on an M1/M1A1 Tank	GATE 3
171-126-1038	Stow Ammunition on M1 Tank	GATE 3

grenades, hand-to-hand combat, obstacle course, confidence course, radio procedure, and a multitude of introductory-type classes. This phase ends with the GATE 1 test.

Weeks 5 to 8 will have more advanced classes. Now he learns to prepare/operate the FM radio; clear, maintain, clean the M240 machinegun; Threat ID; SALUTE;

maintain operation records; basic map/terrain association; M9 qualification; driver station; ammunition ID and storage; breech block; M2 machinegun (familiarization); and reinforcement of previously-learned classes. This phase ends with the GATE 2 test.

Weeks 8 through 10 are tank intensive. The soldier learns to replace and inspect track; clean and service the main gun; loader's station; BDA hull; mount and dismount the AN/VRC 64; and slave start the M1. During Week 10, he drives the tank. Initial driving is structured on a concrete driving course with well-defined obstacles. During this time the soldier starts Individual Conduct of Fire Classes (ICOF), which will familiarize him with the gunner's station. This phase ends with the GATE 3 test.

Week 11 is gun week. The soldier fires a non-moving table VI-type exercise. By now, due to ICOFT training, all the soldiers are familiar with the gunner's station. Even though we set up a realistic target array, and OSUT soldiers do all the firing, this is actually a loader's exercise. Every soldier in the company rotates between the loader and gunner station, and each soldier loads and fires six rounds: two rounds at night, and four rounds during the day. In addition, all soldiers fire 200 rounds from the M240: 100 rounds from the gunner's station, and 100 rounds from the loader's station.

Week 12 consists of a six-day FTX and two days of stand-down operations. During this week, the soldiers conduct a 12-15-mile road march (foot), navigate a day and night terrain course, conduct weapon and NBC training, (to include six hours in MOPP 4), and spend a day driving the tank. The major goals of field week are to get the soldier used to living in the field, and to

drive the tank across country, on a tactical road march, and in tactical formations. The soldier does most of his driving this week. Due to OP-TEMPO requirements, each soldier drives only 18 miles. Approximately seven miles are during week 10 and the other 11 miles per man will be driven during the FTX. Although the soldier lives in the field, it is not under the same conditions as a REFORGER or NTC-type exercise. The soldiers live in pup tents, and not on their tanks.

During Week 13, soldiers finish stand-down procedures, take their record APFT and take their Military Stakes Test. T&E conducts the record APFT, and the soldier must pass with a minimum of 60 points in each area. If a soldier does not pass, he can take the test a second time during Week 14. If he does not pass the second time, the soldier will not graduate with his cycle. We are allowed by regulation to keep a soldier two weeks after graduation to train him to Army standards. If, after two additional weeks of training, the soldier cannot pass the APFT, he either receives a PT waiver or is processed out of the Army.

During the last week of training, soldiers out-process, receive counseling, and practice graduation. All the last-minute glitches on leaves, orders, and training are worked out, and the soldier graduates on Friday morning. After graduation, the average soldier takes two weeks leave, then goes to his first TO&E unit.

As you can see, the new soldier who arrives at your unit will be weak in some areas. Two obvious areas are driving and extended field exercises. In addition, the soldier will not have done any recovery operations, other than a hands-on exercise on how to prepare the tank

for towing. Two other important things the soldier will not have done are to perform semi-annual services and use the MILES training system.

As a general rule, all the soldiers in training are paid in the unit at the end of the month. Because of this, they have to establish SURE PAY to their checking/savings account at the receiving unit. All soldiers receive a class on how to successfully maintain a checking account, but because many soldiers do not have checking accounts when they take this class, their grasp on the subject may be weak.

The soldiers leave Fort Knox highly motivated, and with a firm grasp of the basic soldier skills they need. With your guidance, they will become the future leaders of our Army.

Captain Mike Benver graduated from Ohio State University in 1980 with a Bachelor of Science degree. After attending AOB, he was assigned as a platoon leader in B Company, 6-32d Armor at Fort Carson, armor's first COHORT company. He served as XO of A Company, 2-66 Armor, BMO of 4/41st Infantry Battalion (M), and battalion S4 of 498th Support Battalion in Germany. He is a 1986 graduate of AOAC and has attended CAS³. He served as a project officer in the Directorate of Evaluation and Standardization at the Armor School and is currently the commander of B Company, 2d Battalion, 13th Armor at Fort Knox.

Support Platoon Operations in the Field: Class III

by Captain Juan J. Hernandez

The success of a unit on the battlefield is reflected by the quality of logistical support that it receives. The S4 is the primary logistical coordinator, but the support platoon carries out the logistical mission. This article will highlight problems and solutions for future and newly-appointed support platoon leaders in the area of Class III (POL) operations in the field. The key to success in the support platoon is to plan ahead, plan for contingencies, and allocate assets wisely.

