

ARMOR

French Armor at Dien Bien Phu

see page 16



PB 17-87-5 (Test)

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September-October 1987



Tank Tracks

In case you haven't heard, the next defending champions in the Boeselager Cup and Canadian Army Trophy competitions will wear "U.S. Army" over their breast pocket. We join the entire Armor/Cavalry community in congratulating the 1-11 ACR for taking home the coveted Boeselager Cup, and to the 1st Platoon, D Company, 4-8 Cavalry, 3d AD for its magnificent performance in capturing the Candian Army Trophy for the first time. We hope to have more about how those folks did it in the next issue of ARMOR.

But don't toss this issue on the shelf to gather dust because we have a full menu for you. Major James A. Dunn, Jr. highlights interesting problems and solutions that arose during a heavy force-light force combined operation at the NTC.

In "French Armor at Dien Bien Phu," Captain Michael Woodgerd illustrates the critical role armor plays in supporting infantry operations in any type of terrain. All the tanks arrived at Dien Bien Phu by airlift!

Frequent and longtime contributor Richard Ogorkiewicz lays out a new graduate program in design of military vehicles at the Royal Military College of Science at Shrivenham, England. For those of us who have often wondered who designed a particularly awkward or frustrating piece of equipment and the extent of his military experience, this idea may offer a solution.

Through his device of following a Soviet tank corps commander on a mobile group operation during World War II, LTC Richard N. Armstrong helps us to understand a little better the current discussions of Soviet Operational Maneuver Groups. He says that the mobile group experience is a valuable bridge to understand today's threat posed by the OMG concept.

After action reviews can be valuable if conducted properly. Captain James Barker shares his thoughts on how company commanders can get the most benefit from AARs by analyzing the key events of a training session.

LTC Douglas Campbell, who served as chief of live-fire exercises at the NTC for nearly three years, points out some shortcomings that he has seen in unit gunnery training there. Our antennae might do well to receive his remarks about sensing our own rounds and those of others.

I commend to you "Training Scouts," by LTC A. J. Bacevich. His unit turned an unused building into an imaginative and useful training facility that integrates scout training with a touch of "Dungeons and Dragons." Check it out and see what imagination can do.

Captain John Nussbaum explains why an M1 version worthy of inclusion in a James Bond movie is more than an artist's concept. We should see M1A1 Block II improvements in little more than a year.

Finally, I would like to direct your attention to the Professional Thoughts Section. USMC Captain Peter Walton talks about handling fear when someone is shooting at you, as they did at him in Lebanon and Grenada. The opportunity to hear from recent combat veterans is scarce. Walton has something to say and he says it well. Those of you who will head to the Advanced Course soon should read Captain Gordon Wiborg's warning order. Just what was that "gentleman's course" business?

Read. Enjoy. And let us hear from you.

-PJC

By Order of the Secretary of the Army:

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ARMOR

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LETTERS

Reaction to Light Forces

Dear Sir:

In "Pertinent Questions; Where Are the Answers?" (May-June 1987), LTC F.Y. Hartline of Fort Bragg asks what we think of Army of Excellence changes in force structure and the last four years' emphasis on lighter units.

The word "excellence" appeared a few

years back in the title of a best-selling book about how to succeed in business. Then it became an Army buzzword, in slogans like "Excellence starts here", as a tag line on message traffic, and finally across the bottom of a new shoulder sleeve insignia. (The well-recognized, circular TRADOC patch, showing the colors of all three combined arms, was adequate.) Now that the word "excellence" has proliferated in letterheads and signs, I give it a half-life of about nine months.

Light forces can be deployed rapidly by airlift. They are recommended for forests, mountains, and other close terrain. But who lives in these wooded hills? The descendants of tribes driven there centuries ago by other warlike peoples who settled the valleys and plains, where the land is better for crops and civilization. The great cities and cultures grew near alluvial soils, where a settled life was made possible by sustained agriculture.

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There is a verse in the Old Testament, Judges 1:19, which tells us why light forces are no panacea: "Now the Lord was with Judah, and they took possession of the hill country; but they could not drive out the inhabitants of the valley because they had iron chariots."

Hartline quotes someone's contention that light forces enable us to "get there quickly and lose," a succinct formulation.

ROBERT P. FAIRCHILD
LTC, Armor, NYARNG

Berets Make Sense

Dear Sir:

Like Major Betson, I have been following the debate over berets for the Armor and Cavalry with interest. I'm very proud to say that I'm second-generation airborne and served with airborne units for a number of years. I will not present an irrational or emotional argument against the wearing of a beret by the members of the Armor branch, nor will I attempt to justify the wearing of a beret by those organizations currently authorized to wear them. There is sufficient literature available for a serious, open-minded researcher to study and draw their own conclusions.

Rather, I would like to look at why, if at all, the Armor Branch should have a beret. First, leaders, did you ever notice how many times you find guys working in the motor pool wearing their BDU caps reversed? Naturally, you get angry because they are out of uniform. But those troops aren't deliberately doing that. They have a job to do and the bill of the BDU hat obstructs their vision, which makes work more difficult and possibly more dangerous. A beret would eliminate that problem. The added advantage is that, when the troops leave the motor pool, they look more military. We still want our soldiers to look military, don't we? Let's face it: when you have to scramble around on an AFV, a beret makes it a heck of a lot easier (realizing, of course, that helmets are worn during operations.)

Second, during a mounted review, (when we usually want to impress anyone watching with how sharp our troops look), a driver and TC wearing berets with headsets is much more impressive than if they were wearing a CVC helmet, garrison cap, a C-ops overseas cap, or just a helmet.

Third, a beret is far more versatile than all other headgear. It can be worn with BDUs, greens, or blues. When wearing a properly-fitted uniform (not skin-tight or slightly snug ones) the beret may be dis-

creetly carried out of sight when indoors. Only the overseas cap can claim that distinction at present. So a beret would also be better economically.

So, should the members of the Armor Branch wear berets? I'm afraid that my brothers in the airborne community will never forgive me, but yes, they should. Not just because of the emotional, tear-filled reasons that they are just as good and want their little bells and whistles too. But for hard, realistic, unemotional, no-nonsense reasons. It is more versatile; it is more practical; under certain conditions it is safer; it looks sharp; it is just as easy to maintain; and it is cheaper than three different hats or even two different ones.

Now that we have established the fact that the members of the Armor Corps should have a beret, we now face the task of determining the color. That will, I'm sure, stir up a great deal of debate.

While ARMOR Magazine is the direct descendent of The Cavalry Journal, and ARMOR tries to carry on many of the Cavalry's traditions, and while both have the same tanks, they are different. (Now remember, guys, this is an infantryman talking, so don't get too excited if my ideas of your missions are wrong.)

The Armor, while it offers mobility and shock like the cavalry of old, is closer to the heavily armored knight. It is the apex of the combined arms team. It is the solid steel anvil of the battlefield upon which an enemy attack would break. It is the sharp cutting edge of cold steel which delivers the shock-producing cut for the cavalry, infantry, and artillery to exploit.

So, for the Armor, I'd propose a very dark blue -- not Navy blue -- beret, for the color of finely tempered steel in a highly coveted fighting blade.

The Cavalry, on the other hand, are the eyes of the commander. They are more like the mounted men-at-arms who were used for scouting and as mounted skirmishers, but who could be used in the main line of battle with the knights. They are the ghosts and nightmares of an enemy, when used properly. They see without being seen, and when seen, appear to be more than they actually are. But with their elan and panache, they are ready, at the drop of a gauntlet, to try issues with any foe. For them, a beret of gray, for the ghosts they are, and the nightmares they cause the enemy.

My initial reaction to the question, I'm afraid, was the same as many others in the airborne community on this issue.

Now, looking at the question from a more logical (I hope) point of view, I come to the conclusion that both the Armor and the Cavalry should have berets. And if all the stuff coming out of DA about tradition, home-basing, and esprit-de-corps and all the other things which DA claims to support in the Regimental System, then there is a definite need for two colors.

Kenneth Lachlann
CPT, IN, USAR
Atlanta, GA.

WWII Tank Deficiencies

Dear Sir:

Those of us who were in combat in WWII have come back with a dedication to providing our Armed Forces with the best formations and the most technically advanced weapons that can be provided. In part, this is due to a large extent because of our recollections of, and experiences with, the Sherman M4 tank.

At that time, I was a PFC, first scout of a rifle squad in the Third Army. I've read that General Patton commonly had to lecture his armored divisions as to the effective use of the M4 tank. Since he lectured my regiment, and all the regiments of my division (the 94th) as to how to fight as infantry, I can picture him giving similar lectures to his armored divisions.

While his lectures were ridiculed by the news media, General Patton's instructions made great sense to my sergeants, and they saw to it that we privates did exactly what General Patton wanted us to do. While we never saw General Patton again, the effectual chain of command in the Third Army had only three layers: General Patton, my sergeants, and we privates. As for the M4, in areas where there was no organized resistance, our Sherman M4s were good. However, at other places they were not all that great.

In my company's attack on Nening, we were supported by a platoon of M4s. Our line of departure for that attack was from behind a railroad embankment. The tank platoon was on line with us, but they departed one after the other in a sort of echelon formation. A German 88 took our the first three Shermans in sequence. The fourth M4, which was by that time on top of the railroad embankment, saw what had happened and went into reverse, and backed down. The fifth tank never got started. My company took our portion of the town and defended it against a counterattack by the 11th Panzer Division.

One panzer stopped in front of the house we were in. My squad leader climbed through the roof of the house, and put a bazooka round through the top of the panzer, just as it was swinging its main gun around towards the door to gun us down. Since he was under fire at the time, my squad leader was awarded the second of his Silver Stars for his heroism. I've always thought that the rest of the riflemen, who held their ground with a panzer only 15 or 20 feet away, deserved a medal for heroism also. What they got was a CIB, but that was what a CIB was all about.

My company lost 107 men in that battle. On average, our rifle units lost 50 percent of their men every week for 11 weeks, for a turnover of about 500 percent in the rifle units. After 11 weeks, those who survived, and many did, were a pretty capable bunch of riflemen. Another unit relieved us at Nening, but lost the town; another unit retook it and lost it again. Finally, a battalion of armored infantry from the 8th Armored Division took Nening for the third time, and we held it after that. Those of us who were around to watch stood in awe of what we saw the armored infantry accomplish. Nening was a key part of the Siegfried Switch Line.

At the time, our corps' armored division was the 10th Armored. For much of this period, it was billeted 50 miles to our rear. I've been told that one of the Armor School's studies is on the 10th Armored Division's attack on Trier. My regiment was attached to it for that attack. We had an armor unit attached to my battalion for our attack on the Bannholtz Woods. It was reported to us that they could not get their tracks across a wet area near the line of departure. At any rate, that unit never joined in the attack. The ensuing firefight lasted from about 0600 to about 1600 hours. Initially, we had almost occupied our objective when we were counterattacked by two panzers and a unit of panzer grenadiers. A reported 19 bazooka rounds were fired at one panzer, and 14 at the other. All the bazooka rounds either bounced off like tennis balls, or exploded harmlessly on the bazooka skirts on those panzers. It was only much later that I learned that the WWII 2.36-inch bazooka round had to hit at almost right angles to detonate.

Had I known then what I know now, we would have done things differently. We withdrew when we saw eight more panzers being lined up against us. Not all that many men came back down off the



The M4 Sherman with 75-mm gun.

hill. Little areas like the Bannholtz Woods changed hands something like 15 times before we finally held. About March 1st (1945) the Stars and Stripes put out an edition with the screaming headline that said, approximately, "1,000 Enemy Tanks Knocked Out On Third Army Front During February". Since I knew how we had fared on our portion of the Third Army front, I read the article with great interest. Only at the end did the article state that 990 were knocked out by the Nineteenth Tactical Air Force. Presumably the other 10 panzers were knocked out by bazooka fire. Effective fire from a Sherman M4 was so rare that the odds are that none of those 1,000 panzers were hit by gunfire from an M4.

At Ludwigshaven, the massed 88s of the air defenses there in essence defeated the attacking 10th, 11th, and 12th Armored Divisions. Every armored vehicle that came within range of an 88 was knocked out. One attacking tank battalion reportedly lost 33 tanks before they realized that bravery alone did not win battles. Our 94th Division was then ordered to attack, and after a day and a half or so, we took Ludwigshaven. During that battle, my squad leader got the drop on, and captured, or took the surrender of 200 armed enemy out of a field fortification. (However, he and the three sergeants who helped him got no decorations that I am aware of.) In one of our little firefights on our way through the Siegfried Line proper, my company was attacked by the 6th SS Mountain Division. One of our sergeants assembled the 17 remaining men in his platoon, and with a "captured" American M4 mounted a counterattack using tactics that we had learned from the 11th Panzer Division. He saved the company from being overrun, and was awarded a Distinguished Service Cross. (As far as the tank was concerned, "cap-

tured" is too strong a word. Actually, our sergeant used the external phone to tell the crew how a counterattack was conducted.) However, we had to withdraw, so overall the mountain troopers won that battle that day.

While the airborne troops at Bastogne were superb, once on the ground as a unit, there was very little that they could handle by way of sustained combat. After the Battle of the Bulge was over, the 101st Airborne was the first division that General Patton gave away, and he did have some degree of choice. One wonders why generals like Ridgeway and Maxwell Taylor were unable to figure out an effective way to employ their quite superb fighting units. In warfare the technological edge means everything, or perhaps more accurately, the effective employment of the weapons that you have been given to use. The Sherman M4 was a very fine light tank. It did a great job when it was properly used. Its three inches of armor and a relatively low-powered 75-mm made it ineffective in a major battle. At Bastogne, I'm guessing that it was the TD battalion there, with its high-velocity main gun, that stopped the panzers. Later, when the M4 was up-gunned to a high-velocity 76 in the M4E8 version, it was a lot more capable piece of equipment.

As good as the 2nd Mountain and 6th SS Mountain Divisions were, (They were fresh from occupation duty in Norway), and as handily as they defeated us on initial contact, we eliminated them as effective units in about five or six days of fighting. Foot-mobile bravery alone, as in those mountain troops, is not enough for sustained combat.

The approximately nine Infantry divisions that constituted the Third Army's front were a small part of the 100 or so divisions on the Western Front. Yet our nine divisions were reported as doing 50 percent of the fighting. At the time the Germans were producing 30 jet fighters a month. Had we been just a week or two later in breaking through the Siegfried Switch Line, with its counter-attacking 11th Panzer Division, and later the Siegfried Line proper, with its counter-attacking 2nd Mountain and 6th SS Mountain Divisions, they might have had enough time to get enough jet fighters into the air to make it an entirely different war. As it was, my regiment was among those strafed by ME-262 jet fighters. How close were we to losing in Europe? To my recollection of being shot at, our victories were paper

thin. Had General Patton not pushed us as hard as he did, the Germans might have gotten enough jet fighters into the air to have grounded our air force.

Then, without P-47s to stop them, the panzers might indeed have rolled all the way back to the English Channel. General Patton is often castigated for his exacting discipline for his officers, and for his rear-area troops. However his being tough on the rear-area troops was the kindest thing that any officer ever did for us privates and PFCs in the rifle units. In his way, General Patton was the best friend a rifleman could have. Also, totally contrary to the very unfair press reports on "Old Blood and Guts", the Third Army had fewer casualties than any other Army in Europe that fought a comparable fight. Since we had captured some Tiger tanks in North Africa some three years earlier, it is unbelievable that we did not build a copy of the Tiger to use in Europe.

Today it is comforting to read the reports on the M1 Abrams tank, and the Bradley Infantry Fighting Vehicle. I hope that journals such as ARMOR continue to be published so that today's Army has the means to communicate the lessons of the battlefield to and among those who need to know.

Robert P. Kingsbury
LTC, INF & FA, USAR (Ret)

Recognition Quiz Error

Dear Sir:

Gotcha! For ten years, you've stumped me on your Recognition Quiz and this time, I've got you! In the March/April 1987 issue of *Armor Magazine*, the recognition quiz photo No. 6 shows a wheeled vehicle splashing into the water. Your answer is that it is an A.M. General HMMWV.

The photo is a prototype of a vehicle manufactured by FMC Corporation called the XR311. It was a rear-engined, gasoline-powered vehicle. It indeed was the forerunner of the HMMWV, but if you check you will agree it is a XR311 prototype.

Paul R. Curtis
VP, Business Development
Teledyne Continental Motors
Muskegon, MI.

(Mr. Curtis is correct. The vehicle is indeed an XR311. -Ed)

Two-Man Crew Too Few

Dear Sir:

I am writing in response to LTC Blackburn's letter concerning the two-man tank that appeared in the Jan-Feb issue of ARMOR. The author states that the two-man tank possesses four distinct advantages over a four-man tank: reduced vulnerability, reduced costs, improved strategic transportability, and reduced size. I agree with LTC Blackburn with respect to the notion that a two-man tank would probably be smaller and thereby face fewer problems in the areas of strategic transportability and bridge classification. It is also generally accepted that a smaller tank would present a harder target to acquire and to hit. Beyond these truisms, however, the case for a two-man tank is weak.

A major argument for the two-man tank was the supposed reduced cost of building, maintaining, and manning each tank. Merely because the crew is reduced by two men does not mean that the two-man tank crew will necessarily be cheaper to field. With all the modifications LTC Blackburn cites as necessary to the two-man tank, such as a panoramic stabilized camera, television viewing screens, the new autoloader, any special tools, winches, or jacks necessary to perform heavy maintenance, the additional expert maintenance personnel, and equipment needed to maintain the more complicated tank, and the additional crew training required, it is more likely that the two-man tank will cost more than the current M1 and will be more difficult to maintain.

Whether or not the technology exists in the West to build a reliable autoloader, LTC Blackburn has not shown why an autoloader is preferred to a soldier performing loading duties. It is not important that an autoloader can load fifty rounds faster than a man. It is unlikely that either type of loader will ever need to load fifty rounds in a row. Any tank that fires more than two or three rounds from the same battle position is violating a major precept of tank gunnery doctrine and may well remain in that location permanently (as a hulk tank). A soldier can, therefore, get brief rests while his tank seeks an alternate fighting position. And I think that LTC Blackburn underplays the potential of a man to beat an autoloader over a short time. In an engagement where fractions of a second will mean the difference between life and death, I'll take the faster human loader every time. The disadvantages incurred by eliminating the loader and another crewmember far outweigh the monetary advantages gained.

How can a two-man crew survive on a battlefield where the crew would be called upon to attack over rough terrain, detect, identify and engage multiple targets, send spot reports or calls for fire, and read a map all at the same time? It's not an unrealistic scenario. I believe it's too much for a two-man crew to do. Were such a tank ever adopted, our whole doctrine of tank warfare would have to be modified to accommodate this tank of fewer capabilities. In addition, there are myriad additional tasks that crewmen are called upon to perform in the field that would completely overtax a unit composed of two-man tanks. Such jobs as nightly guard duty, LP/OPs, KP, running land lines, setting up camouflage, NBC survey and monitor teams, and providing local security continually deplete a standard J-series 16-man tank platoon. Heaven help the two-man tank unit that ever has a man get sick or injured and has to go on sick call. To reduce tanks to two- or even three-man crews would be a monumental mistake that could have deadly effects.

Michael J. Miller
CPT, Armor
3d Brigade, 3d AD

The Need for Light Armor

Dear Sir:

In response to MAJ Guy C. Swan's letter in ARMOR's May-June 1987 issue "A Place for Armor in Low-Intensity Conflict?", I agree that the Army is not preparing a force to be an active participant in that level of war. But we do have one such unit in the Armor branch, the 3/73 Armor Regiment of the 82d Airborne Division, that is able to participate in LIC to give that light infantry unit the punch they need and would welcome.

The 3/73 has the M551A1 Sheridan airborne assault reconnaissance vehicle, which is air-droppable, can be air-landed, or LAPES-ed (Low Altitude Parachute Extraction System). It is very versatile and quite maneuverable in woods, swamps, and mountain regions, which would help in Central America. It has a 152-mm main gun that also fires the Shillelagh missile, which has a range of 3,000+ meters. It has the firepower and it is combat-tested.

But there are other problems, such as funding, which prevent updating or modernizing the M551A1, or coming up with another vehicle with similar capabilities. We need more units like the 3/73 Armor for low-intensity conflict if our Armor force is going to be effective with our light fighting forces.

In regard to other letters about the

Armor Badge proposal, I feel that Armor has a right to have such a badge -- a Combat Armor Badge or Expert Armor Badge. We are as much a combat arm as the Infantry. After all, we are a team; one works with the other and vice-versa. The badge is for soldiers who volunteer, have special skills, and excel above the normal soldier. Pride, morale, and esprit de corps are given to the soldier who wears the badge. It can't hurt; it can only help.

...And in regard to the question in CPT Feagan's letter, "When was the last time, if ever, that tanks or tankers were parachuted from aircraft?", my answer would be, "Just last week!"

BRENT J. BOYER
PFC, Armor
3/73 Armor
Fort Bragg, NC

Historical Perspectives

Dear Sir:

In looking through your May-June 1987 issue, I saw several letters that made reference to an earlier letter published in the Jan-Feb Issue. There were so many, that it prompted me to go to that issue and read *ILT Newsome's* letter.