During an unrestricted, divisional maneuver in Europe in August 1984, the support platoon of an M1 Abrams battalion issued 10,000-11,000 gallons of diesel fuel each day for one week. The support platoon, by TO&E, had a 22,000-gallon capacity, but could only muster 15,000 gallons of fuel-carrying assets. This deficit was due to a lack of 64C truck drivers and 76W POL specialists within the platoon. The support platoon never operated at full strength and was often forced to leave trucks in the motor pool during FTXs and gunneries.

The shortage of support platoon personnel is not uncommon. The support platoon leader must certify all of his personnel in the platoon as fuel handlers. A support platoon member should be cross-trained in both ammunition and POL operations to create redundancy within the platoon.

One would imagine that a support platoon could easily support a



10,000-gallon-a-day fuel requirement. The older GOER/5-ton TPU platoon can carry 22,000 gallons, while a HEMTT platoon has a 30,000-gallon capacity. We must now take the following allocations into consideration. A 2,500-gallon HEMTT will always be assigned to the combat trains for emergency Class III. Each company is allocated two HEMTTs as part of the daily LOGPAC, one of which must also distribute assets to fuel the TOC, LOC, ALOC, UMCP, scouts, and mortars. Finally, the support platoon will have to consider dedicating a fuel vehicle, whether it be a HEMTT or 5-ton TPU, to satisfy 1/4-ton, heater, and generator requirements for MOGAS. The platoon will be scattered across a wide area so the platoon leader will have very limited assets under his direct control. Combined with a lack of personnel, this situation could be chaotic if the support platoon leader does not anticipate it. He should know how many vehicles are in each supported unit and what kind of movement has been conducted.

An M1 idling on a battle position for eight hours will devour a lot of

fuel. As part of the planning process, the POL specialist in the platoon must coordinate with the forward support battalion for Class III as soon as possible.

A support platoon without a rest plan could result in an accident involving fuel, ammunition, and needless injuries. This situation is made more dangerous in densely populated areas such as Europe. The platoon will find itself on the move 24 hours a day. A normal LOGPAC will depart the field trains enroute to the units around 1700-1800 hours daily. It may remain with the units until the early morning hours the next day. By the time the vehicles return, transfer of fuel from one HEMTT to another will have begun. The empty vehicles will depart for the forward support refuel point and return in the early afternoon. By the time the operators return and complete after-operations checks and services, the new LOGPAC will be formed. There are various ways to implement a sleep plan into this schedule. First, rotate drivers assigned to the combat trains. Those drivers remain stationary and are

well-rested. Second, when topping off at the forward support refuel point, send drivers who returned earliest that previous night.

The support platoon is equipped with one AN/VRC-46 in the support platoon leader's jeep and an AN/PRC-77. Radio communications in the platoon are severely limited. Support platoon personnel can only function on instructions provided to them before their departure on a mission. Brief your personnel in detail and ensure that they are proficient in map reading.

The support platoon leader should take an active interest in how units conduct resupply operations. The company first sergeant is the primary logistics operator; there should be a good working relationship between him, the S4, and the support platoon leader.

Units should avoid overexaggerating fuel status. There have been many instances when a unit was allegedly "red" on fuel. The support platoon leader then redirected assets to that unit, only to have those

assets returned to him three-quarters full. Tank commanders, platoon leaders, and platoon sergeants should relay accurate information to the first sergeant. Rerouting unneeded assets from battalion control could be critical in combat.

Units should be able to use the LRP system in resupply operations. The first sergeant and the supply sergeant make this work. The first sergeant should have units arrayed, or know exact positions, to expedite resupply operations and return the LOGPAC to the field trains. A HEMTT platoon can refuel an M1 company, service station method, in eight minutes.

Inspect resupply operations whenever possible. Not only is the support platoon leader the resupply expert, but he is also responsible for 40 to 50 men. His presence is good for morale and enables him to observe the men at work. He will be able to see units abandon fuel vehicles in an assembly area, departing without leaving instructions to the driver; watch a tank platoon refueling on top of a battle position

during an ARTEP; or see a fuel vehicle driver attach himself to a tank platoon during a displacement. These situations happen, and it is the support platoon leader's job to correct them.

Class I and V operations will follow similar patterns. The key to the support platoon leader's survival is planning and prioritization of assets. With an extremely high rate of fuel and ammunition consumption in the M1 and M1A1 battalion, the support platoon will be the key to the unit's survival.

Captain Juan J. Hernandez graduated from USMA in 1982 and attended Airborne, Ranger and NBC schools and the German Airborne Course. He has served as platoon leader, battalion support platoon leader and company XO with 2-64 Armor in FRG. He is an AOAC graduate and is currently assigned to 2-37 Armor, 1st ID (forward) in FRG.

An unusual book of "firsts"...

The following quotes are from "Tank Facts and Feats," by Kenneth Macksey, a Guinness Superlatives book published by Sterling Publishing, New York, in 1981:

"The first employment of tanks by the Viet Cong did not take place until 3 March 1969. Until then tank defence had been by orthodox ambush based on hollow-charge weapons and mines. But at Ben Het in the Central Highlands, overlooking entrances to the Ho Chi Minh Trail, the North Vietnamese committed a number of armored vehicles,

including Russian-built PT-76s, to a night assault. A platoon of four U.S. M48s was part of the perimeter defence and had detected enemy engines.