First off, I would like to address the subject of unit history. On 28 July 1756, this unit left the colony of New Jersey to fight the French and Indians in the Mohawk Valley of upstate New York. I didn't recall hearing of any airborne operations in that war.

Later on, we faced off with the British at Springfield, Connecticut Farms, Princeton, Monmouth, and others. Again, I have no recollection of any airborne involvement mentioned in print. We were, and still are, the "mounted combat arm of decision". The Civil War sees us as the 1st New Jersey Cavalry, with 96 engagements and 12 Medals of Honor still standing. There were observation balloons, but I don't think anybody ever jumped from one. WWI was the same old story. In fact, our paths don't cross until the invasion of France in WWII. The lieutenant mentions paratroopers jumping in to take and hold key terrain. He forgets that it was a SGT Cullin, again a member of this unit, who devised the rhino horns for the front of tanks to allow them to break through the hedgerow bocage, not to mention another "plus" for the National Guard, which permitted them to relieve the airborne troops. The Essex Troop was and still is the mounted combat arm of decision. Can anyone in a "maroon platoon" match this? I doubt it.

Secondly, I believe it's time the diehard

airborne proponents gave up their obsolete *modus operandi*. Just as the hard-boiled cavalry trooper shed a tear in losing his faithful mount, the airborne will someday have to give way to the inevitable. When this occurs, who will take them in? Probably the mech, cav, and armor units that have born the brunt of the "I'm airborne - I'm HOT" mentality these last 40 or 50 years.

Lastly, *ILT Newsome* summed up the beret situation when he mentioned the fact that Rangers wear the black beret. That is precisely why Armor can't, and won't, until we can relieve ourselves of the pro-infantry thinking at MACOM and above. I don't know which is more demeaning: a lack of our own distinctive insignia or having to act and dress like infantrymen. What need does a tanker have with LBE?

Duncan C. McQueen
SSG, D/2-102 Armor, NJARNG
Old Bridge, NJ

Changes at ARMOR

Dear Sir:

I want to compliment the staff at ARMOR for the excellent job they've done in converting our branch journal from a magazine to a "professional development bulletin (PB)." The layout, artwork, paperstock and desk-top laser printing system are outstanding. But, the price to be paid for this progress is increased oversight and control of editorial content and style by "information managers" from higher headquarters.

Up to now, the nitpickers confined their reviews primarily to the mechanics of the magazine, i.e., contract compliance, circulation policies, paper weight, use of color and page length, to list a few. However, it now appears that they've inserted their foot in the door of content, visual style, and editorial policy. The breach is evident in the missing subtitle of our journal, "The Magazine of Mobile Warfare;" the missing pictures of our Chief of Armor and the Command Sergeant Major as well as the authors; the restrictive stipulations on content, i.e., only articles for which the Armor Center is proponent; and the deletion, on the masthead, of the department directors names.

The removal of the pictures of our Chief of Armor and his CSM and authors are arbitrary and petty at best. It tramples on an ARMOR tradition and relegates those officials and authors to the bin of "faceless bureaucrats." The pictures don't aggrandize those individuals but add editorial emphasis to their ideas.

But, the content restrictions and deletion of our subtitle are more serious threats. Had these restrictions been in effect on the Cavalry Journal in the 30's, the great debates over mechanization wouldn't have occurred in its pages because the Cavalry was proponent for horses, not mobile warfare in tanks, scout vehicles, and armored cars. The "information manager's" rules would have restricted articles by Patton and the other proponents of mechanized armored warfare. Articles by Eisenhower, Henry Kessingerr, Henry Cabot Lodge, Lord Baden-Powell, and other notables that have appeared in pages of the past would have been rejected.

I maintain that ARMOR remains the Magazine of Mobile Warfare in whatever form mobility evolves, and the magazine should proudly display such heritage in its subtitle. It should not be confined to publishing articles on "armor proponent" material only. The experienced armor officer in the ARMOR editor's chair is the best judge for what article is appropriate for its pages, unhampered by bureaucratic directives from information managers.

The Armor Association ceded publication rights of ARMOR to the Army in the early 70's with the stipulation that should the Army cease publication of the magazine, the rights to ARMOR would revert back to the Association. I don't think it was the intention of the Association that a professional journal as old and distinguished as the Cavalry Journal/ARMOR would, in a few short years, become a "bulletin" by the arbitrary fiat of some information manager. Nor was it the intention of the Association that the oldest army magazine celebrate its 100th anniversary in 1988 as a "bulletin."

Could one conclude from the evidence that the Army has ceased publication of ARMOR Magazine and the rights now reside with the Association? Is the time now ripe for the Association to seriously take up this issue with the Army before the situation worsens?

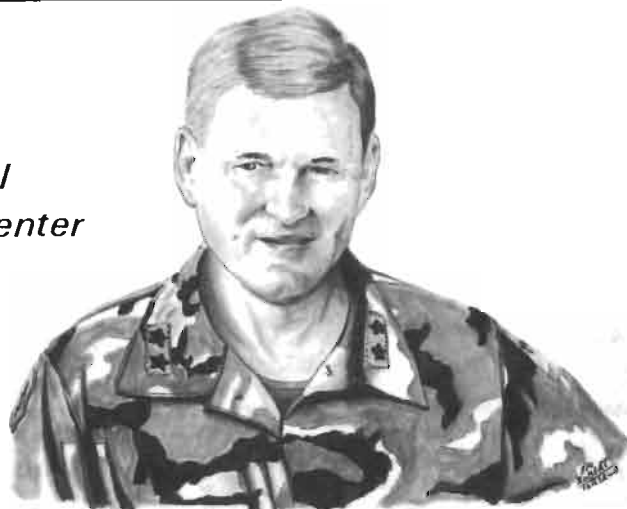
CHARLES R. STEINER, JR.
LTC, Armor
New York Branch
Office of the Chief of Public Affairs
34th Editor of ARMOR

Correction

Lieutenant Colonel Richard P. Geier was incorrectly identified as a major in the byline of his story, "The Evolution of a Battalion Comander," which appeared in the July-August, 1987 issue.

COMMANDER'S HATCH

MG Thomas H. Tait
Commanding General
U.S. Army Armor Center



Safety

Three Recent Incidents

Simply Shouldn't Have Happened

Our business is dangerous. To work with heavy, lethal equipment can be hazardous to one's health. We in the Armor Force have too many accidents, many of them fatal, all of them costly. I'll not bore you with statistics - for you know as well as I, accidents are lurking everywhere.

Commanders are the safety officers of their units. However, the unit commander cannot stop accidents by himself, for he cannot be everywhere at once. He does have some superb assistance. For example, the tank commander is the safety officer on his tank. He is responsible for everything on that tank, including the safety of the crew. If any leader is unwilling to assume the mantle of safety responsibility, then he should be replaced. (This also applies to squad leaders.)

An overwhelming number of our accidents are due to inattention; in fact, they are **dumb**. For example, we have had some downright stupid accidents at Fort Knox:

- An M88A1 was towing an M60A3 down a hill and slid into a ditch, when the tank got away and jackknifed. Standard procedure is

to anchor the tank with another M88 as it is towed down a hill. To make matters worse, the back deck of the M88 was not bolted on. It came off, fuel spilled all over the engine compartment, and both vehicles were lost in the subsequent fire. A further check revealed that a number of the M88s in the battalion did not have their back decks bolted on. This is a serious omission, showed lack of attention to detail, and is an indicator of poor maintenance.

- A mechanic was working on the shifting linkage of an M60A3 tank. His NCO supervisor told him not to run the engine without someone in the driver's compartment. The mechanic ignored the sergeant's directive, and when the sergeant left, he climbed out of the driver's compartment, left the engine running, got on the back deck, and proceeded to adjust the linkage. The tank took off. Fortunately, the incident did not take place in the main post area, but in a tank park. The runaway tank destroyed a cinder block building at a fuel dispensing site, knocked down a cyclone fence, ran through a ditch, climbed over a hill, ran through another ditch, smashed a road bar-

rier, ran over a car, and eventually was stopped by several large trees. This was dumb. The mechanic disobeyed an order and violated safety. This could be an example of a unit with weak discipline.

- My final example occurred not too long ago. A tank crew was replacing track. They got the track on, and were in the process of tightening center guides and end connectors when they got the call to deliver the tank **now** to maintenance for quarterly services. Instead of ensuring the track was on properly, they answered the call. As they drove the tank across the post, the track came apart, and the tank careened into a temporary building, smashing a corner. They should not have moved the tank.

The point is, these accidents were preventable. They just should not have happened. Leaders in two cases did not do their jobs. Fortunately, no one was injured. However, the cost in terms of lost equipment, time, and dollars was enormous.

We all must do better.

TREAT 'EM ROUGH!

Armor NCOES Attendance Update

I thought this article should be directed at updating you on where we (Armor/Cavalry) stand — and what we still need to do — regarding attendance at the Noncommissioned Officers Education System (NCOES).

At the completion of the NCO Development Study, one of the recommendations was to realign the objectives of the course as to who goes, and when. In short, the promote / train / utilize progression was changed to train / promote / utilize. The major problem in achieving that goal had been the number of student slots available at the institution. We will have the necessary number of seats in our senior institution at the end of the year, when the Sergeants Major Academy opens its new building.

As most of you know, the Armor Force had a big increase in the number of E8s selected for the Sergeants Major Academy. For FY 89, there were 66 primary and 27 alternates selected — over three times the number selected in previous years. What does it mean?

It means our senior noncommissioned officers are more competitive now, both for selection to SGM and selection for CSM. This should increase the number of CSMs available for Armor and Cavalry assignments. Hopefully, it will give the battalion/squadron commanders and the soldiers of the organization what they need: a highly competent command sergeant major who knows armor and cavalry, understands its ups and downs, and is highly skilled in training the or-

ganization. All we have to do now is sustain the number of attendees in order to build on a solid foundation.

The Advanced Noncommissioned Officers Course (Armor and Cavalry) has enough seats available to more than meet our annual training requirements. The problem is ensuring the NCO goes to school at the right time. Remember the goal! We want to TRAIN / PROMOTE / UTILIZE.

We should send the NCO to school as a senior SSG or SSG(P), and assign him to a platoon sergeant position after graduation. The advanced course trains platoon sergeants. We still have a number of SFCs that have not attended school. Commanders and senior NCOs need to support the program. Yes, the Army's present policy is to attend ANCOC *before* you are promoted to MSG. However, that decision was based on CS and CSS NCOs who needed to be trained and the seats available. As yet, there are not enough seats to train at the SSG-to-SFC level.

All of that should change shortly; we hope that by 1992 the Army's policy will be to attend ANCOC before promotion to SFC. We know that some of our E7s are overweight, inefficient, or have become disciplinary problems, but we also know that there are a lot of SFCs who are doing an outstanding job and have not been to school.

An example came to my attention while I was on a field trip last winter. Two SFCs, whom I knew well, were master gunners and had not been to ANCOC. One is eligible for promotion to E8. As of today, neither NCO has attended.

Other than getting the right NCO in the course, ANCOC is doing well. My previous articles gave you an idea of what would be covered in the new advanced course. The Basic NCO course (Armor and Cavalry) is doing well. We have the school seats available to train the force. We need to develop a course for the light cavalry. The training developers are working on it now.

In BNCOC, there is still one area on which we need to concentrate. That is attendance of Excellence in Armor (EIA) soldiers. Let's make sure we get them into the right schools early on, so they will be eligible and competitive for promotion. Excellence in Armor is doing well, and the use of NCOES will continue to assist the program.

I have not addressed the ISG Course, Operations Course, Master Gunner Course, or the Drill Sergeant Course. They are not part of NCOES, but they are professional development schools that are very important to armor noncommissioned officers. Success at these schools, and continued success performing the assignment duties, play a big role in the career development of noncommissioned officers. Commanders, CSMs, and 1SGs need to support their NCOs in school attendance. They really need to understand the importance of successful completion of all schools.

Some leaders call going to school a ticket-punching exercise. Maybe that is true. However, the competition is so keen now that without the courses there is no promotion!

*CSM John M. Stephens
Command Sergeant Major
U.S. Army Armor Center*

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 33





Heavy Force Light Force

A Heavy Force of the 4th ID (Mech)
Maneuvers With a Light Task Force
at the NTC

The dawn began to streak the eastern sky as the weary paratroopers climbed the final, steep, pink granite peak guarding the two passes capable of passing armored vehicles forward to the desert floor below. The troopers had marched throughout the moonless night to secure the critical passes to enable a tank heavy task force to pass through the key terrain and attack a motorized rifle company deployed in defensive positions. As the pre-dawn darkness began to fade, the roar of diesels and the angry snouts of 105-mm cannons signaled the arrival of the armored force....

The above could have taken place in the Middle East in previous conflicts or in a readiness exercise, but in fact it took place recently at the National Training Center (NTC) at Fort Irwin, California. In September 1985, a "light" task force from the 82d Airborne Division and a "heavy" task force from the 4th Infantry Division (Mech) participated in a force-on-force training exercise

By Major James A. Dunn, Jr.

against the NTC OPFOR. Two brigade headquarters, with one subordinate ground unit each, participated in heavy/light operations for six days. The purpose of the exercise was to determine how heavy and light brigades would fight if they were introduced into the same division sector. It was not intended that the light battalion/task force be subordinated to the heavy brigade or vice versa.

The NTC operations group developed scenarios to cause the two brigades to plan and conduct operations where close interbrigade (i.e. heavy/light) coordination and support was required if a successful outcome was to be affected.

Although not specifically an objective of the heavy/light brigade scenario, individual combat and combat support units were placed OPCON to, or in support of the

other force for specific missions to discuss significant issues and to enumerate lessons learned during the six-day exercise.

Background

The situation that placed Task Force Champion (82d Airborne Brigade Headquarters) and the 3d Brigade, 4th ID(M) on the same battlefield at the NTC was not preceded by months of planning and coordination. Three or four telephone conversations comprised the pre-NTC liaison between TF Champion and the 3d Brigade.

This is important because this minimal coordination closely resembles that which could realistically be expected when and if heavy and light forces are fraggged into a joint operation.

Task organizations were exchanged, as well as expected general missions that the forces could likely be expected to perform. This permitted appropriate staff of-

ficers and commanders to get a heads-up on these future operations and enabled them to review doctrine and support/coordination issues for those missions.

Both headquarters believed that link-up and passage operations could be expected, because of the organization of the light force and kind of missions that it could perform.

Breakout and battle hand-over procedures were reviewed. This, and an exchange of troop lists, were the major coordination items completed before deployment.

Once both forces were on the ground, staffs conducted immediate liaison, although the light force was not expected to join the battle with the heavy force for almost four days. Liaison officers were exchanged, and there were several update briefings to the light headquarters on capabilities and current missions of the heavy force.

Brigade commanders and primary staff officers met to wargame possible scenarios and discuss how their particular force could best support or assist the other. Communications were established between headquarters in anticipation of future operations.

What's Heavy – What's Light?

As seen in the task organizations (Figure 1) of the two units, heavy

task force had only 75 percent of the major AT firepower of the light force.

This point may seem elementary, but it must be recognized. In fact, the light force may be more heavily gunned than the heavy force when one considers total tubes. These forces do have a tremendous sting, even though they do not have nearly the protection or mobility of the heavy unit. Obviously, the M901 Improved TOW Vehicle can fight longer and harder than a jeep-mounted TOW. An M60A3 can fight "bolder"

than an M551 and still have a chance of survival.

In fact, the ability to slug it out with armored opponents better describes the difference between the heavies and the lights. The heavyweights can afford to pound their enemy while the lightweights must land heavy blows more judiciously and avoid a prolonged slugfest.

Mobility Differential

This difference in ability to survive close combat also makes itself apparent when the mobility of the two

FIG. 1 TASK FORCE ORGANIZATIONS

TF CHAMPION (Light)	3rd BRIGADE (Heavy)
TF Strike	1-8 Mech
1-504 Inf	4-40 Armor
E/504 Inf	3-29 FA (155, SP) (DS)
C/3-73 Ar	4th Avn (Cbt) Bn (-)
TF Avn	A/4-61 ADA (V/R) (DS)
82 CAB (-)	4th Eng (DS) (-)
A/1-17 Cav (+)	104th MI (CEWI) (-)
196 Avn Co (-)	1/31 CML (Decon) (-)
A/2-321 FA (105,towed,DS)	2/172 CML (Smoke Gen)(-)
B/3-8 FA (155, towed)	3/4th MP
A/3-4 ADA (V,S)(DS)(-)	3/B/124 Sig
A/307 Eng (+)	
TM H/313 MI (+)	
1/1/21 CML (Decon)	
1/182d MP	

and light can be misnomers. TF Strike, the airborne task force, had 47 major organic antitank systems, 30 TOWs and 17 152-mm gun/launchers. If the 15 AH-1S helicopter TOWs were all attached to TF Strike, as they were during the exercise, the light force had 62 major AT systems! This count does not include Dragon, Vipers/LAWs or AT satchel charges, which were plentiful in the task force.

The armor task force, on the other hand, had only 41 organic major AT systems, 30 tanks and 11 TOWs, 46 if all five AH-1S from the brigade air cavalry troop were dedicated to the tank task force. Thus, the heavy

forces is considered. During the tactical exercise, the entire paratrooper force of 400+ troopers with fighting loads and ground mounted TOWs and mortars were airlifted into battle. This ability to quickly place substantial manpower on the ground at the location of the attacker's choice is a strategy to be reckoned with. Additionally, the capability to sling-load TOWs in at night, totally blacked out, also provides light forces with the ability to project their firepower and manpower quickly. The speed of a successful insertion will stun even a prepared enemy. Coupled with surprise and audacity, this tactic can succeed.



UH-60A Blackhawks

During the exercise, however, large scale air movements were restricted by the enemy situation. A light commander will not use his helicopters in situations where the enemy air defense array is unknown or strong. Large scale lifts were used only once, to move the task force to the jump-off point for a 10-kilometer foot movement across rugged terrain. The insertion was successful in its execution, but the paratroopers still had a long foot march before they reached their objective.

This fast-slow movement requires different planning techniques, especially for mounted heavy forces who think of rates of movement in tens of kilometers per hour. On the NTC battlefield, light forces had little mobility once they were committed to foot approach. Yes, they could traverse devastatingly difficult terrain at night, but only within limits. To expect a foot-mobile force to

scale cliffs, hump rucksacks, TOWs, and mortars all night, secure the objective, and then march to reorient on a newly-arrived OPFOR was a bit excessive. They proved less able to rapidly reorient to enemy thrusts

than their mounted counterparts. That is not a criticism nor a surprise, only another consideration when conducting heavy/light operations. The heavy force could move much faster, orient and reorient to unexpected enemy parries, and move more quickly than its deployed light counterpart. Of course, its inability to traverse and seize demanding, untrafficable terrain oftentimes prevented the use of this armored force. Clearly, this mobility differential can easily be planned for and capitalized on during a battle. Good planning, keying on each force's strong hand, can result in a well-orchestrated tactic that will defeat the enemy by the cooperative application of the two forces.

Supporting the Fight

From the perspective of the heavyforce, light forces are easily

supported. Ground lift of troops, and Class III and V are all usually within the capability of the heavy force. For example, in a link-up operation it is fairly easy for small arms, TOWs, and mortar ammunition to be piggybacked forward, on combat vehicles if necessary, to resupply the light force. The reverse is not true, however. In planning a forward passage, the only logistical support that the light force could provide was a medical treatment point and vehicle collection points. No emergency Class III or V, recovery, or maintenance was possible. Although doctrinally there is no fixed requirement for these assets, their complete unavailability must be considered.

In operations where heavy sub-elements are chopped to light forces, the problem is exacerbated. The inability to provide adequate fuel and ammunition, other than the attached heavy unit's organic assets, could quickly become a logistical nightmare. The opposite is not as great a problem, because heavy forces appear to be more able to support light forces, with the possible exception of JP4 and other aviation-specific requirements.

Tactical Employment Translation

One would think that both forces would have been able to work with each other easily, especially after anticipated missions had been reviewed by each staff. In reality, the translation of heavy tactics and light tactical employment schemes into a commonly understood lan-

guage was a much larger issue than expected. The armor/mech force trained to and was completely conversant in FM 71-1J (Draft), The Tank and Mechanized Infantry Company Team, and FM 71-2J, The Tank and Mechanized Infantry Task Force. All members of the 4ID team had trained with this document as their reference, while the airborne force was generally unfamiliar with it. Upon initiation of coordination for joint exercises, it became clear that a common, understandable language was not being spoken. Obviously, airborne acronyms and armored acronyms are different and were initially confusing, but the problem went much deeper than that. During discussion of passage and link-up operations, it became apparent that a common language was missing. Perhaps a measure of the way the Army trains its infantry officers, the heavy force had several officers who readily understood light tactics and methods, but the opposite was not true. Although mech-experienced officers were doubtlessly in the airborne brigade, their numbers were significantly less than the opposite arrangement.

Because of this lack of mech/armored experience, graphics, commonly used expressions, and common knowledge items often had to be carefully explained. In fact, diagrams and examples from FM 71-2J were reproduced, annotated, and used by the light force to brief its staff on upcoming operations. More time than expected was consumed in ensuring that each force understood what the other was saying. Translators in the form of officers

with experience in airborne and mech were used extensively.

Along with the exchanged liaison officers, they were essential in ensuring that units truly understood what the other force meant.



Heavy force tankers had difficulty in vehicle identification because the OPFOR's visually modified Sheridans resembled the 3/73 Armor's TOE vehicles.

Lessons Learned

Command, Control and Communications - Several of the missions required that brigade and battalion command posts be co-located to ensure positive control of assets, particularly during passage operations. The airborne assault CP located with the brigade jump CP and the main CP on two different occasions. During these co-locations, the light force CP merely moved into the heavy CP complete with tactical satellite communications antennas and remote units to FM radios. In one situation, the entire cells for both units were placed in a M577, with the heavy force radios in the extension. FSE, Army aviation and Air Force LNOs also located adjacent to each other nearby. This

face-to-face ability to quickly access the other force's intelligence, maneuver, and fire support systems was essential in providing positive command and control of both brigades and their subordinate task forces.

Alternate Communications Means

- Both brigades had different communication systems. The Airborne relied heavily on TACSAT for comms links with its task force, while the heavy force primarily relied on FM. During one phase of the operation, the assault CP lost all comms with its paratroopers. Critical intelligence was needed about the enemy situation in an objective area, but was unavailable due to the communication lapse. The

heavy force, using its organic retrans equipment, was able to net with the attached Sheridan company of TF Strike and receive time-sensitive intel information that was critical for the heavy force. This ability to reinforce or augment each other's primary communication means was an unexpected benefit.

Use of Liaison Officer - Although exchange of liaison officers is certainly not a new idea, the utility of these young officers far outweighed their junior grades. While performing the traditional role of transporting orders and overlays and keeping their force alerted to changes in the other force's plans, these officers were also called upon to describe and explain the capabilities of their parent force's equipment and the manner in which it would be employed. Although previous briefings had described some unit

parameters, there were often times in the battle when a specific question about the other force's capabilities or preferred method of operation had to be known. These lieutenants, fortunately well versed on their unit's organization and abilities, provided detailed technical information to the brigade staff and commanders. The benefit that the exchange of these officers provided far exceeded the expectations of the commands and should be planned in any heavy/light operation, both at brigade and task force level.

Exchange of Communications Operating Instructions and Secure System Codes - A complete issue of the opposite force's CEOs and codes, to include any commonly used ops codes, was necessary. The ability of the light TOW company commander to turn to his CEOI and find the frequency and call sign of the heavy task force command net to which he was being attached greatly simplified the task of affecting rapid task organization changes on the battlefield. Use of common pass-word/challenge and recognition signals was particularly important during passage and link-up operations.

Fire Support

Field Artillery - It proved quite easy to provide support for the other force in this area. The 105-mm and 8-inch batteries of the airborne force were beefed up with batteries from the mech force, firing in a general support reinforcing role on more than one occasion. The airborne cannons also supported the armored force. Close liaison between fire support officers and com-

manders made this cross-force support simple to execute.

Army Aviation - Because the light force had the preponderance of rotary-wing assets, they played an important role in this area. The mech force's air cavalry troop was placed OPCON to the airborne in support of one operation, while in another, both aviation units fought



Air Force A-10 Thunderbolt ground attack aircraft had no difficulty communicating with either the light or heavy force.

simultaneously using graphics jointly established by the two brigade headquarters. Joint FARRPs were planned but not executed, although support at the division airfield was shared. Problems were experienced with CEOs and an inability to rapidly shift the command and control of these assets from one force to the other.

JAAT - Joint Air Attack Team operations were complicated but worked well. Air Force liaison officers conducted joint planning and were able to shift aircraft from one force to the other as the battle raged. JAATs were planned by both forces and executed according to who was in contact when aircraft were available. Air Force A-10s were able to switch from one force to another quickly. FM modification of airspace coordination areas were executed rapidly with little confusion. Coordination of indirect fire

on OPFOR units, SEAD, helicopters and fast movers was complicated but workable, although friendly fire brought down at least one aircraft.

Air Defense

Coordination was effective. FAARs from the heavy force passed target information to the towed Vulcans of the light force. IFF worked well between the forces. No significant problems were encountered.

Mobility/Counter Mobility

Exchange of Assets - Airborne bulldozers were attached to the armored force during defensive operations to assist in engineer work. These D5 dozers were smaller than the D7/8 of the mech unit but were of great utility.

Class IV materials were laterally transferred when the light force expended their basic load and were ordered into another defense. These exchanges were routine and well coordinated.

FASCAM Employment - Problems were encountered when the airborne force, fearing a counterattack, closed passes critical to the armored force's movement with uncoordinated FASCAM delivery. The lashup between engineers, artillerymen, and maneuver commanders broke down in a fast-moving battle, causing problems for the attacking tank task force. These obstacles, with their rapid delivery time, have the potential to cause serious problems if not monitored closely. Coordination between the commander, artillery, and engineers prevented other errors with this weapon.

Maneuver

Seizure of Terrain - The airborne force was tasked on one occasion to seize the pass's vicinity to permit the forward passage of an armored force at first light. The paratroopers moved by stealth across absolutely horrendous terrain and arrived at their objective. When they arrived they found a motorized force dug in and well camouflaged. The lightly armed force (LAWs, Dragons, and TOWs) found that it was unable to seize the terrain. Its firepower, augmented by indirect fire and available air assets, was unable to actually force the motorized force out of its positions. This limitation, combined with its vulnerability to OPFOR artillery, made its utility somewhat limited. Augmented with Sheridans or jeep-mounted TOWs the force could have accomplished the mission.

Intelligence

Vehicle Identification - Units easily recognize vehicles with which they have frequent contact. New vehicles and their different silhouettes, or just getting used to working with many armored vehicles when one normally does not, caused numerous problems on the battlefield. The heavy force was faced with friendly Sheridans and enemy-modified Sheridans. In limited visibility situations, one can imagine the result! Obviously this is an NTC anomaly - the light force problem was more real world. Keyed-up paratroopers had a tendency to shoot tanks when they arrived on the battlefield. In the smoke, dust, and confusion of the battle, the difference between a M60A3 and a simulated T-72, difficult for a tanker who is used to his own silhouette, proved too difficult for many of the light troopers. Basically, they

engaged anything that moved, resulting in friendly casualties. Although this problem is not just airborne/mech related, it was significant.

IPB Focus - Units have a tendency to look at IPB from the perspective of their own force. The armored/mech force looked at the battlefield through the eyes of a mounted soldier. The light force appeared to focus in a different manner, looking with a more detailed eye at closer areas. The paratroopers' named areas of interest (NAI) were usually closer and on a narrower front than those of the mechanized force. Both IPBs addressed the enemy motorized force but differed in the depths to which they looked. The armored forces usually looked deeper with less detail than the light force, which looked more closely and intensely.

The IPBs, therefore, were not as well tied in as they should have been. The problem here is obvious, especially if the forces are abreast.

Reconnaissance -The light force far outstripped the heavy one in assets, capability, ability to employ, and flexibility. The long range recon element attached to the airborne brigade had no equivalent in the heavy force (the air rifle platoon in the air cavalry troop was not permitted at the NTC). The airborne unit was able to insert deep observation posts, move them quickly by helicopter, and communicate with them via hard-to-locate joint tactical satellite communication systems. On numerous occasions, a well-sited and camouflaged paratrooper provided timely intel on OPFOR movements for the heavy force. This capability, coupled with the helicopter assets to quickly deploy them, is tremendous.

The light force's ability to perform

helicopter reconnaissance is also substantially greater. All in all, the light force is much more capable in this area.

Administration and Logistics

Inability to Support - The light force is almost completely unable to support the heavy force in the areas of Class IX, recovery, Class V, and Class III, due to the vast difference in the number and types of weapon systems in the two forces. On the other hand, the heavy force could usually provide those classes of supply for the airborne units once they were deployed.

Transportation - Both units were able to augment each other by playing their strong hand. Airlift in response to the other unit's needs was quite encouraging for the airborne, and ground transport for the mech.

Conclusion

As the Army continues to concentrate on development, manning, and fielding of light forces, more and more interaction with heavy forces will take place. Our profession demands that we learn from these encounters and inculcate the lessons taught by them. By this process we can better train and fight with our heavy or light counterparts and ensure that we will be ready when called.

(Ed. Note: See also "The Heavy Force/Light Force Mix-Up" in July-August 1985 ARMOR Magazine.)

MAJOR JIM DUNN is currently serving as brigade operations officer with the 4th ID (Mech) at Fort Carson, CO. His previous assignments include two tours with the 1st AD and an assignment at the USMA, West Point.



French Armor at Dien Bien Phu

by Captain Michael E. Woodgerd

French author Bernard Fall gave us one example of the employment of tanks in Indochina:

"The tanks of the armored platoon, guns depressed to minimum elevation, fired into the screaming human clusters crawling over the parapets into the position, their heavy treads crushing heads, limbs, and chests by the dozens as they slowly moved like chained elephants in the little open space left in the port. But soon they, too, were submerged by the seemingly never ending human wave, with scores of hands clawing at their turret hatches trying to pry them open; stuffing in-

centiary hand grenades into their cannon, firing tommy-gun bursts into their driving slits; finally destroying them with point-blank bazooka bursts which lit up their hulls with the sizzling of white-hot metal. The sweetish smell of searing flesh rose in the air. All the five tank crews died to the last man, roasted alive in their vehicles."¹

While the action just described did not take place in Dien Bien Phu, the fury of the French in their struggle to hold on to their possessions in Southeast Asia did rise to a crescendo in a small North Vietnamese valley whose name means "Seat of the Border Country Prefec-

ture." During the 56 days of the actual siege, the French Union forces found themselves outnumbered four-to-one in combat troops and artillery. The Viet-Minh antiaircraft nullified French air superiority and shut down the airstrip early in the battle. In the face of artillery barrages as great as anything seen in WWI, only the fighting spirit and courage of the infantry coupled with the squadron of M24 Chaffee light tanks enabled the defenders to hold out as long as they did.

Backdrop

Beginning on 19 December 1946, the French Indochina War dragged on as the Viet-Minh, with substantial Chinese assistance, grew stronger in regular divisions and artillery. In contrast, the French fought on a virtual shoestring of men and equipment. It became im-

MAP 1

The French defense was based on strongpoints and a mobile reaction force led by 13 tanks.

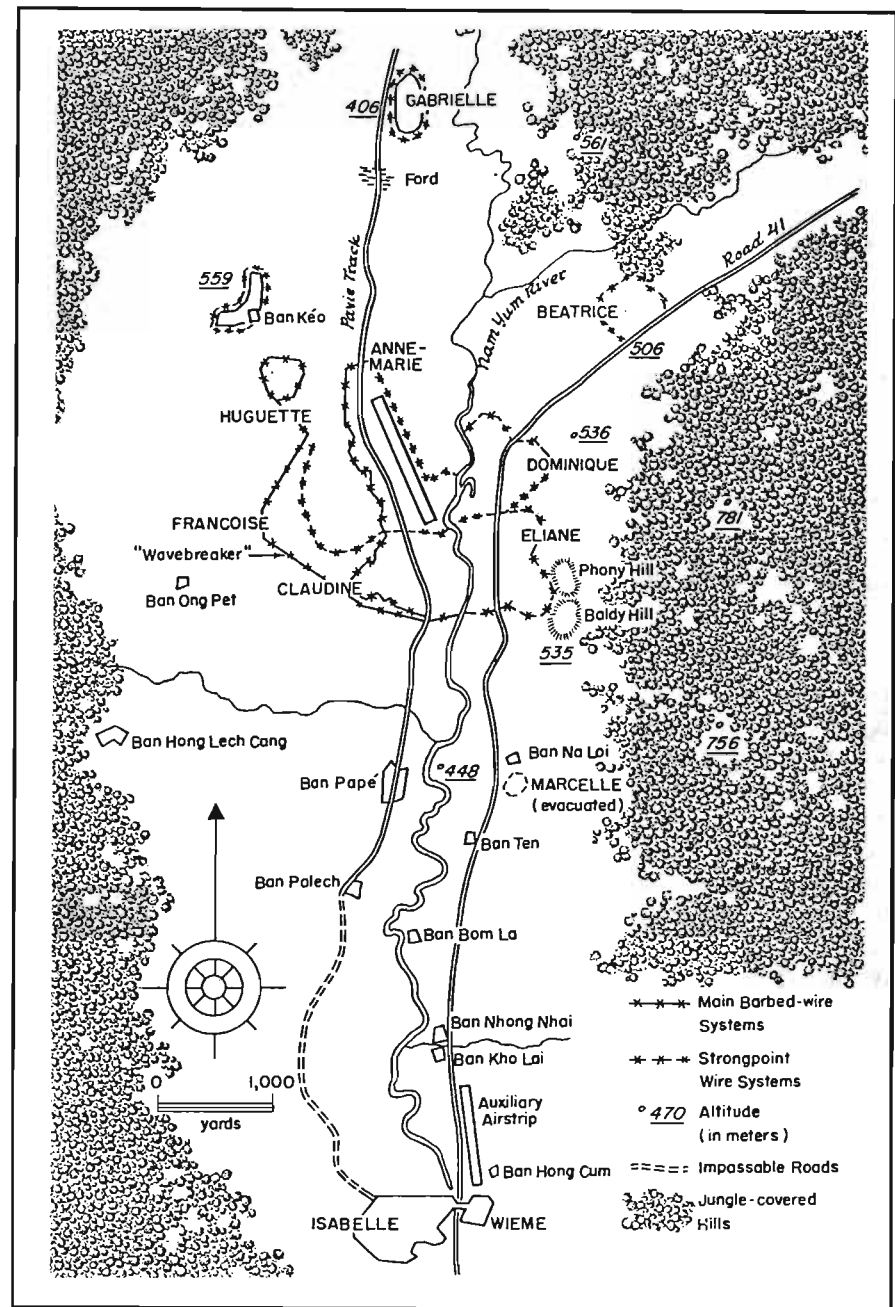
perative that the French destroy a large part of the enemy's main fighting power as soon as possible. To do this, French commanders decided to offer the Viet-Minh an irresistible target, which hopefully would prove strong enough to resist the desired onslaught. They chose the valley of Dien Bien Phu, near the Laotian border, to emplace the strongpoint and draw the Viet-Minh to battle. Ringed by high jungle-covered hills, the valley had wide-open spaces and an airstrip on the floor. The French mistakenly assumed the Viet-Minh could not bring artillery to bear and that the wide-open valley would allow set-piece tactics and firepower to decimate Communist infantry.²

General Cogney, overall commander in northern Vietnam, chose General De Castries, an armored cavalryman, to command at Dien Bien Phu. DeCastries based his defense on static centers of resistance (see Map 1) and vigorous counterattacks. The thirteen M24 tanks comprised the mailed fist of these counterattacks.

Preparation

The tanks came to Dien Bien Phu like everything else, by air. Each tank required five C-47s and two British-built Bristol freight aircraft to carry it in. Foreign Legion mechanics laid out an assembly line in the open valley to piece together the 18-ton tanks. Using a lifting rig from an artillery unit, Legionnaires set the engines in the chassis and then used hand tools for everything else.

By 17 January 1954, the thirteen "Bisons" (as they were known) of



the Composite Squadron, 1st Regiment of Armored Cavalry, took their place as a part of the garrison.³ From 1 February 1954 to 7 May 1954, the tanks fought virtually every day until the garrison ceased resistance.

Opening Moves

In the early stages of the battle, as the Viet-Minh attempted to cut off Strongpoint Isabelle to the south,

the tank squadron led daily attacks to keep the road open. Each of these attacks involved up to two companies of infantry and the entire tank squadron in savage fighting. For example, the road-opening attack of March 22 cost the French 151 dead, 72 wounded, and one missing.⁴

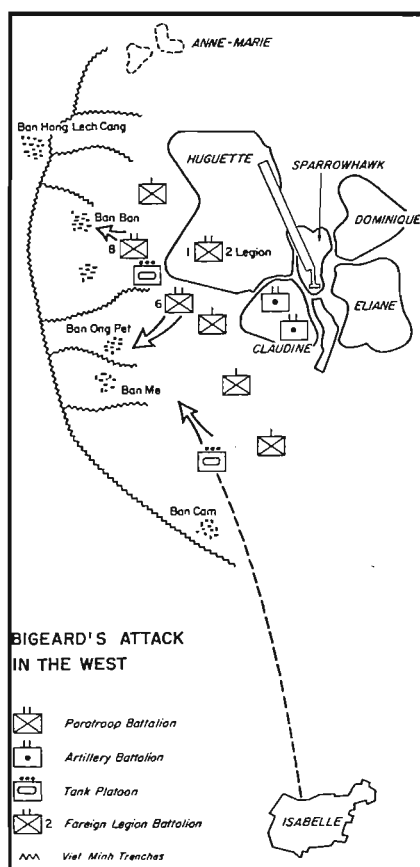
None of the defending officers within Dien Bien Phu subscribed to a doctrine of totally static defense.

De Castries, the cavalryman, and Colonel Langlais, the paratrooper, both favored aggressive offensive action. Captain Hervouet, the tank unit commanding officer, wanted to use his armor correctly. The siege of Dien Bien Phu quickly became virtual trench warfare right out of WWI. In such an environment, tanks assumed critical importance. With limited artillery assets, only the tanks, by giving the French infantry heavy, mobile firepower, enabled the infantry to effectively attack dug-in Viet-Minh infantry and heavy weapons.

Captain Hervouet's "Bisons" supported counterattacks despite repeated hits from recoilless rifles and bazookas. One attack in particular serves as a perfect example of the proper French tactics — tactics which closely resemble current American AirLand Battle concepts. It illustrates that the principles of agility, initiative, depth, and synchronization apply in almost every situation. (See Map 2).

Riposte

Heavy enemy flak installations ringing the garrison doomed it to eventual death from lack of supplies and replacements. De Castries ordered an attack for the morning of 28 March against the closest and most dangerous nest of anti-aircraft guns to the west. With only six hours to plan, Major Bigeard of the paratroops set up an operation involving four parachute battalions, two artillery battalions, a tank platoon, and air support from 200 miles away. Captain Hervouet, who was now fighting with both arms in plaster casts, assigned the mission to the tank platoon from Strongpoint Isabelle. The bare and open terrain made violence, surprise, and speed critical to success. Viet-Minh artillery, deeply dug



MAP 2. The "Bisons" counterattack

into the mountain sides, had limited sectors of fire, which prevented them from shifting rapidly to meet a sudden attack from an out-of-sector direction.

At 0600 hours, the remaining French artillery opened up a rolling barrage. Two airborne battalions jumped off on their routes of advance. At 0900, air support arrived and effectively pinned down enemy reserves. Stiff enemy resistance near the village of Ban Ong Pet (see Map 2) collapsed under a vicious flank attack by the three M-24s under Lieutenant Preaud from Strongpoint Isabelle. Two of the three tanks took bazooka hits, but continued fighting. Suddenly, at about 1500 hours, the surviving defenders broke and left the French

standing amidst 350 Viet-Minh bodies, five 20-mm anti-aircraft cannons, twelve .50 caliber machine guns, and bazookas, automatic rifles, and hundreds of other weapons.

Prisoners described the shock when the defending, and supposedly disheartened, French launched a savage counterattack. Conversely, French morale within the garrison, and even in Hanoi, soared.⁵

This attack illustrates the excellent results achieved when the French used agility, initiative, depth, and synchronization. Shifting four infantry battalions within the main positions, and incorporating the tanks from Isabelle, seven-kilometers away, maximized the flexibility of the disciplined French Union soldiers. The speed and violent execution of the attack kept the Viet-Minh off balance, reducing the threat to the rest of the defenders during the attack.

By seizing the initiative, the French caught their opponents totally off balance. The awesome Communist artillery concentrations used to that point had helped convince the Viet-Minh that they had rendered the French incapable of offensive action. The Viet-Minh, unprepared for an attack, had few reserves nearby, and no artillery that could be brought to bear in time. The rapid French withdrawal after accomplishment of the mission kept casualties light.

While this attack did not penetrate exceptionally deep into the Communist rear, it went as far as the situation allowed. The French had learned that the enemy heavily outnumbered and outgunned them. So, after the first few attacks to open the road to Isabelle, they only attacked to retake lost ground within



the main perimeter. Bigeard's attack on the flak positions, a surprise to the Communists, went much deeper than any previous attack had, or any future attack ever would.

Bigeard synchronized all his forces well. The artillery barrage landed

on time and on target. Air support hit directly, as intended, upon enemy reserve positions. When the infantry began to stall in front of Ban Ong Pet, the unexpected armored thrust from the south broke the enemy resolve.

Surrounded by the Viet-Minh, the base at Dien Bien Phu had to be reinforced and resupplied by air.

Disintegration

This attack marked the last significant offensive action of the French. After this, the initiative remained firmly in Viet-Minh hands. Tank and paratroop counterattacks continued as the enemy encroached deeper into the perimeter. The shock effect and firepower of the M24s often turned the enemy back. In the face of lengthening odds, including many bazookas and recoilless rifles, tank strength declined. Each tank had, by then, taken repeated hits and luck finally ran out. The last two tanks, one on Isabelle and one in the main position, met their ends at their crews' own hands, to avoid capture.