"Later yet track noises were heard. Then the Americans came under fire. Nothing could be seen through night-vision scopes until a PT-76 detonated some anti-personnel mines, setting itself on fire. A

shooting match began in which one M48 was struck in the glacis plate and some of its crew killed or wounded.

"The enemy withdrew, leaving three vehicles, including two PT-76s destroyed. **This was the first time in 16 years that U.S.-manned armour had engaged enemy tanks in battle...**"

Training the Reserve Force: Change the Scale, Not the Standard

by Major John Miller, USAR

One Army means one standard, because in war there can be only one standard. But how, in 12 weekends and two weeks of active duty a year, can a Reserve unit reach the same standard that Active duty units train continuously to achieve?

With the background of several years of conducting ARTEPs on National Guard and Reserve Armor/Cavalry units in New England, and as the commander of a Reserve armored cavalry troop, I spent many hours thinking about and discussing how to train the Reserve armored force. What I decided is that in the time-constrained training environment of a Reserve or National Guard unit, it is critical that the trainer change the scale, not the standard. What is scale? To describe my concept, I must rely upon my own command experience with D Troop, 5th Cavalry, 187th Separate Infantry Brigade at Ft. Devens, MA.

We all know that the Mission Essential Task List (METL) should drive training. The first, and perhaps most critical, step in changing the scale is recognizing that a Reserve unit cannot train to standard on every ARTEP task. Clearly, the prioritized METL tasks must represent a realistic assessment of what are the critical tasks required when a unit exercises its CAPSTONE mission.

The 187th's commander, BG Stones, clearly stated that his training priority was defense. The defense, as practiced in this brigade, is an active exercise in well-

developed battle positions supported by continuous dismounted patrolling. Unfortunately, the armored cavalry troop's role in this scenario was that of armored pill boxes. One of my major tasks was to emphasize my scouts' ability to patrol beyond the foot patrols, and the need to keep a least a portion of the troop free to act as the brigade reserve. I developed the METL to support this battle plan, emphasizing two tasks: defense to support the brigade's plan, and reconnaissance to maintain the troop's ability to support any contingency the brigade might face. With this METL, and a thorough analysis of the troop's strengths and weaknesses, I next turned to resources.

In addition to time constraints, Reserve units face restraints in training areas, ranges, and ammunition. Many units have home stations with no training areas or ranges. Going to the field involves not only the normal maintenance, equipment draw, etc., but transportation to the nearest post or State training facility. A unit is lucky to have from Saturday noon to Sunday noon to train. Under these conditions, field survival must be trained during the unit's two weeks of annual training. We must obtain the maximum benefit from the constrained weekend training periods. Sand tables are a necessity.

My troop was fortunate. Ft. Devens has ranges and training areas, and they could fit us into the heavy weekend schedules. Changing the scale here involved using every bit of ground and every facility we could. To train in the defense, the

woodline behind the Reserve Center became a close-in training area. We constructed our fighting positions, had the engineers instruct us in building obstacles, which we left in place and improved, and developed our fire planning. The result was an instantly available training site perfectly suited to our defense mission. Our 4.2 inch mortars outdid everyone in building a textbook example of a fortified position. In front of these positions, they prepared a scaled range for use with the pneumatic firing device.

The Scaled Tank Engagement Range (STER), an indoor scaled tank range (see *ARMOR* July-August 1987), was another example of using a facility to the utmost. Use of the laser targeting system allowed excellent training in tank crew drill and TOW tracking. But that was only a start. Placing two scout crews and two tank crews on line, we allowed the platoon leader to develop a scenario using spot reports by the scouts to guide target acquisition and platoon fire commands. The mortars added the finale to this exercise by setting up a scaled range adjacent to the STER, allowing the scouts to call for fire by looking out the sliding garage doors on the side of the building.

Map reading is a critical reconnaissance skill. Map reading in moving vehicles demands terrain appreciation. Teaching these skills requires seeking out new areas and forcing the soldiers to read maps, preferably in a moving vehicle. We accomplished this by taking our wheeled vehicles to state parks during our annual trek, which

provided our scouts excellent training while the tanks were involved in gunnery.

Using sand tables is vital to the success of any training plan. Sand tables can do so much with so little. For instance, an excellent way to teach terrain appreciation is to have soldiers construct a sand table from a map. Nothing imprints the meaning of all those contour lines like using them to shape hills and valleys. We sand-tabled an area we had reconnoitered during Overseas Deployment Training (ODT) and capped the terrain appreciation lesson by showing color slides of the area. Sand tables can be used to train for any tactical scenario, for reporting, direct fire control, command and control, and just about any other training task. They allow you to walk through a tactical scenario before you try to run it on the ground. This factor is important

to the Reserves, as you cannot train often enough to maintain all the skills needed for command and control, and you rarely have time to re-run an exercise. The real key here is to train the SOPs so that the chain of command can avoid as many routine tasks as possible when in the field. Sand tables often show you what SOPs won't work. Tank gunnery training in Reserve units is a direct and unwavering challenge. Bi-annual gunnery, which takes a citizen soldier from civilian life and shoots him from Table VI to VIII in two weeks, is always a challenge. Our top tank crew taught me another lesson in changing the scale. The TC arrived late at camp, due to a civilian job conflict. He beat the odds — and every other crew — by using every available minute to drill and dry-fire his crew. He emphasized that tank gunnery is a crew drill. The crew that drills,

day after day in the motor park, and that practices proper engagement techniques during ARTEP training when no one is looking, is the crew that will qualify on the range and survive in war. In short, tank gunnery is always an excellent example of the value of changing the scale.