Defeat

At 1740 hours, 7 May 1954, a Viet-Minh platoon leader, Chu Ba The, raised the gold-starred red flag over De Castries' command bunker. Although they ceased resistance, the French did not surrender. Around 10,000 of the prisoners died en route to the prison camps or within three months. Only about 3,000 of the 16,500 defenders ever returned alive. The tankers continued to resist the Communists. Of the 78 men to escape Dien Bien Phu, eight were tankers.⁶



"Although they ceased resistance, the French did not surrender..."

Epilogue

In the years following the battle, many writers have speculated on what might have changed the outcome. One of the most interesting and most discussed aspects is the possible effect if the French had employed more tanks. The successful riposte of 28 March showed the benefits of aggressive attacks. If larger armored forces could have destroyed more of the Viet-Minh artillery and flak concentrations, the airfield might have remained usable much longer. This would have facilitated resupply and evacuation of wounded. Such positive effects would also have been beneficial for morale.⁷

Discussion of tanks at Dien Bien Phu does provide an interesting ex-

ercise in "what if?" It also shows us that armor has a key role in all types of conflicts. While obviously needed in a European conflict against massed armor, tanks are also critically important to support infantry anywhere in the world against entrenched, heavily-armed enemies. The basic armor attributes of shock effect, mobility, and firepower are key components on every battlefield.

Endnotes

¹Bernard B. Fall, *Street Without Joy* (New York: Schocken Books, 1972), p. 53.

²The situation in Indochina and the French decision to fight at Dien Bien Phu have been paraphrased from Bernard B. Fall's *Hell in a Very Small Place* (Philadelphia: J.B. Lippincott Co., 1967), pp. xi - ix, pp. 22-52.

³De Castries' selection for command, his concepts of the defense, and information relating to the assembly of tanks in Dien Bien Phu comes from Bernard Fall's *Hell in a Very Small Place*, pp. 96-98.

⁴Fall discusses this operation in *Hell*,

pp. 174-175.

⁵The March 18th attack is covered by Fall in *Hell*, pp. 185-89. Jules Ray also discusses the fight in *The Battle of Dienbienphu* (New York: Carroll & Graf, 1984), pp. 199-201.

⁶The final defeat and its consequences are paraphrased from Fall in *Hell*, pp. 408-448.

⁷Conjecture about the effect of more armor at Dien Bien Phu comes from several sources. John Keegan discussed it at length in his book entitled *Dien Bien Phu*. This book was in this author's collection but is now lost. Bernard Fall also brought out the point in *Hell*, p. 454.

Captain Michael E. Woodgerd was commissioned in armor from the USMA in 1982. He is a graduate of AOB, AOAC, and the Airborne and Ranger courses. He has served as an M1 platoon leader, M3 scout platoon leader, and battalion liaison officer in 3-63 Armor, 3d ID, in the FRG. He now commands D Co., 2/77 Armor at Ft. Carson, CO.

Graduate Studies in Combat Vehicle Technology

by Richard M. Ogorkiewicz

The design and development of combat vehicles is a demanding process which calls for a high degree of specialized knowledge and skill on the part of those involved in it. Some of that knowledge and skill can be acquired by operating combat vehicles. More of it can be acquired by actually working on the design and development of combat vehicles. But to operate or work on combat vehicles generally involves concentration on particular tasks or problems, which leaves little time for the acquisition of knowledge and experience outside the areas of immediate concern. In consequence, this way of acquiring wider knowledge tends to be very protracted, even though it is the best in several respects.

There is, therefore, a need for additional opportunities for acquiring the relevant knowledge. In particular, there is a need for acquiring a sound, broad-based understanding of combat vehicle technology and for doing it more rapidly than is possible by working on a job, or at an earlier state of the career of those involved in the design and development of combat vehicles.

All this has been recognized by the creation at the Royal Military College of Science in England of a graduate course in Military Vehicle Technology. Apart from meeting an important need, the MVT course is believed to be the only one of its



Headquarters of the Royal Military College of Science, Shrivenham.

kind in the whole Western World, which in itself makes it of considerable interest. The writer is also able to comment on it from first-hand experience, having been invited to act as an external academic examiner to it.

The Royal Military College

What the MVT course offers is based on a sound academic foundation provided by the well-established record of the Royal Military College of Science. In fact, RMCS can trace its ancestry to 1772, when at England's oldest arsenal at Woolwich a society was formed for the scientific study of gunnery. From this grew a university-type military institution, which since WW II has been located on a spacious campus at Shrivenham, some 80 miles west of London.

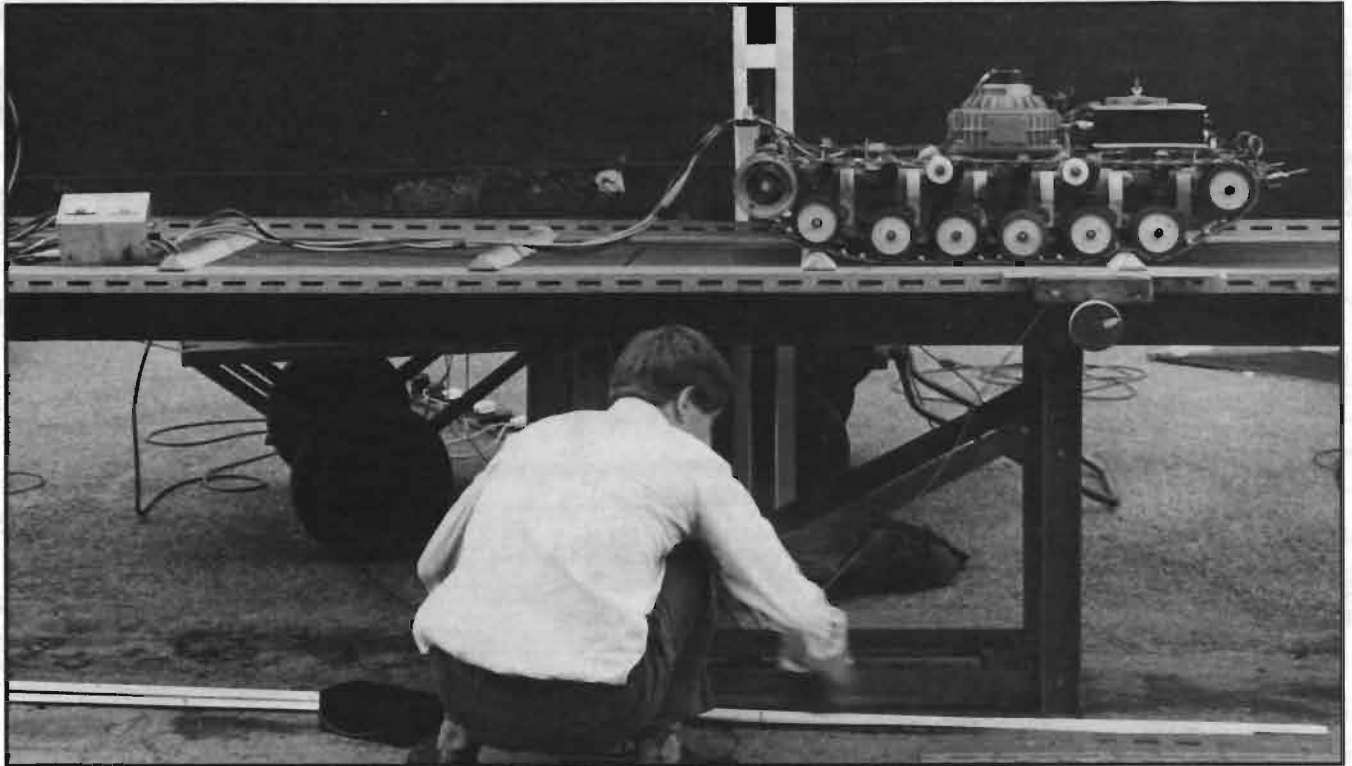
The basic function of RMCS is to provide scientific and technological education to military personnel in the form of a three-year bachelor of science program and a large number of specialist courses ranging in duration from a few days to six months. The RMCS also col-

laborates with the British Army Staff College at Camberley in running the scientific and technological parts of the Army Staff Course. In addition to the MVT course, it runs other graduate courses in military systems and technology and it also carries out research for the British Ministry of Defense and for industrial organizations.

All this implies that the MVT course is run against a wide background of academic and military activities, which ensures that it is comprehensive and relevant to current military problems. The MVT course also enjoys the advantage of the facilities provided by the RMCS, which include not only conventional engineering laboratories but also such things as an instructional collection of modern British and other armored vehicles and a unique teaching exhibit in the form of a wide range of standard and experimental tank guns.

Military Vehicle Technology Course

The MVT course itself consists of a short introductory period, a core



of compulsory subject modules, a number of supplementary optional subject modules, and individual projects. The purpose of the introductory studies is to revise or update students' knowledge of basic academic subjects and, in particular, of applied mathematics and computing. Once this is over, the emphasis shifts to the nine compulsory subjects which range from power plants and transmission systems through vehicle dynamics and soil-vehicle mechanics to armor protection and combat vehicle weapon systems.

The optional subjects, of which there are 11 — and at least three of which have to be taken — are intended to provide more specialized or advanced knowledge of the subjects already introduced in the compulsory modules, or of other subjects, such as ballistics, electronics and guided weapons.

Teaching of the various subjects is intended to bring out the principles of military vehicle technology and to lead to a proper understanding not

only of the technology of vehicle components but also of vehicle design as a whole. This goes hand in hand with attention given to the analysis and evaluation of vehicle concepts and to the interrelationship between them, threat assessments and user requirements.

In addition to the teaching program, and running in parallel with it during the whole of the course, there are the individual projects. Their general purpose is to enable students to develop their skills in research, design and development. But through them students can also acquire expertise in areas of vehicle technology that are of particular interest to them. The projects are invariably related to current, practical problems.

Individual Projects

The problems addressed in the individual projects vary widely. Together with their practical relevance, this makes them a particularly interesting part of the

Fully instrumented scale model of a main battle tank, designed and built as part of MVT course project on suspensions.

MVT course. Only a few examples can be quoted here. One recent project involved a comparison of the theoretical and experimentally observed distribution of pressure under the tracks of a model vehicle. This is of particular interest in relation to the increasing use of mean maximum pressure (MMP), that is, the average of the peaks of pressure under the tracks of vehicles, as a more accurate measure of the soft-soil capabilities of vehicles than the nominal ground pressure used for this purpose until now.

Another recent project formed part of a series that started with the design and construction of a remotely-controlled scale model of a tracked vehicle with a suspension carefully modeled on that of a contemporary battle tank. This model was then used in other projects to validate experimentally computer



Special research vehicle with large wheel movement used to study active suspensions.

predictions of suspension behavior and to assist in the development of a computer simulation of obstacle crossing by tracked vehicles which would be more precise than that currently incorporated in the NATO Reference Mobility Model.

One of two other projects that might be singled out was concerned with the influence of different types of tires on the handling of an armored scout car, which threw light on some puzzling aspects of its behavior at high speeds. The second of the projects involved a detailed investigation into the efficiency of tracked vehicle transmissions and of the consequent losses of power between the engine and the track sprockets, which have a major influence on the performance of combat vehicles.

The results of such projects can clearly contribute to the solution or at least to a better understanding of current problems. Each project is written up in the form of a thesis and this, together with examinations at the end of the course, forms the basis of the assessment of the student. The successful completion of the one-year course leads to the award of a Master of Science degree and makes its graduates qualified to play an effective role in the design, development, or procurement of combat vehicles.

Most students on the MVT Course have come from the British Army, usually in the rank of captain, and from British government research establishments and defense industry.

However, the course is not confined to British students and has been attended by others, from the Australian, Canadian, and Indian armies and, most recently, from the Republic of Singapore. One very beneficial result of this has been that it brings together students with a wide variety of experience.

Fighting Vehicles Diploma Course

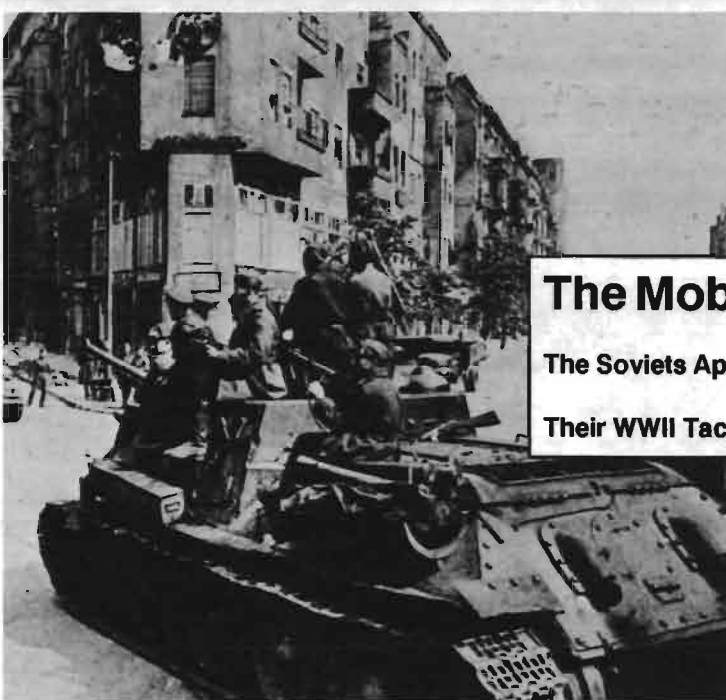
The range of students' backgrounds and contacts is about to be extended still further by the creation of a Fighting Vehicles Diploma Course. This new course is to be run in parallel with the MVT course and will share with it some of the subject modules. However, the FVD course is less intensive academically and technologically than the MVT course. Instead, it is oriented more toward the military problems facing armor officers and in particular toward the procurement and operation of combat vehicles.

In fact, the FVD course takes the place of the so-called Long Armour

and Infantry Course which has been run for many years at the Armour School at the Royal Armoured Corps Center at Bovington Camp — the British equivalent of Fort Knox.

That course is well known to many U.S. armor officers who have attended it over the years as students, together with armor officers from the Australian, Canadian, Federal German, as well as British armies. The course is being discontinued as a result of a recent reorganization within the British Army. However, the reputation which it gained, and the contribution which it made to the education and training of armor officers, should be maintained by the new FVD Course at the Royal Military College of Science, which will enjoy the added advantage of being closely linked with the MVT course.

RICHARD M. OGORKIEWICZ is a London-based consulting engineer recognized as a leading authority on AFVs. The author of two books on armor and more than 300 articles — including 75 in *ARMOR Magazine* — he is now working on a new book on tank technology.



The Mobile Group Experience

The Soviets Appear to Be Still Refining

Their WWII Tactics in Today's OMGs

by Lieutenant Colonel Richard N. Armstrong

Rarely do we possess the necessary insights for accurate assessments of new military phenomena. Understanding comes with time, and with time we gain experience. Primarily through experience, we develop a character of thought that is flexible and imaginative, and allows us to make proper and incisive assessments. One method for expanding individual experience is to study the past. Breaking the bounds of one's immediate environment and time-span allows one to see a richer variety of alternatives or solutions to current problems.

Currently, there is a new military phenomenon that has evoked great speculation.¹ For the modern military professional, many unanswered questions are raised by the sudden awareness of Soviet Operational Maneuver Groups (OMG). How will the OMG be committed? What will be the command and control? How will the operation be supported in the depths of a penetration? All these questions are legitimate concerns for an understanding of how to fight the OMG.

Yet, the dry, clinical speculations

standing of its employment. If one could take part in an OMG attack into the operational depth of an enemy defense, one's assessment would be richly enhanced by such an experience. While accompanying an OMG operation today is impossible, one can gain some useful insights from a knowledge of Soviet WWII mobile group operations. Soviet mobile group operations serve as the fundamental combat experience for Soviet military theorists and OMG planners, who strongly insist that the study of WWII experience is a prerequisite to understanding contemporary combat.² In essence, the missions and functions of the two groups are the same since OMG use is strongly influenced by the mobile group experience, and primarily the impact of technology alters technique and capability in combat.

Through a composite of mobile group operations, we may very well create an appreciation for standard Soviet organization and routine procedure in armored operations of this nature. This background will develop a useful historical frame of reference for understanding OMG potentialities today.

Since most mobile groups were

and facts on the O M G operation give no animation to an intuitive und e r-

based on tank, mechanized, or cavalry formations, we will use for our purposes the actions of a typical Soviet tank corps in 1944. By 1944, Soviet tank units were hitting their stride in force structure and competency of commanders. A tank corps at that time consisted of one motorized rifle brigade and three tank brigades. It had a number of combat support units (see figure 1). On the average, with some 12,000 men and 200 tanks, 63 self-propelled guns, 182 artillery guns, mortars, and rocket launchers, the tank corps packed considerable fighting punch for its day.

Soviet WWII Pre-Planning

We will accompany the tank corps commander through a typical breakthrough operation. Although he is relatively young, the commander is experienced and holds the rank of major general. He started the war in the summer and fall of 1941, as a tank brigade commander; in the spring of 1942, he became a tank corps commander. He has been fighting the Germans for three years as a tank commander and is very professional at his job.

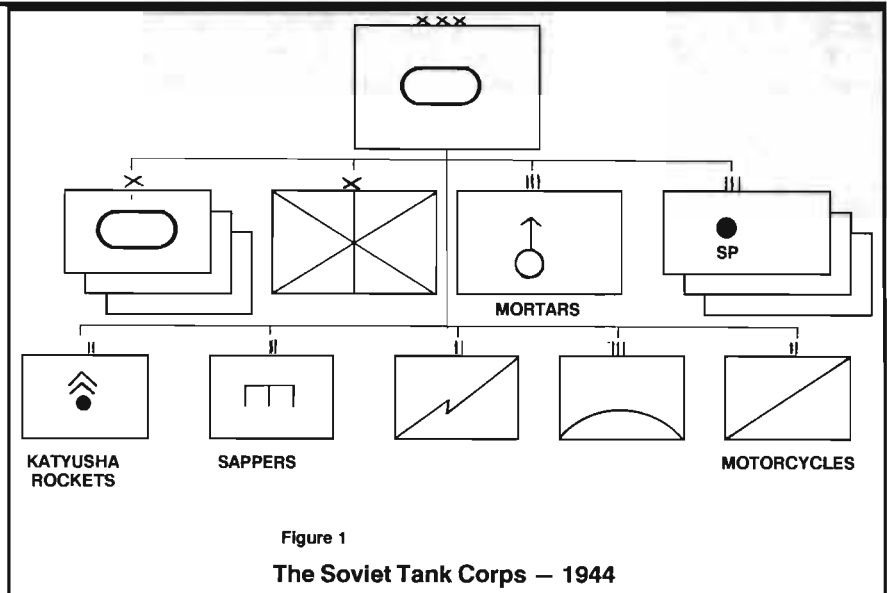
As commander of the 13th Tank Corps, he is informed by courier that in the approaching operation his corps will be committed as an army-level mobile group into a breakthrough made by the 30th Guards Army. His mission will be to exploit tactical success by attack-

ing into the German defense's operational depth. Since the commitment of the tank corps to action will be one of the decisive moments of the attack, an army-level staff officer is sent to the corps command post to assist in planning and to assure close, continuous liaison and coordination.

The corps commander, his brigade commanders and key staff section chiefs take a trip into the area where the breach will be entered. They proceed to reconnoiter the intermediate assembly area and the routes leading to it. They also get a general orientation of the situation from the commanders of the forward rifle units in contact, along whose sectors the breach will be entered. Clad in ordinary soldiers' uniforms with no distinguishing ranks, the corps commander and his senior officers visit the front for a first-hand look at the terrain.

Knowing the general situation, the corps commander begins to prepare his tank corps units in a concentration area some 75 kilometers from the front line. Since the corps can be located in the concentration area from three-four to 15-20 days, he organizes staff exercises for his staff and subordinate staffs. The commander, using a terrain mock-up, takes the subordinate commanders through the operation explaining alternative actions at key points in the operation. These pre-operation exercises ensured subordinate commanders understood the corps mission and provided a concentric effort by subordinate units in the confusion of combat.

One of the primary operations to be planned and coordinated are the actions of the forward detachments. A forward detachment was usually a reinforced tank brigade that had the specific mission of seizing and holding important tactical or operational



objectives. It had the additional missions of disrupting German defenses in depth and partially preventing the maneuver of the enemy's operational reserves. The commanders of forward detachments were selected from the decisive and most experienced officers.³ It was not unusual for the army or front commander to visit and ask for detailed information about the preparation of these detachments. They talked with the forward detachment commanders and gave them specific instructions.

The success of a forward detachment's operation was directly influenced by establishing an optimal composition that allowed it to operate with autonomy. A tank or mechanized brigade sometimes included up to a regiment of self-propelled artillery and a battalion of antitank and antiaircraft artillery, and up to a battalion each of rocket launchers, combat engineers and motorized infantry. Dependable radio communications were established. The extensive employment of forward detachments in offensive operations became an integral part of armored forces in the operational depth because of the number of diverse and complex combat mis-

sions they could perform.⁴

The corps commander and responsible staff officers met personally with brigade and battalion commanders. Before WWII, missions to subordinates were passed through written operations orders. As the Soviets gained experience they realized timeliness was of the greatest importance, and transmitted key orders orally in meetings between commander and subordinates. Written confirmation followed later. Many Soviet commanders believe no written order or telephonic directive replaces giving orders personally, on the spot. The commander has the opportunity to make certain that instructions are correctly understood by subordinates, and to resolve all unclear questions — not only on a map, but also in the field.