My troop's training successes resulted not only from a supportive chain of command, but an excellent full-time staff. The staff allowed the troop to begin each drill with a running start, and the first sergeant kept the "admin trivia" off my back so I could train my soldiers. Beyond that, the key to good training is a realistic appraisal of what needs to be done, and a lot of imagination. The same combination will serve any trainer, Reserve or Active Duty.

Major Miller commands D Troop, 5th Cavalry, a Reserve troop based at Fort Devens, MA.

Recognition Quiz Answers

1. **Ka-25 HORMONE.** Type, ship-based ASW, search/rescue, utility; dimensions, main rotor diam. 15.75 m; fuselage, 10.36 m; height, 5.4 m; combat weight, 7,500 kg; max. speed, 193 km/hr; max. range, 650 km; armament, one or two 400-mm AS torpedoes, depth charges.

2. **Mi-2 HOPLITE.** Type, multi-role, utility; dimensions, 3-blade main rotor diam. 14.50 m; length, 17.42 m; height, 3.75 m; combat weight, 3,700 kg; max. cruise speed, 200 km/hr; max. range, 800 km; armament, can have pylons for AT-3 or AT-5 AT missiles, gun pods, etc., depending upon mission.

3. **Mi-8 HIP-C.** Type, utility, assault, electronic warfare, etc.; dimensions, main rotor diam. 21.29 m; length, 25.24 m; height, 5.65 m; combat weight, 12,000 kg; max. speed, 260 km/hr, max. range, 480 km; armament, 57-mm rockets, AT missiles, gun pods, etc., depending upon mission.

4. **Mi-24 HIND-E.** Type, armed gunship, AT helicopter; dimensions, main rotor diam. 17 m; length, 17 m; height, 4.25 m; combat weight, 11,500 kg; max. speed, 275 km/hr; armament, 4-barrel cannon (23-mm?); six AT-6 missiles, gun pods, etc., depending upon mission.

5. **Mi-26 HALO.** Type, utility, cargo carrier; dimensions, main rotor diam., 32 m; height, 8.06 m; length, 33.73 m; combat weight, 56,000 kg; max. speed, 295 km/hr; max. range, 800 km.

6. **AH-64 (USA).** Crew, 2; type, attack helicopter; combat weight, 7,892 kg; max. speed, 378 km/hr; max. range, 578 km; main rotor diameter, 14.63 m; length, 15.05 m; height, 3.69 m; armament, Hughes 30-mm chain gun, 16 Hellfire AT missiles; 76 2.75-in. rockets, or combination.

LETTERS (from Page 3)

get engagements, gunner's requirements, direct fire adjustments, and reengagement techniques. In order to understand why we (the Armor Force) use the current precision, as well as battlesight, fire commands, you have to understand how these fire commands came to be.

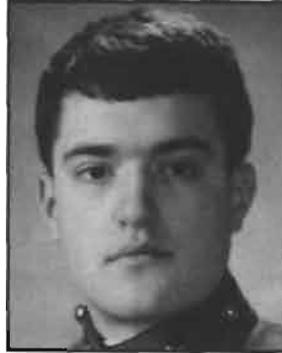
For years before the outbreak of WWII, our Armor Force used a variety of fire commands, from very simple to very complex. When the United States entered the war our Armor Force was using a hodgepodge of fire commands. The problem with this was, as new replacement crewmen arrived on the battlefield, they had not been trained to use or understand what has been described as "unit fire commands." A standard or formal fire command was a timely, efficient way to correct this problem. Since then, the concept of using a reduced fire command has been initiated many times.

You will also find that most of our NATO allies use fire commands formatted very similarly to ours. While they may not use the same terminology, the structure is basically the same. FMs 17-2-1, 17-1-2, 17-12-3, and 17-12-5 all allow for tank commanders to reduce the precision engagement fire command to an alert ("Tank/PC/Troops") and an execution command ("Fire"). However we cannot condone the elimination of the standard fire command elements because they provide individual tank commanders the background and format for directing section and platoon fires at multiple targets. One of our greatest advantages over our threat counterpart is that we train to the next higher level of command (i.e., gunner to TC, TC to PSG, PSG to PLT, PLT to CO, etc.) and we should not eliminate tank fire commands at the expense of being able to direct platoon fires.