The political affairs cadre conducts classes in preparation for the coming fight. Often, as the corps moves closer to combat, these sessions by political officers are conversations with the anxious men to boost morale. In the mind of Soviet commanders, indifference is a disease that blunts vigilance and is prevented at all costs.⁵

In preparing his staff, the tank corps commander determines specific actions to be taken by all the officers of his staff during the preparation for the penetration and during the subsequent battles. This avoids assigning additional missions for tactical control during the battle.

At this time the commander determines the make-up of his operational group. Small in size, the operational group usually has the commander, the corps artillery commander, chiefs of operations and intelligence staffs, liaison officers with higher and subordinate commands, and a signal communications element.

Movement to Battle

From the concentration area, the 13th Tank Corps moves forward to a designated intermediate area. Reconnaissance of the intermediate area is conducted. The units move at night and, as they arrive, they are hidden in the forested areas. Traces of tank tracks along the various routes into and in the intermediate area are obliterated. A ban on all radio communications prior to commitment in the operation is strictly observed. Patrols search the area to clear any possible enemy reconnaissance. The army or front has created a 25-kilometer exclusion zone behind the front line from which the local population is evacuated.

Often the immediate deployment of the tank corps is hidden not only from the enemy but also from the friendly front line troops. Only the forward commander and a small portion of his staff for coordination of the passage of lines knows the true mission of the tank corps.

Intermediate areas, situated to

move the tank corps in the direction of the impending operation, provide concealment to the closest possible distance from the line of commitment. Here, final preparations are made. If only 15-20 kilometers from the line of commitment, the tank corps remains a short time, topping-off vehicles with fuel and making last minute maintenance repairs. An intermediate area this close to the front line precludes designating an additional jumping-off area for these final preparations. The tank corps moves directly into the attack.

Just prior to commitment, the corps commander locates with the 30th GA commander's forward CP which allows the army commander to ensure the organized commitment of the tank corps into the battle. From this point the corps commander watches the timing of his corps' advance in order not to arrive at the breach too early or too late. Upon direction from the Army commander, the corps commander moves to the observation post of the forward rifle corps commander where the commitment of his corps will take place.

During operations, operational groups headed by the corps commander are often established to function as a forward command post. Soviet commanders want to be well forward and at the decisive points in the battle.

Coordination continues with the front line unit in whose zone the tank corps will be committed. The forward unit clears the roads; all supply and transport vehicles are routed off the main roads. Priority goes to the 13th Tank Corps.

Sometimes, at the last moment, the situation could dictate a redirection of the tank corps to another sector, in which case the coordination has to begin anew and hastily. The corps commander had heard General D. D. Lelyushenko, com-

mander of the 4th Tank Army, discuss his major redirection during the Lvov operation:

At 1400 hours on 16 July 1944, General Lelyushenko received from the front commander orders to leave two of his brigades in the 38th Army's sector and move to the north in 60th Army's sector to be committed at dawn on the 17th behind the 3d Guards Tank Army in a 4-6 kilometer wide penetration. All the questions of coordination and support had to be done over again in a matter of hours.⁶ The operation was successfully organized and executed on the move.

The 13th Tank Corps chief of operations directs the work on the combat orders and coordinates with forward units of the 30th GA. The chief of intelligence collects and processes information from higher and forward units. Soviet tank commanders like accuracy and do not tolerate "approximations" in estimates by their intelligence officers. For tank forces moving into the operational depth, the location of enemy reserves is most important.

As the corps moves towards the line of commitment, the brigades and the supporting units are arranged to preclude regrouping and loss of time. In this operation, because the approaches to the front line are exposed to enemy aerial and ground observation, the corps advances quickly and directly into battle.

The Chief of Technical Services advises the corps commander that the tanks that had broken down enroute from the concentration area to the intermediate area are repaired, and the unit is up to strength in tanks. The front line army, 30th GA, will provide maintenance support until the corps commits through the breach, leaving the

corps maintenance support intact for support behind the enemy lines.

While the tactical configuration of the tank corps depends on many variables such as combat mission, fighting strength, width of sector, enemy defense, and terrain, the tank corps commander usually seeks to provide for flexible control and speed. Based on the information concerning the situation, the commander prescribes a zone six to eight kilometers wide in the advance to the line of commitment. This gives him room to maneuver the corps. He forms the corps into two echelons, an artillery group, and a reserve. Two tank brigades, with a large proportion of the support weapons and all the artillery, formed the first echelon, while advancing the corps on two axes. The depth of the columns of the main forces reached 20-22 kilometers (see figure 2).

Questions of coordination and passage of lines with the commanders of the first echelon rifle corps were taken up previously on the day preceding the transition to the offensive. At that time, the brigade commander conducted a reconnaissance of the routes of advance.

An attached representative from

the supporting air army worked out aviation support. In coordination with the operation, the air representative planned the air support for the approach and supporting strikes once the unit broke into the operational depth.

For greater flexibility and agility in signals communications, selected combat vehicles with cross-country capabilities were fitted out as main radio stations and the commanders and staff run a communications test before moving out. Communications within the corps are organized in the following manner: corps staff has radio communications with the subordinate units on two channels; with staffs of higher headquarters over three channels; and two stations for communications nets to other units and commanders.

The tank corps commander from his operational group has a radio station working with the brigade commanders and a radio station with the higher commander. Also, on the corps commander's net with the brigade commanders is the chief of staff for the corps, which allows him to keep informed on orders and reports from brigade commanders.

The radio nets of the artillery are organized in a similar manner. The

corps staff maintains separate channels with reconnaissance and the rear, and a separate net with the front line infantry who create the breach in the lines for the tank corps. Through radio nets, officers from the air units assigned to the corps staff communicate with air support to direct aircraft to targets.

Under the cover of darkness, the reconnaissance elements of the first echelon brigades begin the advance on their respective axes. The reconnaissance parties consist of a platoon of tanks, a section of combat engineers, up to a platoon of submachine gunners, and armored vehicles and motorcycles.

The Movement Support Detachment follows behind the reconnaissance and begins necessary obstacle-clearing on the movement routes for their parent brigades. Approaching the line of commitment, forward detachments deploy into combat formations. The corps commander receives the signal from the army commander to commit to battle.

The Battle

The Corps commander hopes to have a "christaya" (clean) breakthrough. This means the first-

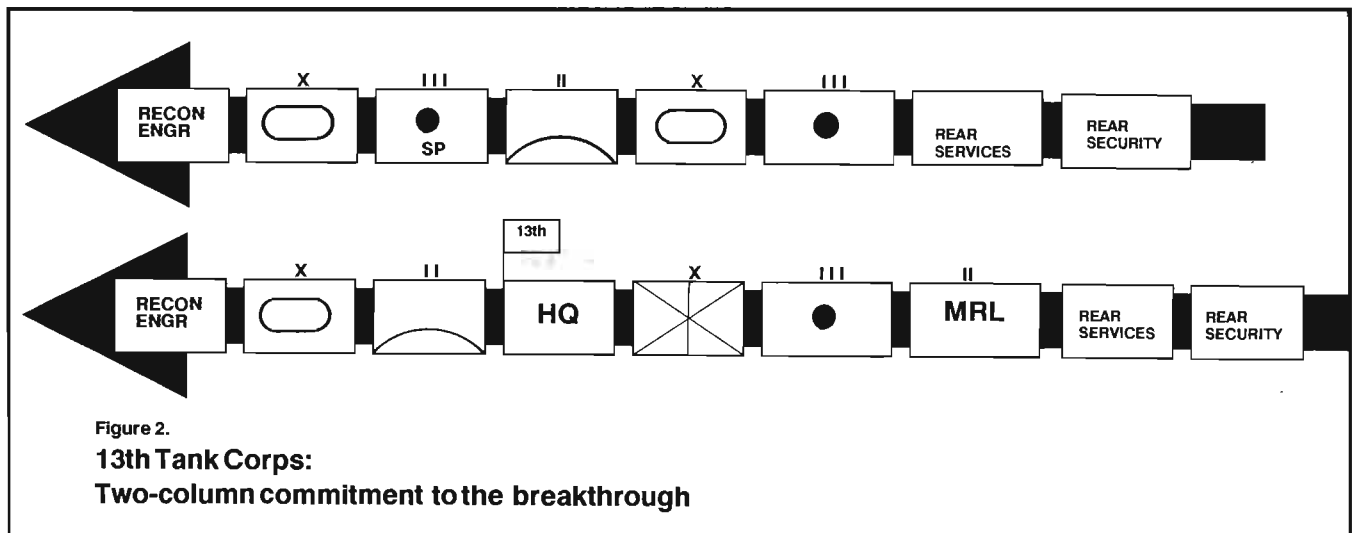


Figure 2.
13th Tank Corps:
Two-column commitment to the breakthrough

echelon army has already penetrated the entire German tactical defense zone, clearing a path into the rear area. If this is the case, the tank corps commander can leave the rest of the corps in column for speed and ease of movement.

Most of the time, as in this case, the infantry fails to breach all the tactical defenses. Adding its tank strength, the tank corps also fights to achieve the breakthrough before moving into the operational depth.

The commander orders the forward detachment to assist the infantry in creating a breach.

The breach in the zone of commitment for the tank corps is too narrow with only a single road for commitment. The commander knows from experience that the Germans will bring up local reserves with the mission to restore the situation and close the "throat" of the penetration. In the interest of seizing this fleeting opportunity and maintaining the tempo of the attack, he risks commitment in the narrow penetration.

At least during the initial contact with counterattacking reserves, the tank corps will have the support of the army's artillery and close air support. This will give the tank corps a local numerical advantage that would preserve his force and allow him to move into the depth of the defense.

The tanks corps will ignore flank fires and will avoid engaging attacks from the flank in order to speed through the gap. Securing the shoulders of the penetration is the concern of the first echelon army, its reserves, and any available reserves from the front.

In this case, the prior planning of the tactical control at this point is effective. The corps commander with his operational group moves direct-

ly behind the combat formations of the first echelon of the left column. He controls the forces by issuing short combat orders by radio; liaison officers carry duplicate messages. Radios transmit only after the corps and brigades began moving up to the attack line. At this point, the pace of the action at the tactical level is too fast for reaction by the Germans to any signals interception. Army staffs had previously worked out a unified coded map and code table.⁷

The main command post with the corps staff leap-frogs forward. The rear CP to the main, main CP to the forward. The movement of the command posts depended on the rate of advance. By the middle of 1944, a Soviet High Command-promulgated directive established the practice of working out a specific plan for the movement of the basic command posts. Headed by the deputy chief of staff, an officer group with a communications group moved ahead of time to the new location.

The command posts of armored formations displaced in large jumps of 15-30 kilometers. The existing communications means restricting the number of command post moves to not more than two or three a day. The corps commander's operational group was more mobile. Its move did not involve the time of changing the location of the command post. In some operations, the operational group halted for 20-30 minutes every hour-and-a-half of movement.⁸

The speed of deploying and taking down the command posts depended largely upon the teamwork of the staffs and prompt preparation of the equipment and communications. The practice of setting up command posts according to a previously elaborated scheme proved effective. In this instance, 15-30 minutes were

spent in a brigade, and 40-60 minutes in a corps.⁹

Deep Penetration Defense

As the operation unfolds, the Germans in the sector have four previously-prepared defensive lines. The infantry broke through the first two defensive lines, and the remainder require breaching by the tank corps. Rushing past the infantry units, the tank corps fights away the German screening forces and reaches the third defensive line. The advance holds up here. Being well forward, the corps commander assesses the situation in a timely manner and makes the decision for the execution of a turning maneuver. He covers his right flank with a tank unit of the second echelon and assigns the rest of the second echelon the mission of attacking the Germans from behind the left flank of the first echelon. He brings up artillery. At the same time, he directs the fire support for the assault of the first echelon. With the movement of the second echelon around the left flank, the Soviets threaten the Germans with encirclement and an attack from the rear. Shifting to meet this threat from the rear, the Germans weaken their front. Taking advantage of this, the tank corps' first echelon breaks through the German resistance and scatters it.

Once committed through the tactical defensive zone and into the operational rear, the tank corps commander receives direct support of air units subordinated to his command. Air strikes clear his way. The tank corps' momentum carries it through the fourth line of defense. The German fire plan has gaps, and they have not had time to emplace obstacles and other engineer barriers to slow the tank attack.

"...Tanks and assault guns coming out of repair were a main source for replenishing tank units..."

The corps commander watches his casualty rate and tank losses closely. He has lost close to 20 tanks. This is 10 percent, and experience taught the Soviet Army that they could tolerate up to 25 percent losses in these initial phases and remain combat effective. His corps is in good shape.

As his tank corps emerges through the German tactical defense zone, the commander worries about other concerns. One of the important requirements for mobile groups at this stage of the operation is to achieve a high rate of advance. At the operational level of war, high tempo begins to disrupt the whole orderly commitment of the enemy defense's reserves to action, and it is this breakdown of the defense's systematic control and unit integrity that provides the basis for successfully developing an operation to a great depth.¹⁰

The commander also knows as the tempo of his forces picks up, the corps at this time is more elongated. The Germans will undoubtedly seize roads in the rear. The commander is concerned that his staff is not cut off. He directs their movement to a position close behind the main forces of the corps.

The development of the offensive tempo depends greatly on how quickly mobile forces cross water obstacles. Quite often, throughout the war, rapidly moving tank forces



in the operational depth were forced to cross several water obstacles during one operation. The chief method was to cross on the run. The forward detachments seized crossings and bridgeheads. All possible measures were taken to ensure artillery and bridging materiel moved up to the river quickly. Supporting aviation would be tasked to isolate the crossing sections from any approaching enemy reserves.

The commander advises the Chief of Technical Services to ensure the organization of maintenance reconnaissance groups to quickly identify the repairable tanks and get them back into service. Tanks and assault guns coming out of repair were a main source for replenishing tank units in the course of an operation.¹¹ Soviet experience in the latter period of the war revealed that some tanks were "recycled" 3 or 4 times during an operation.

Other matters of supply do not bother him at this time. His corps had begun the operation with 3.5 times the combat load of ammunition, four times its fuel and

lubricants, and they carried almost 15 days of rations. And, they are prepared to forage for immediate needs. At this stage, the units are expending more fuel than ammunition. German fuel dumps would be used for refueling before destroying.

Having beaten the initial reserves of the Germans, the corps commander knew that for the next several days, they would not meet any serious resistance. Then, they would run into reserves from the strategic depth. In the meanwhile, the tank corps' actions in the depth of the German defense would be demanding. The continued spread of the units on separate axes would make tactical control difficult. The brigade commanders operated more independently, displayed initiative and acted aggressively, to break up and cut off withdrawing Germans. At this point in the operation, the corps commander has to affect very careful coordination and assignment of missions to the brigades. He and his deputy would go to the brigades personally and assign missions on the spot.

The chief of intelligence provided very important information. To ef-

fectively operate in the operational depth, it was necessary to determine in advance the routes of withdrawal of the Germans and the strength of garrisoned strongpoints. Most of the time it was necessary to bypass these centers of resistance. The mobile group had to avoid any battles of attrition at this time. Early warning of the advance of enemy reserves was of special importance.

After several days operation, the tank corps lost more tanks to battle and mechanical failure, and supplies ran low. After a brief meeting engagement with German strategic reserves, the tank corps assumed a defensive posture. It would attempt to hold its line of advance. With the

tank corps, the commander creates a number of strongpoints, directs seizure of road junctions and coverage of likely routes of enemy withdrawal. He also establishes a corps mobile reserve and directs his brigade commanders to do likewise. This gives the units the potential to repel unexpected attacks and destroy infiltrating groups between the strongpoints.

While sitting astride the retreat routes of the German front, the tank corps assumes a defensive line. Waiting for the relief by the front line, the tank corps commander could delve into his years of battle and compare the phases of the war. By 1944, it seemed to him that they

had mastered the art of war. The number of combat tasks that they had accomplished on this operation were considered only natural, but if they were transferred mentally back to the initial period of the war, they would be considered incredibly difficult, bordering on the impracticable.

Conclusion

Reflections similar to the tank corps commander's have continued as current Soviet military researchers rigorously analyze their mobile group operations on the Eastern Front. Soviet analysts have identified the same areas of concern, i.e., command and control, logistics, air defense, fire support, as have the Western speculators on the problems of OMG-type operations. For the Soviets, truly in Marxian dialectical form, their solutions incorporate new technology with mobile group experience to allow realistic considerations for the OMG role. The mobile group experience is an invaluable bridge to understanding similar operations on the modern battlefield.

FOOTNOTES

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²V. Odintsov and V. Ovsyannikov, "Rear Support for Mobile Groups," *Voyenno-istoricheskii zhurnal (Vizh)*, (No. 3, 1983), pp. 43-49; I. Tormozov and V. Tokarskii, "The Organization of Air Defense for Mobile Groups of Armies and Fronts During Offensive Operations of the Second and Third Period of the War," *Vizh*, (No. 4, 1983), pp. 21-27; A. Krupchenko, "Technical Support of Tank and

Mechanized Corps Operations as Mobile Groups," *Vizh*, (No. 6, 1982), pp. 27-33.

³N. Kireyev, "From the Experience of the Employment of Forward Detachments of Tank (Mechanized) Corps," *Vizh*, (No. 9, 1982), p. 21. The current Marshal of Soviet Armored Forces and Commandant for the Malinovsky Tank Academy, O.A. Losik, won his recognition during the war as a forward detachment commander. His tank brigade, in the capacity of a forward detachment, was the first to reach Minsk during the Belorussian operation of 1944. See note 11 below.

⁴*Ibid.*, p. 23; See also F. D. Sverdlov's, *Forward Detachments in Combat*, Moscow: Voenizdat, 1986.

⁵V. I. Chulkov, *The End of the Third Reich*, Moscow: Izdat "Sovetskaya Rossiya," 1973, p. 80.

⁶D. D. Lelyushenko, *Moscow-Stalingrad-Berlin-Prague*, Moscow: Nauka, 1973, p. 255.

⁷P. P. Torstukha, R. M. Portugal'skii, *Troop Control in an Offensive*, Moscow: Voenizdat, 1981, p. 1982.

⁸*Ibid.*, p. 178.

⁹*Ibid.*

¹⁰I. S. Konev, *Forty-five*, Moscow: Voenizdat, 1966, p. 106.

¹¹O. A. Losik, *Formation and Combat Use of Soviet Tank Troops During the Years of the Great Patriotic War*, Moscow: Voenizdat, 1979, p. 331.

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A Company Commander's Guide For Conducting Tank Platoon After-Action Reviews

by Captain James R. Barker

A thorough after-action review (AAR) is an essential part of any training experience. Yet, many company commanders are not familiar with how to plan, prepare, and conduct AARs that effectively reinforce their company's training. In fact, their only experience with AARs might have come from a National Training Center (NTC) rotation where platoons, companies, battalions, and brigade staffs receive a variety of formal AARs.

The detail and formality found in NTC AARs does not necessarily meet the needs of a tank company commander trying to assess his home-station platoon training. A tank platoon executing the Tank Tactical Tables found in FMs 17-12-1 and 17-12-3 only requires a short, but thorough, debriefing after completing each table.

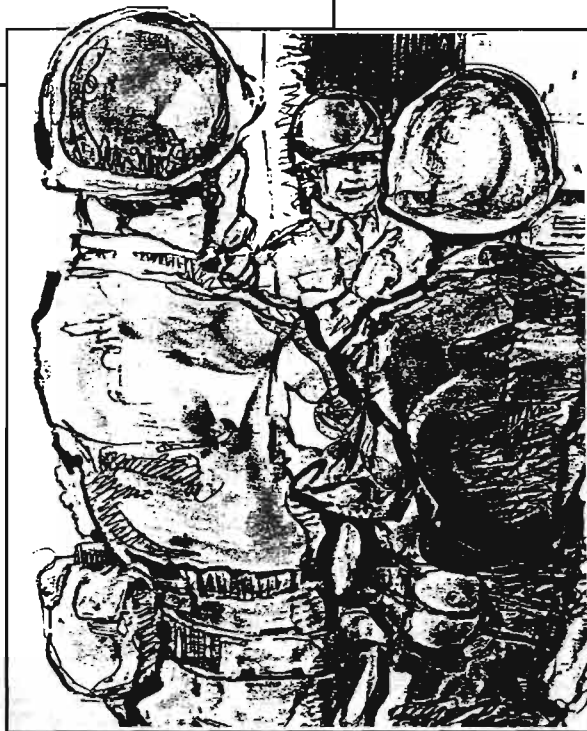
While assigned to the NTC, I conducted, or observed, hundreds of AARs. Based on this experience, I will describe several guidelines that should help company commanders and other leaders conduct platoon-level AARs designed to maximize home-station training. Specifically, these guidelines focus on how to use a quick and effective AAR format that fits platoon-level training, how to organize the main body of the AAR into key teaching points, and how to ask questions that will prompt platoon members to participate in the AAR.

Different training situations require different AAR formats. The formal battalion AAR format based on FM 71-2J's seven operating sys-

tems used at the NTC does not suit a review of a tank platoon's performance on the tactical tables. At the NTC, my platoon AARs followed a variety of formats depending on the type of mission and the platoon's progress through the training rotation.