The gunner's response of "Identified" to his tank commander's fire command is not the cause of any delay in the gunner's ability to fire at a target. He can easily utter this word while still making his final lay on the target, "OK" is too freely used in everyday conversation to be specifically linked with a gunner's acquisition and positive identification of a threat target.

If short is better in fire commands and crews responses, then changing the gunners "On the way" before firing is possible. Rather than repeating the "fire" of the execution element of the fire command and possibly causing some confusion, however, we recommend that simply "away" would suffice.

Armor Saber Award Winners at West Point Are Both Heading For the 11th ACR



KELLY J. WARD
Academics



THOMAS D. DORAME
Leadership

Cadet Kelly J. Ward and Cadet Thomas T. Dorame were this year's winners of the Armor Saber Awards for leadership and academics at West Point.

The U.S. Armor Association has given the awards for the past 33 years to the top academic and top leadership positions cadets who will be commissioned in Armor.

Ward, the cadet with the highest academic average, was a distinguished cadet for four years and served as executive officer of the 4th Regiment. He was a Rhodes Scholar candidate and a member of the Brigade Championship football

team in 1986. He attended DCLT and Airborne School at Fort Benning and served as commander of the Air Assault Class of 1987.

Dorame, who held the highest leadership position in his senior year among Armor-bound cadets, was brigade operations officer and permanent captain. An economics major, he made the dean's list for four years and was a Sandhurst competitor for two years. He attended DCLT at Fort Dix, NJ, Airborne School, Jungle Operations School, and began AOBC in July.

Both cadets will join the 11th ACR.

When a target appears that would be better fired upon by a round other than that which is loaded in a battlecarry posture, the commander should not compound a relatively confusing situation by announcing a change in ammo before the gunner even gets to identify the target. "Prep HEAT" might cause the gunner to index HEAT before he fires his battle-carried SABOT, thereby giving away his position with little or no possibility of hitting the target. SSG Thomas's point is well taken that we should use our LRF to determine the range to the target, whenever possible, regardless of that target's close proximity. We would not recommend the elimination of the battlesight fire command, however, because it is alerting the gunner to a target that can be hit with battlesight range indexed, even if the LRF is inoperative, or if conditions don't allow the LRF to provide an acceptable range.

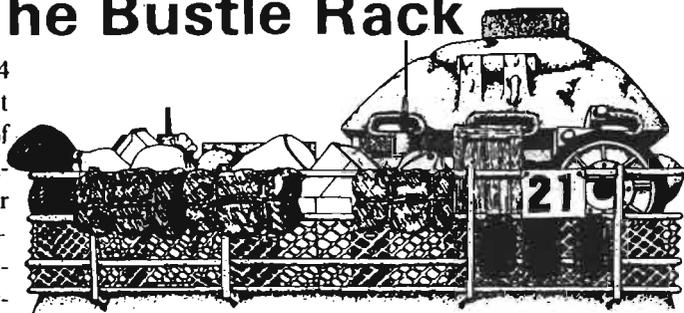
Sensing or observing 105-mm APFSDS-T rounds is difficult, to say the least, and 120-mm APFSDS-T rounds are just impossible to observe in flight. Depending on the distance to the target, round impact observation may be possible. SSG Thomas is on the right track regarding

gunners' responses with simultaneous target engagements and the advent of CIVT. The crew cannot afford the luxury of a TC just watching what the gunner is doing. If the TC does observe the round's impact, the correction for that round is sufficient if the target or the firing tank are not moving. If either are moving, then the appropriate fire command would be "Re-engage," to see if a more accurate range solution could be achieved. We are currently experimenting with the fire command formats as part of a test involving a surrogate CIVT mounted on a COFT. We will work to validate the most concise, coherent fire commands.

Changes to present and future tanks may well require a change in our direct fire procedures and doctrine. It's always helpful to get thoughts and suggestions from the field to apply to potential problems, or to enhance our capabilities. We do share a common goal, and that is to kill the enemy as quickly as possible.

SFC CRAIG A. LASSITER and
SFC SAMUEL M. BASS
Master Gunners,
Weapons Department, USAARMS

The Bustle Rack



Military Qualifications Standards (MQS) Manuals

One of the findings of the recent (Nov 87-Apr 88) Armor Officer Survey was that about one of every three lieutenants does *not* have an Armor MQS Manual. Of those lieutenants who do, about 44 percent said the manuals were moderately to extremely helpful in their professional development.

Units ordering copies of STP 17-1211-MQS, Armor Officer MQS 11, must submit DA Form 4569 (USAAGPC Requisition Sheet) to U.S. Army Publication Center, 2800 Eastern Boulevard, Baltimore MD 21220. Individual officers must see their unit publication control officer/clerk or unit training officer to initiate this action.

Other MQS publications currently available and of interest include: STP 21-II-MQS, MQS Manual of Common Tasks, and STP 25-II-MQS, Commander's and Supervisor's Guide. Work on the Armor Captain's Manual (MQS III) is underway, and the manual should be available through the pinpoint distribution system in the second quarter of FY 89.

1989 Armor Conference Dates Announced

MG Thomas H. Tait, Chief of Armor, announced that the 1989 Armor Conference would be held at Ft. Knox, KY on May 8-12.

Expansion of COHORT

The Army recently received approval to continue and expand the COHORT (Cohesion, Operational Readiness and Training) concept. The first phase of the phased expansion is scheduled to run through

1992 and involve 364 units, or seven percent of the total number of Army tactical companies. The goal is for all tactical companies — combat, combat support, and combat service support — to come under company COHORT.

There will be two types of unit manning systems in operation once the expansion begins. Companies in Korea will come under the traditional COHORT concept. Members of those units will be recruited and trained together. They will then stay together for a definite life cycle, usually three years.

Most other units will use the sustained COHORT system. Once a COHORT unit is formed, it will periodically receive replacement packages. They could be platoons, squads, or any number of soldiers, depending on the unit's requirements.

Sustained COHORT units will include 288 other companies assigned to Forces Command, Western Command, and U.S. Army Europe. Companies slated for Europe will form and spend their first 12 months in Forces Command. They will then deploy to Europe and replacement packages will sustain them.

Companies remaining in the United States will form COHORT units and remain in place. The Army will use traditional COHORT in Korea because, as a short-tour, unaccompanied area, it is suited for that kind of system. It also allows the Army to modernize in Korea by sending fully-trained units to man the new equipment.

Seventy-six companies will support Korea under traditional COHORT

in the initial four-year expansion phase. These companies will form and spend their first 24 months in Forces Command and Western Command divisions. They will deploy to Korea for the final 12 months of their life cycle.

Phase II and future phases of the plan to expand COHORT to the remaining tactical Army are under review. They will be coordinated with the major commands as they are formalized.

1988 Armor Trainer Update Set

The 1988 Armor Trainer Update (ATU) is scheduled at the USAARMS, Ft. Knox, KY, from 14-18 November. The five-day session will update Armor/Cavalry officers and NCOs who are instructors in schools and NCO academies; U.S. Army Reserve Forces (USARF) advisors and unit officers; Readiness Group Armor Assistors; Active Component (AC) staffs; and AC and USARF unit commanders on current developments in doctrine, tactics, training, and training materials.

Forward agenda recommendations and requests to address the assembly or conduct a seminar to Mr. Troy E. Schaffner, ATSB-DOES-SA, Autovon 464-1932/3028.

1988 Military History Writing Contest Announced

BG William A. Stofft, U.S. Army Chief of Military History, has announced that the 1988 Military His-

tory Writing Contest is open. Entries must be postmarked by 31 December 1988 to be eligible for the five monetary prizes that start at \$500. Students of officer advanced courses and the Sergeants Major Academy are eligible. Previously unpublished manuscripts of 2,000-4,000 words (about 7-14 pages), typed, double-spaced are acceptable. Subject matter should deal with the *historical perspective* of one of the following aspects of Training, the contest's theme.

The NCO and Training; Training the Trainer; Logistic Training; Unit Training; Leadership Training; Initial Entry Training; Intelligence Training; Staff Training; Training Exercises/Maneuvers/Simulations; Civil War Training or Other Period Training, and Effects of Training on Warfighting/Combat. Documentation is required, but footnotes or endnotes do not count as length.

Send two copies of the manuscript along with any photographs, charts, maps or other graphics to: Center of Military History, ATTN: History Writing Contest, 20 Massachusetts Avenue, NW, Washington, DC, 20314-0200. POC is Billy Arthur (CMH) Autovon 285-1279 or commercial (202) 272-1278/9.

Winners will be announced in the first 1989 issue of *The Army Historian*, scheduled to appear in March 1989. A panel of three historians will judge the entire on originality, historical accuracy and documentation, style and rhetoric, and usefulness of article to today's Army leader. Entrants should contact their command's historian for assistance in writing their essays to acceptable historical standards and methodology.

All entire must be postmarked by midnight, 31 December 1988. Entries must include Sergeants

Major Academy or advanced officer course title, course number, dates attended, and forwarding address upon completion of course.

Officer Training in Reconnaissance

The Scout Platoon Leader's Course at Fort Knox, KY, has been training lieutenants in the intricacies of leading scout platoons since February of this year. To date, five 3-week courses have gone through the course, and feedback from students and field units confirms the course's validity.

We automatically schedule lieutenants completing the Armor Officer Basic Course who are on orders to cavalry units are automatically scheduled to attend the Scout Platoon Leaders Course (SPLC). The course is applicable to regimental and divisional cavalry units and to battalion scout platoons. Normally, a mix of armored, mechanized infantry and heavy and light cavalry officers attend. Marine Corps officers assigned to light armored vehicle (LAV) battalions, and observer-controllers from the National Training Center (NTC) also attend.

The course is also available to field officers on a TDY-and-return basis. Experienced cavalrymen teach small groups in Threat tactics; intelligence preparation of the battlefield; long-range communications; planning and installing demolitions; target turnover; preparation of an obstacle; bridging, fording, swim site, tunnel, and underpass evaluation; route, zone, and area reconnaissance; screen/counter-reconnaissance; patrolling; and how to train.