There was one format I found that was the most applicable to home station platoon AARs. This format is nothing more than a review of the key events that occurred during the training mission. Key events are the critical acts that influence the success or failure of the mission. This is the easiest and most productive AAR format for home-station platoon AARs because the format fits the tank tactical tables which themselves focus on "key events" (e.g., engage aerial targets, react to ambush, etc.)

Prior to executing the platoon tactical tables, or an ARTEP training mission, the company commander should review the tactical tables in either FM 17-12-1 or FM 17-12-3 and the platoon ARTEP mission standards in FC 17-15-1 to determine the possible key events that might develop during each exercise. Tactical table performance steps and standards are a ready example



of key events that may occur during the mission. This provides the commander with a means to guide his observation of the conduct of the mission. For example, if the platoon is executing Tactical Table I-5, React to an Ambush, possible key events the commander observes are:

- Did the tank platoon execute a correct action drill?
- Did the platoon engage all targets?
- Did the platoon send a correct spot report?

The AAR, then, will focus on these key events and how they contributed to the success or failure of the task or mission. In essence, these key events become the main teaching points of the AAR. The preparation phase of the AAR further illustrates the use of the key events format.

During the conduct of the tactical table or training mission, the commander will note the platoon's planning, preparation, and execution of the mission and highlight those items that appear to be key events. After the mission is over, the commander turns these key events into the key teaching points of the AAR by outlining the AAR around the key events. The easiest method of outlining the AAR is to organize the key events chronologically and discuss the planning, preparation, and execution factors that influenced the key events.

The AAR outline is the same as any outline done for a paper or report. It is simply a method for organizing the key event list. Here is an example of a simple AAR outline for the react to an ambush mission:

A. Complete FRAGO issued

1. Areas of observation designated.
2. Proper movement techniques mentioned.

B. Pre-Combat Checks inadequate

1. Ammo not cross leveled.
2. Vision blocks and sights not cleaned.

C. Movement techniques adequate

1. Platoon moved in correct wedge formation.
2. Drivers followed terrain.

D. Platoon failed to acquire ATGM team.

1. B22's loader was not watching his sector, did not see ATGM signature.
2. B22 destroyed before anyone reacted.
3. PSG's section did not provide suppressive fires.

E. ATGM team destroyed two tanks before the platoon returned suppressive fires.

To this outline the company commander now adds the details that influenced these key events. To do this, the commander should ask himself four questions: What happened?; Why?; What should have happened?; and, How can we make "What should have happened?" happen the next time?

The answers to these questions are critical because they involve the details that caused the mission to succeed or fail. If the commander uses these four questions to deter-

"...Participation in the AAR discussion by the platoon members is critical to the success of the AAR..."

mine the details of his key events outline, he will drive home the AAR's main teaching points. Although the commander uses the four questions mentioned above to help prepare his AAR, he still wants the platoon's members to find the answers to the questions for themselves during the AAR discussion. For this to happen, the company commander must ask questions that will ensure the full participation of the platoon's members in the AAR.

Participation in the AAR discussion by the platoon members is critical to the success of the AAR. The company commander can help foster this discussion by asking questions that prompt answers. The commander must ask open-ended questions — questions that the platoon members cannot answer with a simple yes or no. Notice the difference between the question "Did you see the ATGM team by the obstacle?" and the question "What did you see when you reached the obstacle?" The first question is answerable with a simple yes or no.

If the soldier is reticent, he may not elaborate on his own. However, the wording of the second question forces the soldier to say more than yes or no. The key words to remember are: who, what, why, where, and how. Here are a few examples:

Bad: "Did you fire at the aircraft?"

Good: "What happened when the aircraft flew overhead?"

Bad: "Loader, did you complete your pre-combat checks?"

Good: "Loader, what were your pre-combat checks?"

The commander must remember to ask open-ended follow-up questions to continue to bring out detailed information from the responses to the initial questions. Examples of good follow-up questions are:

"What happened after you saw the ATGM signature?"

"Platoon Sergeant, what did you tell the platoon leader over the radio?"

"Gunner, what do you think caused the problem with your sights?"

The key to driving home the AAR's teaching points is the answer to the "How can we make 'What should have happened?' happen the next time?" question. This is an easy question to answer through the use of follow-up questions:

Company Commander: "B22 Gunner, what happened when the TC laid the main gun on the target?"

Gunner: "I couldn't see it, the sight was dirty. Must have been some mud on the ballistic window."

Company Commander: "Why did this happen?"

B22 Loader: "I should have cleaned the sights during my pre-combat checks."

Again, the point to remember is to ask open-ended questions, questions that begin with who, what, why, where, when, and how, to get the platoon members talking. Once everyone begins to talk, the lessons will come out on their own. The commander's job then is to guide the discussion, according to his outline, remembering to identify both the platoon's strengths and weaknesses and discover ways to correct the weaknesses and maximize the strengths.

In sum, I have discussed several guidelines that company commanders or other leaders can use to conduct effective platoon AARs. These guidelines consist of using a "key event" format that focuses on the critical occurrences that happen during training missions; organizing these key events chronologically and discussing the planning, preparation, and execution factors that influenced the key events; and asking

open-ended questions that prompt more than simple yes or no answers.

An effective AAR for home-station platoon-level training does not require a sophisticated computer system or a rigid format. The guidelines I have discussed are simple methods designed to maximize training lessons.

Weak AARs degrade training value. These guidelines provide company commanders with a tool for improving the quality of their training and maximizing their always short training time.

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- Tank Platoon ARTEP Mission Training Plan, FC 17-15-1, Fort Knox, KY: US Army Armor School, January 1984.

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Recognition Quiz Answers

1. M109A2 155-mm Howitzer (US). Crew, 6; combat weight, 24,948 kg (28 tons); maximum road speed, 56 km/h; maximum road range, 349 km; armament, 1 x 155-mm main gun, 1 x 12.7-mm AA machine gun.

2. M60AI Bulldozer Tank (US). Crew, 4; combat weight: (w/o blade kit) 48,987 kg (56 tons); maximum road speed (w/o blade kit), 48 km/h; maximum road range (w/o blade kit) 500 km. Armament, 1 x 105-mm main gun, 1 x 7.62-mm coaxial machine gun, 1 x 12.7-mm AA machine gun.

3. M1 MBT (US). Crew 4; combat weight, 54,432 kg (60 tons); maximum road speed, 72 km/h; maximum road range, 475 km; armament, 1 x 105-mm main gun, 1 x 7.62-mm coaxial machine gun, 1 x 12.7-mm AA machine gun. (Surprise! The M1 shown is an inflatable rubber decoy that can be carried in a duffle bag) .

4. T-72 MBT (USSR) Crew, 3; combat weight, 41,000 kg (45 tons); maximum road speed, 60 km/h; maximum road range (w/o auxiliary tanks), 480 km; (with tanks), 700 km; armament, 1 x 125-mm main gun, 1 x 7.62-mm coaxial machine gun, 1 x 12.7-mm AA machine gun.

5. T-54 MBT (USSR). Crew, 4; combat weight, 36,000 kg (40 tons); maximum road speed, 48 km/h; maximum road range (w/o auxiliary tanks), 400 km; (with tanks), 600 km; armament, 1 x 100-mm main gun, 1 x 7.62-mm coaxial machine gun, 1 x 7.62-mm bow machine gun, 1 x 12.7-mm AA machine gun.

6. T-80 MBT (USSR). Crew 3; combat weight, 48,500 kg (53 tons) ; maximum road speed, 70 km/h maximum road range (with auxiliary tank) 650 km; armament, 1 x 125-mm main gun; 1 x 7.62-mm coaxial machinegun, 1 x 12.7-mm AA machinegun.

Combat Gunnery: Observations from the NTC

by Lieutenant Colonel Douglas B. Campbell



"The bloodiest solution...the character of battle, like its name, is slaughter and its price is blood..."

— Clausewitz

Day 5, 0900 hours, task force headquarters, Live Fire Assembly Area, National Training Center, Fort Irwin, CA.

"This task force has been the top gunnery battalion in the division for two years."

"We have been conducting CAL-FEXes at platoon, company, and battalion level for the past six months and are the best combat task force in the Army."

"We just completed Bradley transition and shot better than any other unit in the division."

"We have been practicing long-range gunnery and have been consistently achieving hits at 3,500 meters. This is the top mortar platoon in the division; it can get steel on target in less than five minutes."

Day 6, 1400 hours, Live Fire After-Action Review Site, National Training Center, Fort Irwin.

"During this mission, the task force killed a total of 54 percent of the targets presented, compared to our average results of 80 percent. Tanks killed 22 percent, TOWs killed 24 percent, and Bradleys killed three percent with 25-mm.

Tanks averaged 5.4 rounds per kill, with three kills at ranges beyond 2,500 meters, all other tank kills were at less than 2,500 meters, with the majority of targets killed at less than 2,000 meters. No missions were fired by the mortars, because they received no calls for fire. Bradley crews consistently engaged targets beyond effective range, using 235 rounds per vehicle killed."

As Field Marshal Lord Wavell said:

"The principles of strategy and tactics, and the logistics of war are really absurdly simple: it is the actualities that make war so difficult — the effects of tiredness, hunger, fear, lack of sleep, weather..."

Based upon watching almost thirty battalion task forces go through live-fire operations at the National Training Center, the clear picture that comes through all other lessons is that we do not understand the actualities of combat, and we do not train our tactical formations to use combat gunnery.

What do we do wrong? Why don't we kill? These are frequently asked questions at the NTC. The first

major question that units face in live-fire operations is the decision to concentrate on maneuver, or gunnery, or safety.

Those commanders who concentrate all their efforts on running a safe range lose for themselves and their unit the benefit of significant training. Contrary to what it may seem like to those visiting, NTC live fire is a very safe environment, primarily as a result of two groups of dedicated professionals. The first group is your soldiers, who are doing what they have been trained to do, just as you would expect them to function in combat. The second group is the live-fire combat trainers, who are double- and triple-checking everything: weapon placements, angles, and locations. Their experience gives them an almost sixth sense of what will happen next.

The usual winner in this maneuver/gunnery debate is maneuver — units concentrate on tactical deployment. Leaders devote their efforts to movement over the battlefield, formations, integration of weapon systems, and placement of supporting arms. It is only after the first few engagements, when the task force is normally destroyed, that a re-appraisal of this priority is required. The next focus by the task force is to devote its attention to gunnery. Leaders tell tank and vehicle commanders to concentrate

on the things they have practiced during gunnery at home station.

This normally fails as well, with the results much the same: companies and task force destroyed. Some units may even reach the point where platoon or company commanders control or direct gunnery, but such action normally breaks down quickly once leaders become casualties.

Let's examine what takes place during these phases and isolate the problems that need to be corrected by training.

During the maneuver phase, the unit concentrates on moving as a unit, platoon, company, task force. When they are attacked, the attention of the leaders remains on moving, because they are well trained in gunnery skills, and vehicle commanders can handle gunnery by themselves. Leaders issue orders to move platoons or to bypass with companies so as to continue the attack. No platoon or company fire commands are issued, no sensing between vehicles, between platoons, or between the various elements of the task force is even attempted. Individual tanks, Bradleys, or ITVs engage what they think is the target without any direction or guidance.

Unlike home-station gunnery, the crews do not know the range or target locations. They have never had to try to find the target amidst the smoke and dust of platoon or company engagements, with the tank next to them sending up billowing clouds of dust, with multiple projectiles hitting around the target, with smoke, HE, and WP rounds bursting between them and the target.

Ranges consistently greater than 1,800 meters result in short rounds as the norm, with crews unable to sense their own rounds. The result is short rounds into the same location as the previous short round. As leaders die, the unit even stops maneuvering and just sits and shoots, three, four, five rounds from

the same location. The result — units destroyed and enemy withdrawal, or enemy destroyed at great cost to the unit.

The second phase, concentration on gunnery, follows. The unit reforms, or is reconstituted, and moves on to the next engagement. This time the leaders concentrate on directing and controlling gunnery. They maneuver their force to bring massed fires on any target presented. The problems of ranging, sensing, and constant searching in stabilization mode have not been solved, but now all maneuver is directed to bring force to the firing line. This concentration of effort normally results in the force being surprised by attacks from multiple locations. While all forces are on line to engage enemy number one, enemy number two attacks the flank, breaks up the effort, leaders begin dying, and the attack falters and stops.

The greatest problems remain, however, that none of the combat gunnery deficiencies have been solved. Short-line rounds are still the rule, rather than the exception. The earth erupts around the targets, the air is filled with 25-mm rounds falling drastically short, wide, or over the target. The ITVs can hardly get a clear shot, and the Bradleys resort to TOW shots only when out of ammunition or directly forced to use the TOW. The task force may eventually overpower the enemy, but it suffers equal or greater losses than it imposes.

The picture sounds bleak, and clearly not all units that go through live-fire operations at the NTC perform that poorly. However, it is a picture closer to the norm than we can afford to accept. Why can't our units quickly destroy enemy targets without suffering unacceptable casualties? What training do we need to improve or increase if we are to change this situation?

Precision gunnery is a requirement for survival in any situation where range to target has the chance to be greater than 1,800

meters. Almost universally, crews open fire using battlesight gunnery. By the time they decide the target is beyond battlesight range, the target is obscured, and friendly losses have occurred.

This lack of training is normally coupled with an inability to keep gunners scanning while the unit moves forward, so that gunners are surprised when targets appear, and are not sure of the location or range to the target. Gunners are not using their thermal sight as their primary sight. In M1s, they are not scanning in three-power, then switching to 10-power for the engagement, and back to three-power to identify any other targets.

Sensing and communications between vehicles, between platoons, companies, and all elements of the task force are not accomplished. Each vehicle fights each engagement as an independent operator. No unity of effort exists. The scouts, who see exactly where the enemy is and that rounds are going short, never call the company commander. Companies operate a single-company net, vehicle commanders do not talk or pass sensing information because there is not enough "air time" available. Platoon leaders do not lead or provide directions because the net is too busy. They do not want to override their commander and they do not want the company commander to hear their mistakes.

There is no well thought-out and practiced sensing SOP in the platoon, where wingmen always sense for the firing tank. Although some M1 tankers will say they don't need sensings, that the subsequent fire command will most likely be "LOST — REENGAGE", experience indicates that the crews do not recognize they have missed the target. Crews will tell you that they were hitting what they shot at, that the other vehicles shot short. Bradley units do not even think about the concept of sensing, either because "that's tank gunnery," or be-

cause "the 25-mm is a machine gun and we don't shoot it that way".

In the defense, we have poor BFV scores because, in addition to not sensing, the "correct" method of engagement, single-shot sensing rounds, does not work. With constantly changing ranges, it takes three or four rounds (or more) to get on target. By that time, we are engaging the enemy at ranges under 1,000 meters and have lost most of the advantages of defending. Range cards can help solve this problem. However, we need to train their use and then force their employment. The number of crews that make a useless range card or never use one is disturbingly large.

Coordination and direction of combat systems within the task force is not accomplished. The mortars receive no calls for fire. Commanders are too busy trying to fight the direct-fire systems to worry about indirect, especially mortars, which have no impact on the enemy. The task force's most responsive indirect-fire system, which is capable of providing immediate suppression on quickly-appearing targets, is wasted. Because of this lack of attention, the best mortar support normally comes from direct-lay missions called and directed by the mortar platoon leader. Even though this may appear to be a desert-only tactic, it is a technique vital to rapid armor operations and needs to be stressed in training.

Bradley commanders shoot 25-mm when they should be engaging with TOW. Some commanders say that it's only an NTC problem, that crews only shoot 25-mm because Bradley MILES TOW does not kill. But a greater reason is that BFV crews believe they can kill with 25-mm at 3,000 meters and attempt to do so, rather than go to TOW. That problem turns the question back to sensing. No provision has been made for the tanks to pass range to the BFV crews. There is no tank platoon leader telling his infantry counterpart "Range 2,800, use TOW", or company commander

directing its use. On the NTC battlefield, ITVs totally fend for themselves. With a mission of follow and support, and no further guidance. It is a remarkable AT platoon leader or company commander who gets involved in the battle at all, much less plays any valuable part. They spend most of an operation with hammer-head down and normally get into the battle after it is too late, and all other combat power is hopelessly lost. The control and employment of attack helicopters, close air support, and artillery further compound the other problems, taking up leaders' time. However, because they have practiced working with these systems at home, they can generally get those systems employed. It is the basics, necessary for survival, which means killing the enemy, that were not refined nor practiced at home.

What training do we need to be doing to get the basic skill required to kill the enemy, as a platoon, company, or task force? The first requirement is individual crew proficiency. Crews must be able to function quickly and shoot accurately. If crews can't hit, the battle is lost. Crews must train for precision gunnery, and they must know and understand the limitations of their weapons. Home-station ranges should add smoke, explosions, and sensing as the norm.

The requirement for, and practice of, sensing should be a matter of course, but it should not be limited to tanks. The scouts, mortars, and infantry should all develop and train on these techniques. Infantry BFVs should work sensing for themselves and for tanks. Platoon live-fire exercises are only useful if there are few or no restrictions on where individual vehicles can fire. Company live-fire exercises are almost universally counterproductive. Virtually no installation in CONUS or overseas can allow a company, much less a larger unit, to conduct an unrestricted live-fire exercise. A far better effort would be a subcaliber range, which would allow free maneuver and force-sensing be-

tween elements of the company. A range into which you can introduce the swirling free-for-all typical of armored combat is required. If that is not available, you cannot substitute a sterile, controlled range. It is bad training.

Leaders at all levels must know and understand the weapon systems of the task force, and must be prepared to pass information freely between themselves. The mark of a well-trained experienced unit is the amount of communications between equal leaders, company commander to company commander, platoon leader to platoon leader, rather than higher to lower. Leaders cannot see and control everything. Subordinate leaders must pass information between each other and assume their commander and the TOC is listening. Everything else takes too much time, and too many people die in the process.

We have the equipment and the ability to attack and destroy the enemy quickly, with few losses. To accomplish that mission, however, we need to understand what the battle will be like, anticipate, and practice the "confusion" of combat. We must ensure that our leaders know that they must talk to each other, not just to the boss.

Lieutenant Colonel Douglas B. Campbell, commissioned in Armor in 1965 following graduation from Rutgers University, served in Germany and Vietnam with the 11th ACR. He has been an instructor at the Infantry School; XO to the Chief of Policy Branch, SHAPE; and a force planner at the Army Staff War Plans Division, HQDA. He is a graduate of the C&GSC and the Army War College and served almost three years as chief of live fire at the NTC. He is now vice commander of the Warrior Preparation Center in Einsiedlerhof, FRG.



"Scouting is an art, as well as a science."

- Anonymous

To call scouting a complex business has become commonplace. Maneuver commanders expect the scout to do more kinds of things than any other fighter.

- To find the enemy without being discovered himself, the scout is a master of movement by stealth, whether mounted or dismounted.

- In locating his prey, he routinely demonstrates proficiency in map reading and land navigation.

- To reach his objective — typically without engineer support — he may have to breach an obstacle or clear a passage through a minefield.

- Once he finds the enemy, the scout, regardless of his rank, becomes a communicator.

- In contact, he can dispose of the enemy with dispatch. Small arms are his stock in trade; he knows them all from the M16 to the .50 caliber.

- When the enemy is beyond small arms range, the scout adjusts indirect artillery or mortar fire onto the target. If pressed, he becomes a

Training Scouts

by LTC A. J. Bačevich

tank-killer, skilled in ATGM employment, on or off his vehicle.

The scout employs all of these skills on the most exposed reaches of the battlefield, operating at best as part of a platoon or section but often virtually alone.

In cavalry units, scouts occupy the center of the overall training program, and rightly so. Without good scouts, cavalry is ineffective. But what makes a scout "good"? What type of scout training is most effective? In 2d Squadron, 3d Armored Cavalry, we've wrestled with these questions and believe that the answers are not as obvious as they might seem. The purpose of this article is to share our tentative findings.

Typically, scout training focuses on technique — on teaching the myriad skills that scouts require. The tasks, conditions, and standards of Soldiers' Manuals and ARTEPs provide the meat in the scout's training diet. Mastering those skills will produce scouts that will measure up

to the challenges of battle — or at least so we assume.

Consistent with the Army's insatiable penchant for evaluation, units spend as much time testing the scout's proficiency as they do nurturing it.

In 2d Squadron, we call that evaluation the Manly Cup. In the fashion of cavalry everywhere, the Manly Cup has its own distinctive gloss of panache. (Our scouts perform their feats of derring-do in a semi-mythic desert land, recovering long-lost artifacts of great political significance or struggling to liberate a benevolent ayatollah — educated at UCLA! — who promises to bring democracy to his oppressed countrymen).

But panache aside, the Manly Cup is pretty much like scout exercises conducted elsewhere. Whether eighteen hours long or thirty-six, whether conducted at section level or platoon, they are all much alike. Like the Manly Cup, they include a live-fire phase, requiring scouts to engage targets with machine guns and ATGMs, employ demolitions, and adjust indirect fire; and they feature a maneuver phase — a part of which occurs at night — during which scouts execute various reconnaissance and security missions.

As with these other scout evaluations, the Manly Cup is good train-

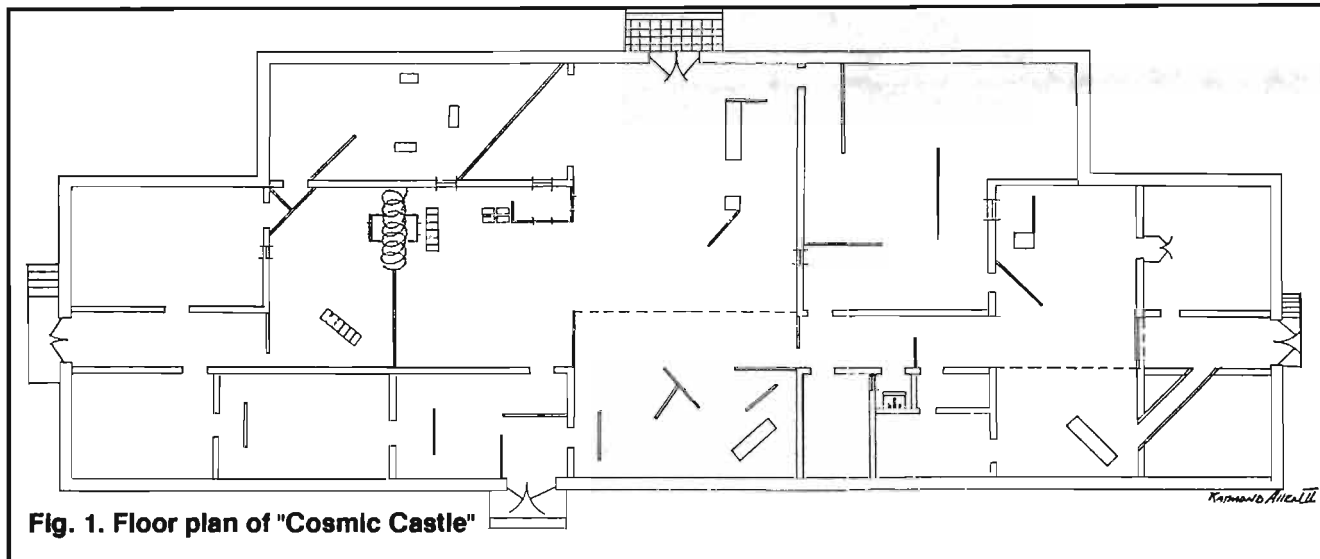


Fig. 1. Floor plan of "Cosmic Castle"

In converting this WWII-era building for scout training use, additional walls, crawl spaces, firing ports, and obstacles were added to the already complex building. The result is a sort of maze, darkened by painting the windows black.

ing. Our scouts learn a lot and enjoy the chance to compete for recognition. Yet, even as successive evaluations have shown solid improvement in scout technical proficiency, the Manly Cup has failed to invest our platoons with the qualities — largely intangible, almost undefinable — that we know instinctively that scouts must have. However well our platoons grasp the science of scouting, they show too little artistry.

In short, our experience with the Manly Cup has convinced us that skill training alone will not suffice to develop effective scouts.

What are the "qualities" that skill training fails to provide? They are three in number: initiative, teamwork, and the ability to communicate clearly; qualities that may in fact be in especially short supply

among young Americans as they come off the streets and into the Army.

An absence of initiative manifests itself on the training ground as the "tourist mentality." Scouts who know better stand by passively and allow opportunity to escape or disaster to occur. Later, at the after action review, they will acknowledge sheepishly that they should have acted and may even be able to explain what they should have done. But in the heat of the moment, they stand as if uninvolved, bystanders rather than participants, condemned to inaction. The problem here is not one of technique, and the solution is not to be found in rehearsing soldiers on some particular T&EO.

Or consider this: scouts confront a routine tactical problem, be it to reconnoiter a defile, to breach an obstacle, or to clear a small built-up area. Suddenly enemy fire sends the scouts diving for cover — and there they remain. The shock of the enemy's presence shatters the unit's ability to work together. Effective action ends; all is disjointed and confused. The scouts sit frustrated waiting for something to happen; operational momentum grinds to a halt.

Teamwork that cannot survive contact with the enemy is a hollow

attribute. But how do units build teamwork that will withstand crisis? In our Army, drills are the preferred solution. Experience shows, however, that even if drills are a useful preliminary, alone they are inadequate. Tactical problems are infinitely variable. The conditions encountered on exercises (not to mention the battlefield) somehow never correspond to the tidy situation assumed by preconceived drills. Scout platoons need a capacity for teamwork that is itself infinitely variable and elastic, adaptable to any threat and applicable to any situation. Again, Soldier's Manuals and ARTEPs provide little help in developing such qualities.

The problem of the inarticulate scout completes our trilogy of shortcomings that current training strategies fail to address. The essence of scout communications lies not in the individual's ability to use a radio or to submit a spot report in the prescribed format. Rather, it lies in his ability to recognize what is important and to pass information clearly and accurately.

Trainers can leave it to others to explain why so many young Americans cannot express themselves clearly. The fault may lie with declining standards of literacy. Or perhaps it stems from the pervasive phenomenon of Spectator-Nation, in which only a few actually per-

form, while the numbed majority is content to watch — whether the activity is a sports event, a rock concert, or a videotape. In either case, the impact on the Army is severe. The scout who cannot sound the alarm is indeed a cripple; the cavalryman who cannot rapidly assess, decide, and effectively communicate his intent is a danger to those around him.

What sort of training will build teamwork and initiative and help the soldier overcome his tendency to be inarticulate? Clearly, training by checklist so typical of the Army will not do. There are no ritualized performance standards that will guarantee improved teamwork. Nor does the local training aids office provide a laminated card listing "five steps" to initiative. There are no cut-and-dried solutions.

As so often, a sports analogy gives some idea of what we're looking for.

A basketball team requires players with sound individual skills. But a team that devotes all of its practice time to lay-ups, free throws, and drills won't be a winner. A team also needs practices that replicate game conditions. For this reason, coaches traditionally make scrimmages the centerpiece of their practice sessions.

What are the characteristics of a good scrimmage? The first is intensity, demanding the total involvement of each individual. The second is spontaneity, continuously changing situations force the players to adapt prescribed plays to fit the actual circumstances. The third is the rhythmic interaction of the players as they respond to each other's capabilities and communicate to one another with a glance, a ges-

ture, or the briefest shouted command.

To build quality scouts calls for training that can be likened to a scrimmage. The similarity to a scrimmage must extend in particular to the training's accessibility. Just as the coach can scrimmage his team at will, so too must the trainer be able to "scrimmage" his scouts as often as he wishes, avoiding the complex coordination required for a major deployment. The scout scrimmage needs to be close at hand and easy to execute.

In 2d Squadron, we've taken a cut at developing two such scrimmages, exercises that we call COSMIC CASTLE and PHOTON WARRIOR. Neither is the "approved solution"; both are offered as examples of the direction that we believe scout training must take.

The Cosmic Castle

The COSMIC CASTLE is an unused WWII-era building that stands by itself along the northern edge of Fort Bliss, a building like countless others except for the unusual number of small irregular rooms that it contains. We compounded the interior complexity by adding obstacles and crawl spaces, cutting firing ports through walls, and in general converting the interior into a maze (see figure 1). Then we painted the windows, making it pitch black inside as well.

Our aim was to place the individual scout in a closed, high-threat environment that provided strong incentives for him to exhibit the qualities we wanted. Four scouts play Cosmic Castle at a time, each one wears a MILES-harness and is armed with a MILES-equipped M16 rifle and ten rounds of ammunition. On a signal, each scout



enters the building through a separate entrance, the door is immediately locked behind him. Standing in the eerie silence of that vacant building, waiting for his eyes to adjust to the darkness, the scout contemplates a series of perplexing problems:

- Two of the other scouts in the building want to kill him, but he doesn't know which ones they are.

- The remaining player is his teammate, but our scout doesn't know which of the three is his partner or even which door he entered; (teams are designated moments before the game begins when two scouts are marked with engineer tape; a player knows whether or not he has been marked but not who else has been).

- Three containers of "secret documents" are hidden about the CASTLE; each side needs to recover them; neither side knows where they are.

- Once the two teams have been given fifteen minutes to eliminate each other, a single door will open to admit the "Grim Reaper," an alarming figure in a hooded, black robe. Armed with a MILES-controller gun, the Grim Reaper glides like death from room to room, looking for survivors to claim. Assuming that he is still alive, our scout can win the game by eluding the Grim Reaper and escaping with the secret



documents through the one unlocked door.

These miniature combats in the COSMIC CASTLE have no standard outcome. Each contest differs from all previous ones — sometimes hilariously so. Most, however, share certain common themes that contribute directly to the development of artful scouts. Circumstances in the CASTLE compel the player to deal with his opponents. Some scouts aggressively seek out their enemy, others cunningly lie in ambush in the recesses of the CASTLE. But no one stands around uninvolved.

Even as he worries about his enemy, the scout feels an urgent need to link up with his partner. The shadow lurking behind the doorway — is it friendly or enemy? The scout is terrified of killing, or of being killed by, his own teammate. Thus, the scout confronts the most elemental of communications exercises, that of telling friend from foe and of conspiring with a friend to destroy a common enemy.

Photon Warrior

What the COSMIC CASTLE does for the individual scout, PHOTON WARRIOR attempts to do for the section. This scrimmage occurs outdoors, in a fragment of desert, about 400 meters by 200 meters, across from the squadron motor pool. This fugitive from the

asphalt and gravel that covers the rest of Fort Bliss consists of small dunes, three to five meters apart, covered with the tough, thorny scrub brush indigenous to the region.

Two teams play PHOTON WARRIOR, each consisting of seven MILES-equipped scouts with M16s. On each end of the playing area is a "gate," the only ways to enter or exit. In the center is another box of "secret documents" in an enclosure of concertina. Starting at opposite ends, each team has an identical mission: recover the documents and escape through the far gate. Doing so necessarily requires a fight with the other team.

PHOTON WARRIOR incorporates troop leading procedures. Each team has a leader. After receiving the mission, the leader has time to plan and to explain that plan to his subordinates. Once both teams enter their gates and collide at the center, the plan, however well-conceived, falls apart.

Here the training value of the exercise is at its greatest. Changing circumstances force the leader to modify his plan while under great stress, to communicate it to his teammates, and to rally them to carry out his intent. Or the leader is killed, a common occurrence, forcing another scout to take charge and to formulate his own plan.

Again, the enclosed, laboratory-like conditions virtually eliminate the bystander syndrome characteristic of large-scale exercises. The fight see-saws back and forth as first one side then the other gains control of the documents and struggles to escape with them. Almost without exception, victory comes as a

byproduct of one team's annihilation.

Conclusion

It would be nice to report a quantifiable improvement in the performance of scouts who participate in COSMIC CASTLE and PHOTON WARRIOR. We cannot do so. Frankly, we doubt that the outcome we seek can be quantified in any rigorous sense.

We can report this much: scouts enjoy these exercises enormously. The challenge turns them on and engages them — physically, mentally, and emotionally — in a way that more traditional forms of training seldom do. To those who appreciate the importance of artistry, a quality felt rather than measured, we recommend this type of training.

Those who insist on a precise demonstration of its values will have to wait until the time for scrimmage is past and the actual competition is upon us.

Lieutenant Colonel A.J. Bacevich commands the 2d Squadron, 3d ACR, at Fort Bliss, Texas. A graduate of the U.S. Military Academy, he was a cavalry platoon leader in Vietnam and commanded a troop in the 3d ACR. More recently, he has served as S3 of the 3d Squadron, 2d ACR, and S3 of the 11th ACR.

The Newest M1:

A Fourth Variation of the M1 Tank

Capitalizes on New Technology

by Captain Jon Nussbaum



"Bravo-Two-Six...Bravo-Two-Six...This is White-One-Zero. Charlie-Papa One-Six. 0318 Zulu. Am continuing with mission. Out."

1LT Schwer took another quick look at the digital map on his battlefield management system (BMS) display to make sure that the three blips on his map that represented the other tanks in his platoon were still on line and moving with him. "Thank God for this position navigation equipment. I would hate to have to keep track of these guys in the dark without it. Especially the way SSG Kojro reads a map," LT Schwer thought to himself. "Lieutenant, I think I see scatterable mines in front of us on the dirt road," said PFC Uliano, the lieutenant's tank driver.

LT Schwer knew that the driver's thermal viewer (DTV), which PFC Uliano was using, could distinguish between the ground and the dense material of the scatterable mines, with their telltale geometric shape, if temperature conditions were just right.

"White-One-One, move onto the road and plow us a path. Over."

LT Schwer ordered into his SINGGARS radio, "White One-

Three, this is One-Zero. You guys set up in overwatch until One-One and I are on the other side of the mines. Out."

"Uliano, follow 50 meters behind SSG Kojro's mine plow tank. Make sure you stay on the plow marks and don't wander out of his path."

LT Schwer could see the moonlight shining off SSG Kojro's tank through his near-panoramic periscopes in his commander's weapon station as Kojro's tank lowered its plow and headed through the minefield.

LT Schwer then drew the minefield on his digital map and pressed the button on his BMS flat-panel display, which sent the information by digital burst to the other three tanks in his platoon and to the other two platoon leaders in the company, his CO, XO, and 1SG at the blink of an eye.

"Silva," Schwer said to his gunner, "You search from 12 o'clock to 3 o'clock. I'll cover 9 o'clock to 12." LT Schwer then set his commander's independent thermal viewer (CITV) on automatic scan from the 9 o'clock to the 12 o'clock limits, with reference to the tank's hull, set the field of view on WIDE by flicking the thumb switch on his TC's override handle, and studied his CITV display for possible targets. The CITV, which gave Schwer the same thermal sighting

capabilities as his gunner, would automatically scan back and forth between the programmed left and right limits, restarting the cycle every five seconds.

PFC Uliano put the tank in gear and started to follow the trail left by White 11.

"Lieutenant, tank in sector left-one!", Uliano shouted.

Schwer grabbed his TC override and traversed his CITV over to the sector Uliano announced, using the symbology in his CITV display, which corresponded with that of Uliano's DTV. Once in sector, he elevated his CITV until he saw the BMP-2 that Uliano had identified.

Schwer switched to narrow field of view, layed his reticle on the center mass of the BMP, and hit his HUNTER/KILLER (target designate) button. The turret of the tank instantaneously slewed over and automatically layed the gunner on the BMP at the same point that the CITV was aiming.

"Gunner, battlesight, Tank!"

"Identified!"

"Fire and adjust!"

"I hope we get him first," Schwer thought to himself, as he started to search with his CITV for any

friends of the BMP that may be covering the same obstacle with direct fire.

"ON THE WAY!"

"BOOM!!" The 120-mm smooth-bore on Schwer's tank fired.

"UP!"

PVT Economy screamed as he loaded another sabot round.

"TARGET!" Silva yelled happily, as secondary explosions started to rip the luckless BMP-2 apart.

Schwer now heard his platoon sergeant's tank and the tank of the sergeant's wingman open up on two more BMPs. SSG Kojro's mine plow tank was now on the other side of the minefield and generating a smoke screen to cover the passage of the rest of the platoon.

"Maybe I should have waited and conducted a deliberate breach with the rest of the company," LT Schwer thought to himself as his driver gunned it across the cleared path and settled their tank in a good hull-down position parallel to White 11.

Schwer hit the CONTACT button on his BMS display. His position, identification, and the time he hit the button, as well as a warning that he was in contact, were immediately transmitted by data burst to CPT Sanders, his CO, 1LT DeMont, his XO, and LTC Seiler, his battalion commander, using his BMS message preaddressing system.

"White One-Three, this is One-Zero. I'm set. Move now. Out."

The two tanks moved from their overwatch positions and crossed the cleared lane. Suddenly, there was a white-hot flash, and White 12 shuddered to a stop in the middle of the cleared mine path.

The ATGM round that hit 12's turret came from the hill designated



Turret roof details of "M1A1 +"

as Check Point 23 on Schwer's digital map. CP 23 was White platoon's final objective, where they were to set up in overwatch to support the assault of the rest of the company on OBJ Funk. Schwer touched CP 23 on his map and then touched the IMMEDIATE SUPPRESSION button located next to the CONTACT button on his BMS display.

"As long as the FIST is on line, the 4.2-inch mortar rounds should start hitting in less than two minutes," Schwer thought. White 12 started moving again and pulled up to the left side of White 13, waiting word to commence the final assault on CP 23. The 4.2-inch mortar rounds started impacting on CP 23 as White Platoon moved out to overrun the hill, adding main gun and machine gun fires to suppress and destroy the BRDM and BMP-2 that were still on the objective.

White 13 destroyed the BRDM with a main gun HEAT round, while White 11 blew the turret off of the BMP, both firing on the move while closing in on the hill at CP 23. These destroyed enemy vehicles were drawn onto the BMS display's digital map and sent out by data burst, as were the first three BMPs White platoon had killed, by PSG Peterson in White 13.

Once White platoon was set on CP 23, CPT Sanders moved the rest of the company out and secured OBJ Funk. CPT Sanders ordered all platoons to begin consolidation and reorganization efforts in anticipation of a counterattack. PSG Peterson immediately received fuel and ammo reports from all the

tanks in White platoon, as well as a consolidated maintenance status. He received this information through his BMS display using preformatted reports, and instantaneously forwarded a consolidated platoon report to the ISG and battalion S4, with a single data burst.

White 12 had reported that his gunner's primary sight (GPS) and cant sensor were malfunctioning, according to his BMS diagnostics system. The damage was due to the ATGM hit on the turret. The crew reported it would continue to fight in a degraded mode with the cant sensor shut off and using the CITV commander's sight instead of the gunner's GPS until the ISG could send a maintenance contact team forward to affect repairs. An hour later, when preparation of his platoon's battle position was completed, LT Schwer leaned back in his hatch and took a bite out of his "John Wayne" candy bar. Suddenly the radio crackled, "All Bravo elements, this is Bravo Two Six, frag order follows..."

LT Schwer looked at his map display screen and studied the new overlay appearing on his map as he heard the frag order over the radio. He could see the symbology for a T-72 company 12 km to his east and the preplanned artillery targets to his front. He knew that platoon battle positions would soon follow.

"Smoke," he thought. "I'll put smoke between me and them and then pick them off, using my thermal sights and CO² or carbon dioxide laser rangefinder before the T-72s can even see me."

Schwer moved his tanks back into turret-down positions. He designated sectors of fire to the tanks in his platoon by drawing them on his map and transmitting them by data burst. Then he sat back to the wait.

At 0613 hours, 152-mm artillery rounds started to blow apart the woodline on the hill 1,500 meters to the east of CP 23. LT Schwer

M1A1 Block II Improvements

looked at his BMS display and saw the NBC attack alert.

"GAS!... GAS!... GAS!", he yelled into the intercom. The counterattack had started.

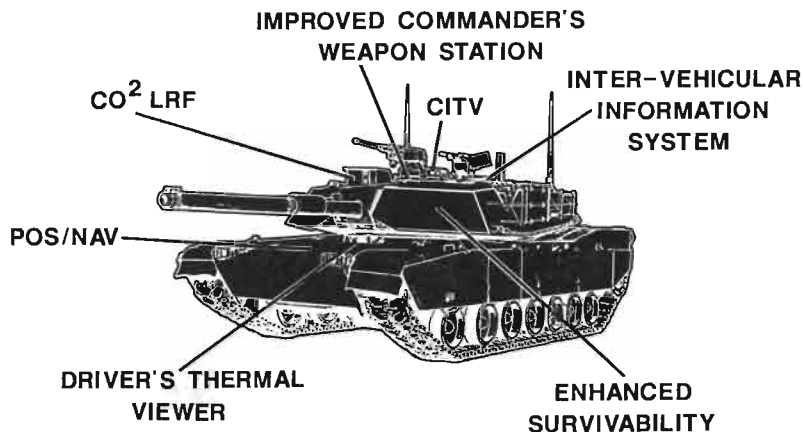
* * *

Although the hypothetical battle that Schwer's platoon was fighting may be futuristic, the tank systems described will be here in the near future - November 1988 to be exact.

The Abrams tank is a relatively new system, which was first fielded in 1980, but has already been modified (product improved) to the point that there are three different models that have been, or are being, produced.

The original system was the M1 tank, which was produced from 1980 to 1984. The second model, produced from 1984 to 1986, was the Improved Performance M1 (IPM1), which received an up-armored turret, rear bustle storage rack, and modified suspension and drive systems. The third model, the M1A1, or M1 with Block I Product Improvements, is now in production and has received the M256 120-mm smoothbore main gun and an NBC overpressure system, in addition to the IPM1 modifications. A fourth model will soon begin production with a second set of block improvements. This is the tank with which LT Schwer's platoon was equipped, and it is called the M1A1 with Block II product improvements, or nicknamed the M1A1+.

The rationale behind the Block II product improvements is the same as for most improvements to Army systems: a change in the threat, a change in U.S. doctrine, identified technical/operational shortcomings in the currently-fielded systems, and new technology breakthroughs.



The rapidly changing threat has been well documented and therefore will not be discussed in this article. The change in the U.S. doctrine that has recently occurred is the shift from the heavily structured "Active Defense" to the highly fluid "AirLand Battle" concept, which requires rapid dissemination of information, both up and down the chain of command. Identified operational shortcomings, which are the direct result of technical shortcomings in the tank's original design, include the awkward commander's station; the driver's image intensifier AN/VVS-2 and YAG-D laser range-finder (LRF), that do not operate optimally under all obscuring conditions; an outdated command and control system; and bulky, expensive, and cumbersome intrusive diagnostics equipment.