Tough standards prevail, and the student's days last 10 to 19 hours. The lieutenants must demonstrate their technical and tactical abilities and proficiencies in all aspects of

reconnaissance and screen-related missions.

Hands-on training in the "hard" reconnaissance skills occupies the first week, and students enroute to Bradley units receive training in the Bradley Conduct of Fire Trainer. During their second week, students participate in situational training exercises requiring them to master reconnaissance and security collective tasks. In the final week, the lieutenants practice mounted/dismounted day and night field exercises, testing their abilities to direct scout platoon operations. The exercise is conducted on and off post and fully challenges the young officer's abilities to execute missions over extended frontages and depths. The mounted tactical training uses HMMWVs and Ft. Knox's own aggressive OPFOR.

Response to the efficacy of the SPLC is enthusiastic. An observer-controller from the NTC reports: "The Scout Platoon Leaders Course is an outstanding course that every scout platoon leader should attend. As an observer-controller, I learned what I should expect from scout platoons that come to the NTC, and what I might need to train them in conducting scout missions. I believe all scout platoon OCs would benefit from this course."

A student of class 5-88 said of the course: "The training was some of the best of its kind afforded to U.S. cavalrymen and scout platoon leaders. Having attended some 17 service schools during my tenure in the Army — most of them combat arms-MOS related — I say that this course is the tops without a doubt."

Unit commanders can assist the Armor School in identifying AOB students enroute to cavalry assignments so they may be enrolled in the SPLC. POC is Major Bob Wilson, AV 464-6235/3154.

An Armored Surgeon's War

reviewed by R.E. Rogge

The Other Side of Time: A Combat Surgeon in World War II, by Brendan Phibbs. Little, Brown & Co., Boston, 1987. \$17.95. 341 pages.

It isn't often that one reads a war book written by a man who is not only sensitive to the subtleties of the English language, but sensitive as well to the emotional flimsiness and the myopic minds of humanity let loose in the chaotic cataclysm of war.

Least of all, does one expect such sensitivity from the pen of a surgeon from CCB, 12th Armored Division. Surgeons are trained in the meticulous artwork of the human body, trained to disassociate themselves from that humanity lest they fall prey to very human emotions as they exercise their skills. Somehow, somewhere in his training, and during his violent exposures to combat, Brendan Phibbs retained a full measure of humanity and he pens it in striking prose.

This is one man's account of WWII, and perhaps it is one of the finest to come out of that war. The non-combatant surgeon with major's oak leaves on his shoulders saw that war from the very devil's cockpit of battle — the frontline aid station under fire, and his human compassion for the detritus of battle is bitingly scored by his even greater loathing for those responsible, from national leaders to private soldiers.

The frontline medics, those vaguely-trained and unproclaimed heroes



Medics treat a casualty amid the chaos of a Normandy beach.

— the only men in uniform uniformly loved by the infantry — here at last receive belated recognition. The struggles to save lives in the killing insanity of battle are here, as is the fighting man's flagrant, foul-mouthed rage for hallowed rank and bathed and manicured privilege.

"Arrest me, Colonel Bambino? You gonna send me to a nice quiet stockade where they feed me three good meals a day and no one shoots my ass off?"

Here, too, is Phibbs' quiet admiration for a singular tank battalion commander who advises a general: "An American tank battalion is a lot of concentrated violence, but to use

it you have to go back to Indian fighting. Sneak, stalk, flank...pull the bastards out in the open and hit them before they know you're there. Sucker them, fool them...Brains and speed, that's how you survive." Phibbs concludes his vignette: "...Creighton Abrams is the hero's name... He was a rare soldier who served the Republic with courage and intelligence."

The all but unbridgeable gap between classroom and battlefield is acutely set forth by an artillery forward observer: "First thing, you gotta have brains and next you gotta have some kind of very strong ability to keep on using your brains when everything's screaming and

blowing up. Like a gyroscope in your head keeps you steady. Ninety percent of your average guys can learn the crap officers learn in a classroom, but maybe one percent can use that stuff, keep on functioning, out here in a hurricane..."

Phibbs was among the first Americans to enter Dachau, and his evidence of man's calculated inhumanity to man is devastating. His abhorrence of the Wehrmacht in general and the SS in particular, was that of all those who experienced either or both of those German forces. *The Other Side of Time* is not for the squeamish, but Phibbs' illuminating passages of insight and philosophy — and cutting humor — make this book one to be kept and read and read again. Here is what happened to armor and mechanized infantry in the wintry woods and fields of France and Germany 44 years ago. Here is one surgeon's scalpel and morphine syrette and suture war. It isn't always pleasant, but the overriding compassion of this man for those he saved — and lost — is compellingly true.

Mr. Rogge is ARMOR's assistant editor.

Kenneth Macksey's New Tank Book

Tank Versus Tank, by Kenneth Macksey. Totem Books, Don Mills, Canada, 1988, \$24.95.

Key factors in understanding the future of armored warfare are the examination of trends in armored vehicle development and the evolution of armored tactics. When the technology available is considered, the progress of armored warfare has for the most part followed a logical path.

Tank Versus Tank explains and illustrates key events and developments in armored warfare in an effort to define where this path has been and where it will likely lead.

Macksey has blended the technological improvements with tactical modifications to show the interrelationship between the two. With this background, he focuses on a series of firefights and battles between armored vehicles to give the reader a feel for how these developments were applied on the battlefield.

Battles such as Jiradi Pass, Singling, and Jeremejewska, to name a few, are described with full-page illustrations and terrain diagrams. Perhaps the best thing about the book is that not only does Macksey provide analysis and lessons learned from these encounters, but he presents enough facts and technical data for the reader to draw his or her own conclusions. As an example, for each period he provides "Gun versus Armor" tables showing effective ranges of main battle tanks when engaging different types of enemy tanks.

Macksey, as one might expect from a distinguished author, has some profound insights on armored combat. He shows, for instance, that of all armored vehicles rendered non-mission capable during combat, two-thirds are repairable.

Then he goes on to prove that the combatant on the tactical or operational offensive has a significant advantage because the attacker can recover and repair damaged vehicles. The defender does not have the capability to recover damaged tanks because he quickly loses access to them when he gives up ground. Therefore, over the course of an offensive operation, the attacker maintains his vehicle strength, while the defender ex-

periences dramatic reductions in strength.

The book closes with a chapter on the author's vision of the battlefield in the 1990s. Macksey predicts that the tank destroyer will come back in vogue along with other prophecies well worth considering. Overall, *Tank Versus Tank* is must reading for anyone studying the future nature of armored warfare.

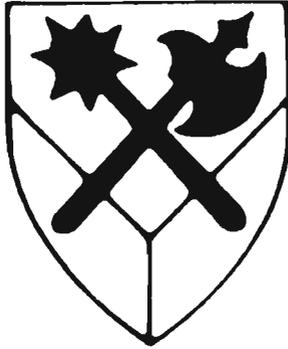
Kris R. Thompson,
Captain, Armor,
Ft. Knox, KY

Two New Videotapes Are Worth a Look

Threat Division, DCD, Fort Knox, recently reviewed two unclassified videotapes produced by ODCSI, HQ USAREUR, on Soviet armor and Soviet training. The 30-minute armor tape is a documentary on Soviet tanks, soldiers, and tactical doctrine. It presents a technological profile of main battle tanks, including the T-80. The video examines the life of a Soviet tanker with respect to training, education, and military requirements.

The second tape, on Soviet training, focuses on surface-to-surface missiles, attack helicopters, and river crossing operations. The 40-minute tape provides information on Soviet missile capabilities and the technical characteristics of attack helicopters, including the M-28 HAVOC. It also portrays a successful river crossing. Taken primarily from Soviet television, the tapes are well done and the first two of a series planned by ODCSI, USAREUR.

For more information, contact MAJ Ted Dyke, Production Division, ODCSI, HQ USAREUR, APO NY 09403-0102.



Distinctive Insignia

Gold colored metal and enamel insignia consisting of a black mace, handle to base, with three flashes of blue, gold and red from left to right; overall in base an arched golden scroll inscribed "Thunderbolts of Battle" in black.

Symbolism

The colors yellow, blue and red represent the principal combat arms elements (cavalry, infantry, artillery) of an armored organization. The mace alludes to the smashing power of Armor and the unit's participation in the Central European campaign of World War II. The flash refers to the motto.

194th Armored Brigade

Thunderbolts of Battle

Lineage and Honors

Constituted 24 June 1921 in the Organized Reserves as Headquarters and Headquarters Company, 194th Infantry Brigade as an element of the 97th Division (later designated 97th Infantry Division).

Organized in June 1922 at Concord, NH.

Converted and redesignated 30 January 1942 as 3d Platoon, 97th Reconnaissance Troop (193d Infantry Brigade converted and redesignated as 97th Reconnaissance Troop (less 3d Platoon)).

Troop ordered into active military service 25 February 1942 at Camp Swift, TX.

Reorganized and redesignated 1 August 1943 as 97th Reconnaissance Troop, Mechanized.

Reorganized and redesignated 15 October 1945 as 97th Mechanized Cavalry Reconnaissance Troop.

Inactivated 31 March 1946 in Japan.

(Organized Reserves redesignated in 1948 as Organized Reserve Corps, in 1952 as Army Reserve).

Relieved 15 July 1962 from assignment to 97th Infantry Division; concurrently, converted, withdrawn from the Army Reserve, and allotted to the Regular Army. 3d Platoon redesignated Headquarters and Headquarters Company, 194th Infantry Brigade (remainder of Troop redesignated Headquarters and Headquarters Company, 193d Infantry Brigade; separate lineage).

Converted and redesignated 2 October 1962 as Headquarters and Headquarters Company, 194th Armored Brigade.

Activated 21 December 1962 at Fort Ord, CA.

Campaign Participation Credit

World War II
Central Europe

Decorations

None