The new technology breakthrough referred to is, of course, the micro-processor chip.

The objective of the Block II modifications is to reduce or eliminate the shortcomings while producing a tank that is lethal, survivable, and supportable on the AirLand battlefield, and that capitalizes on the newest and most reliable technologies available at the time of production.

A concerted effort is being made to ensure that, as the tank becomes

more technologically advanced, human factors engineering provides a design solution that is easier for the crew to use than the current tank during all modes of operation, but especially when operating with closed hatches. Originally approved 1 Feb 85, and then re-analyzed in August of that year, the Block II product improvements (PIPs) now consist of seven improvements or modifications to the M1A1 tank. Five of these PIPs are scheduled to begin production in November 1988 with the remaining two delayed at least 18 months. Block II is planned to be retrofitted to all M1A1 tanks, with individual PIPs retrofitted to the entire Abrams fleet on a case-by-case basis.

The most noticeable PIPs to the tank's exterior will be the commander's independent thermal viewer (CITV) and the new commander's weapon station (CWS). The CITV will allow the tank commander to search for and acquire targets using an independently stabilized thermal sight off the main gun axis concurrently with the gunner, thereby doubling the tank's target detection capabilities.

The CITV will incorporate a "Hunter/Killer" target designation capability, which automatically slews the main gun and GPS to the same aiming point as the CITV.

A 1/35th scale model of the M1A1+ shows "top hat" of CITV housing and new commander's weapon station. The same model is seen on page 41.

Operationally, this will allow the gunner to service targets while the commander is searching for and laying on the next target. This capability will drastically reduce engagement times of multiple targets in both target-rich and lean environments. The commander will monitor the CITV using an adjustable display located in the same area as the current GPS extension (GPS-E). The CITV display will consist of either a binocular (like a M60A3 TTS elbow) or direct view (TV) screen, along with associated CITV controls. Since the main gun can be fired off the CITV, GPS-E elimination - or replacement with a built-in through-sight video feed to the CITV display - is being investigated to reduce weight and space claims. Holes are already being cut into the roofs of production M1A1 tanks in front of the loader's hatch to reduce the retrofit effort and cost of CITV to the M1A1 fleet.

The new CWS will incorporate significantly improved, near-panoramic periscopes, a larger hatch and a ring-mounted externally-fired machine gun mount, which removes the power and manual machine gun controls in the current tanks. This removal of machine gun controls allows for a more open weapon station that is easier to use, while integrating required displays for CITV and BMS in a manner that optimizes human factors and man-machine interface.

To correct the shortcomings of the current YAG-D laser rangefinder, a carbon dioxide laser rangefinder (CO²LRF) is being developed. The CO²LRF will operate on the same wavelength as the tank's thermal sights and will therefore allow you to engage whatever you can see, regardless of



obscurant conditions. Additionally, the CO²LRF will be eye-safe, requiring no filters for training, and have a smaller "footprint" than the current LRF, to reduce the probability of multiple returns. Operationally, the change in LRFs will be transparent to the crew.

The driver's passive image intensifier, AN/VVS-2, will be replaced with the driver's thermal viewer (DTV). The DTV will allow the driver to operate the vehicle day or night, in all obscurant conditions, at high speeds, without requiring guidance from the commander or gunner using the GPS, as is frequently done now. The DTV will have a slightly larger field of view than the current AN/VVS-2, and will incorporate two reticles. One reticle will be located at the top of the DTV viewing screen to aid in handing off driver-identified targets to the tank commander, while the second reticle will be a template depicting vehicle width at 50 meters. This template will aid the driver in maneuvering the tank through close-in areas.

The battlefield management system (BMS), also called intervehicular information system (IVIS), is the first step at harnessing the power of the microprocessor and using it to alleviate both command and control and maintenance diagnostics shortcomings. The hardware subcomponents of the BMS system, which will be in the vehicle at initial production, are a commander's interactive display with built-in processor, a dual 1553 mil standard data bus with controller, and SINCGARS radio interface.

The commander's display will be an 8- to 10-inch diagonal flat panel display that will have the capability to display both text and graphics. The display will be interactive, which allows for both touch-sensitive buttons and a free-drawing capability. The software menus will be stored and generated from a microprocessor built into the display itself. The commander's BMS display will be located to the right of the commander's station on the turret wall, next to the CITV display.

The 1553 mil standard data bus with controller will serve two functions. First, it will be used to integrate electronic subcomponents in the turret, replacing some of the bulky hard wiring harnesses already there, and requiring no new wiring harnesses in the traditional sense. Since the data bus is a piece of quarter-inch cable that approximates RF cable used with cable TV and VCRs, use of the data bus will reduce the bulk, weight, and complexity of the tank wiring harness architecture.

Second, the data bus will reduce reliance on external intrusive diagnostic equipment at the organizational level. This will be accomplished by integrating built-in test (BIT) capabilities in all Block II PIPs, as well as the addition of BIT in as many old subcomponents as possible. The 1553 data bus controller will monitor these subcomponent BIT systems on a time-sharing basis and report any faulty systems through the BMS display. This BIT diagnostic capability, in essence, allows the crews of the M1A1+ to report what module in their tank needs to be replaced by their maintenance contact team before the team comes forward, thereby cutting vehicle down time in half, while also reducing the reliance on intrusive diagnostics equipment (STE-M1).

The SINCGARS radio interface will allow the digital burst transmission of text and graphic information input to the commander's display through the SINCGARS radios. Although this text and graphics capability will never totally replace the maneuver force's reliance on voice FM transmissions, BMS will allow for the rapid passage of tactical and logistical reports, orders, and overlays, without requiring long voice transmissions or face-to-face contact. The result of this capability will be a reduction in the force's overall electronic signature.

Position/navigation equipment (P/NE) is being developed to automatically input the tank's eight-digit grid location and vehicle heading into the BMS system. Unfortunately, unless American industry can successfully complete "Mission Impossible", P/NE will probably not be available by the initial production date.

Another planned addition to the BMS that will not be ready for initial production is a data loader. The data loader will allow added memory and software flexibility in the BMS processor, similar to the relationship between a disk drive and a personal computer. With the addition of both P/NE and the data loader, BMS will be able to display color 1:50,000-scale maps, plot the location of all BMS-equipped vehicles on that map, allow for embedded training of gunnery and other related crew skills, precision calls for indirect fires using the LRF, and many more capabilities never before imagined.

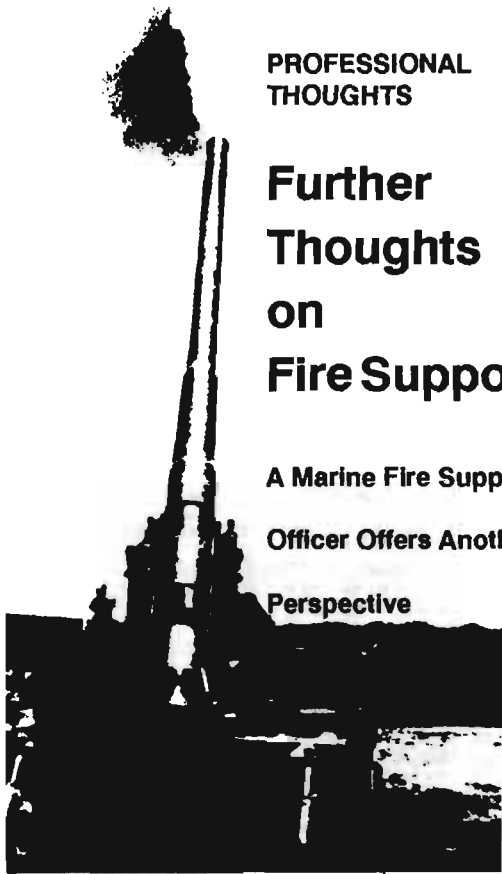
Two Block II PIPs that will not be on the first M1A1+ tanks, due to technology or funding delays, but will be cut in and retrofitted later, are an identification, friend or foe (IFF) device and an enhanced survivability (ES) package. IFF is planned to be a passive, non-cooperative system that signals the gunner and tank commander prior to firing that the target they are about to engage is either friendly or a threat. The purpose of IFF is to reduce the probability of fratricide on a fluid and confusing battlefield. ES is an armor/protection package that will increase the tank's protection against top-attack munitions, as well as increase the armor protection on other parts of the tank.

The M1 mine-clearing blade system (mine plow) is not a part of Block II, but has been developed for the entire Abrams tank fleet. The mine plow was type-classified early in 1986 and should start to be

fielded by mid FY88, with one plow going to every Abrams tank platoon. The system will consist of a track-width plowing device, which attaches to the tow hook points already on the vehicle, a control box mounted in the driver's compartment, and a modified driver's daylight periscope, which allows routing of plow control cables from the plow to the control box. The integration of the M1A1+ into the Armor force in FY89 will significantly enhance the Armor force's capability to meet the near and mid-term threat well into the 1990's. The M1A1+ will be a lethal, survivable and supportable tank, which will support the current AirLand Battle doctrine through improvements in the tank's fire-control system, enhanced command and control capabilities, and maintainability.

"White 13, this is White 11. You are on track. Move out."

Captain Jon K. Nussbaum was commissioned in Armor from the USMA in 1980 and later attended the Armor Officer Basic Course, the Armor Officer Advanced Course and the Airborne, Motor Officer, and Northern Warfare courses. He served as a platoon leader and HHT XO in 1/9 Cav, 1st Cavalry Division, Fort Hood, and also as the Tank Test Bed Program project officer and XO at the Directorate of Combat Developments, USAARMS. He plans to be reassigned to the 194th Armored Brigade this fall.



PROFESSIONAL THOUGHTS

Further Thoughts on Fire Support

A Marine Fire Support
Officer Offers Another
Perspective

The recent article by LTC Hollis, "Fixing Something That Ain't Broke" and COL Conrad's article, "Artillery Under Fire", attempt to look at the issue of fire support on the modern battlefield. While both articles have something to say from different viewpoints, I would like to add some comments from my perspective as a trainer of fire support officers at the Field Artillery School.

Fire Support Issues - For some time, the Field Artillery School has recognized that fire support planning and execution at the National Training Center falls along the continuum from excellent to poor. In particular, fire support often appears "broken" during the visible phase of the NTC rotation, the force on force battle. Within the Field Artillery School, a task force was chartered to evaluate NTC fire support issues and to suggest solu-

tions to lingering problem areas that would not only contribute to greater fire support success at the NTC but to enhance fire support execution through-out the Army. Some thoughts on the issues:

NTC. While the NTC is the best peacetime training available, it is still oriented towards training the maneuver task force commander. There simply is no way to replicate the effects of indirect fire on the training battlefield that can compete with the advantages the current MILES system provides the direct-fire battle. Typically, commanders forget about indirect fire during peacetime and learn all over again during combat that indirect fire kills more equipment and people than tanks or riflemen. Until maneuver commanders significantly increase their emphasis on fire support training objectives during their NTC work up and a way is devised to both replicate the effects of indirect fire and then accept the simulated effects during the force on force battle, significant gains in fire support execution won't be apparent. The addition of a training device, however, is not the panacea. Other equally important initiatives are key to services at NTC, Europe, Korea, and the battlefields of the future.

Fire Support Officers. Field Artillery commanders have the responsibility to put the best, brightest, and most experienced officers in the fire support billets. Task Force FSOs must be former battery commanders, not newly arrived officers waiting for a command assignment.

Direct support battalion commanders must use the most experienced major as their brigade FSO and then the direct support commander must fulfill his duties as the maneuver commander's FSCOORD. The business of fire support is the most complicated on the modern battlefield and demands the best effort from the best officers.

Fire Support Education. While most maneuver commanders are acknowledged experts of the direct-fire battle, many of these same commanders do not know enough about fire support coordination and execution. As observed recently by several general officers, including the TRADOC commander, the issue is not only fire support execution but the proper integration of all combat power by the maneuver commander. All too often, the maneuver commander leaves fire support to fire supporters, and this usually leads to marginal fire support execution. The maneuver commander is the integrator and no one can take away this responsibility. Fire supporters have the responsibility to ensure that the maneuver commander understands both the capabilities and limitations of fire support assets so that combat decisions are based upon facts and not fantasy. This is often difficult for the FA community to accept because we all want to say we can accomplish any mission no matter the difficulty. Ongoing efforts by the Field Artillery School to educate maneuver commanders on fire support issues will pay big dividends in the future; however, the bottom line is that it is the responsibility of the artillery commander, corps to battery, to educate his maneuver commander on fire support issues. No other initiative will substitute for this responsibility.

Combined Arms Training. Until the Army trains as it talks, i.e.

AirLand Battle doctrine, the reality of the combined arms team will not be seen. There continue to be brigade commanders that go to the field without insisting that their fire supporters be right by their side. Many DS battalion commanders are more concerned with fitting into the DivArty training plan rather than putting integration into the maneuver brigade training schedule — the first training priority. As armies habitually fight as they train, we must ensure that combined arms training, under the same stressful conditions as encountered at the NTC, is a reality at home station. There is no substitute for hard work and daily interface between the maneuver commander and fire supporters when stress and minimal planning time play such a large role in the success of the operation.

Direct Support vs Organic. I feel

Fear in Combat

Fear is something that we have all had to deal with in our lives. Whether it was going to the dentist or being inspected, we've all had some experience of fear. In the military, fear is naturally associated with combat. In order to be effective, we must understand what fear is and how to deal with those feelings of apprehension and worry which each of us will experience when we realize that someone is actually trying to kill us.

To illustrate the problem of fear in combat and how one might deal with it, I am going to draw on my personal experiences as tank platoon leader for Battalion Landing Team 2/8, 22nd Marine Amphibious Unit (MAU). I was with the 22nd MAU from 2 September 1983 until 30 May 1984. During that time I participated in Operation

that statements such as "There are inevitable differences between what is best for the DivArty and what is best for a particular brigade" is a rationalization. We all work for the same corps and division commander and owe this commander the best for the combined arms team. The field artillery supports the intent of the maneuver commander by providing, within capabilities, the best custom-tailored fire support available. A successful concept of operations is composed of both a scheme of maneuver and a fire support plan. Neither can stand on its own and ensure success on the battlefield. Whether the DivArty organization can provide for the future battlefield as it has provided for in the past is subject to opinion, but we kid ourselves by using organizational structure to explain away obvious training deficiencies that surface at the NTC.

"Urgent Fury" in Grenada, and later I was part of the Multinational Force in Beirut, Lebanon.

I would find that it wasn't during the actual fighting when fear was dominant. It was before the shooting started when fear and apprehension became prevalent. To illustrate this point, I quote part of a letter that I wrote to my wife the day I left Grenada. "I can honestly say that this has probably been the most difficult time (for me) in the Corps. Not because of the Corps, but because of what I've learned about myself. This morning, for instance, I was so nervous (that) my mouth was dry. I mean dry. It's weird; we can train to do all the things required of us in combat, but we can't train for fear. Fear of the unknown is the worst fear that I've ever had. There was the fear of being hurt, the fear

Basically, what has to be done throughout the Army is like what is being done between the Field Artillery School and other branch schools. The Artillery School has initiated numerous contacts between the maneuver arms and combat support schools and FORSCOM units to try and break the fire support deadlock. Cooperation and the "team spirit" must become the norm and nothing less can be acceptable. The business of fire support is critical in this age of modern warfare and demands that analysis and objectivity, not emotionalism, lead the way toward honing the capabilities of the combined arms team.

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of one of my Marines being hurt, the fear of me forgetting to do something or say something which may get one of my men hurt. Also, I think, I was afraid of being afraid, and I was afraid."

Those feelings of apprehension and worry are very similar to the same feelings you may have had before an inspection or competition. To those who have played on a high school football team, those feelings are the same as the feelings you had right before a big game. The nervousness, anxiety, and suspense are all there, but in your mind, and in reality, the stakes are much higher.

This still leaves us with the problem of how we are to deal with fear in combat. Part of the solution will rely on unit training and cohesiveness.

"...No engagement was ever the same, but the feeling of relief after shooting back remained constant..."

Unit training and cohesiveness are important because they build confidence and increase efficiency. I had my platoon for 15 months prior to leaving the United States. Three-quarters of my platoon had been there as long as I had, and we had trained in various terrains and climates.

Confidence in yourself, your crew, and your tools will reduce but not eliminate fear. Confidence reduces fear because you are not worried whether or not you can hit the target. You know you can, because you've done it before in training. Additionally, you know that the tank to your right or left can do it too, because you've seen them do it on the range. The adage, "The way you fight is the way you've trained," could not be more true.

During tank engagements in Beirut, I found that my tank crews which had practiced longer on the firing line and used proper fire commands, did better in gunnery when the bullets started flying. This is not to say that fire commands were perfect, but because the crews had done them so often in training, procedures were familiar to all crew members.

To a degree, I would say that their level of apprehension and fear was reduced. I know that this was my case on my tank. However, before I started shooting, I still remember experiencing fear. It wasn't until I began shooting back that I felt relieved.

I consider the moments between being shot at and shooting back to be the most fearful in one's life. It is only in shooting back at someone trying to kill you that you feel great-

ly relieved of fear.

During the evening of 4 December 1983, my platoon was deployed on the east side of Beirut International Airport. Just prior to dusk, my position started receiving small arms fire initially intended for Lebanese Armed Forces (LAF) located 300 meters to my front. All of my Marines were in position. We were nervous but ready, because we had done this several times a week since we had arrived in Lebanon. As darkness fell, it became apparent that this evening was going to be rough.

The rounds intended for the LAF positions began hitting Marine positions as it grew darker. The distinctive four-tracer group of the quad 23-mm guns began landing in our position. Then 12.7-mm machine gun rounds, fired from trucks 1,200 meters away, began impacting within our perimeter. At this stage of the fight, the tanks still had not returned fire. In simple terms, I was a spectator watching people shoot at me. Then a 12.7-mm machine gun started shooting at me and at an adjacent unit. I flicked the safety cap up and placed my machine gun in the FIRE position. The decision was then made that my tanks could engage targets in their sector. I had already laid my machine gun on the target. I announced, "Caliber Fifty", and fired a long burst on the target. At that instant, I went from being a

spectator of the fight to being a participant in the fight. The sense of relief was immense. Another, shorter burst effectively suppressed the machine gun.

After that engagement, I felt invigorated. Not because I had suppressed the target, but because I was relieved of a lot of fear. Most of the doubt that I had previously felt was now gone. I felt confident that I could make a difference in the fight.

The night wore on, and we were intermittently shot at and we shot back with main gun, coax machine gun, and the M85 .50 caliber machine gun. As the night went on, each crew seemed to react more quickly and more efficiently.

It is important to note that each engagement may have lasted no more than one minute, with a five-minute to one-hour lull between engagements. Each engagement was different. You react differently when an RPG-7 is launched at you from 400 meters than you do when a quad 23-mm shoots at you from 2,400 meters. A common factor in all of these engagements was a feeling of relief after returning fire, followed by a slow build-up of anxiety until you shot again. My platoon would go through this same experience on different occasions for the next three months. No engagement was ever the same, but the feeling of relief after shooting back remained constant.

My experience of combat may be unique, but my feelings of fear were not. After talking to Vietnam veterans and members of my platoon and other units, my experience has shown that fear is an element we all have to face when the bullets start to fly. The more

you know about fear, the better you are able to deal with it. We must realize that effective and realistic training is critical if we are to perform well on the battlefield. Training can build confidence, which will lessen the amount of fear we feel. We must realize that we can't fully expose ourselves to the type of fear that occurs on the battlefield, but we

can enlighten ourselves through professional development classes. We can call upon those who have been in combat to tell us what it was like. We can also read books by authors such as S.L.A. Marshall, James Webb, Ernie Pyle, and others, to get an insight into what goes through a man's head in combat. Each one of us will react differently the first time that

we're shot at, and there is no way of telling how anyone will react. If we don't expose ourselves, however, to the reality of fear on the battlefield, that fear could lead to panic and defeat.

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Warning Order: AOAC 1990 ...Be Prepared!

"Don't you think that you could...?". With those words, the team leader welcomed us to the small-group instruction phase of the Armor Officer Advanced Course. We were the "guinea pigs" for a new course of instruction at the Armor School, Fort Knox. Little did we know what the next sixteen weeks would hold.

AOAC 3-87 reported 23 January 1987. We had spent the first four weeks of the twenty-week course in what appeared to be a somewhat conventional, albeit rushed, course of instruction. We learned old standbys such as maintenance and supply accountability. There were some strange new disciplines, such as the Army Writing Program. It seemed fairly normal, and our initial uneasiness quickly vanished. It was an unusually large class with 100 officers enrolled. Being the confident senior lieutenants and captains that we were, we simply attributed it to "the powers that be". By the second week we were hearing rumors about mysterious "team leaders" who were supposedly in a deliberate defense on the second floor of Skidgel Hall awaiting our arrival. They did not have to wait long. We first met the

small group instructors (they prefer team leader) in Gaffey Hall auditorium. The senior class advisor introduced them as "hard chargers". It was soon apparent that DA MILPERCEN had finally stumbled upon the perfect match. Most of the team leaders would not have been ON the fast train, they probably would have been way ahead of it.

As the fifth week began, we nervously entered the small team rooms on the upper floor of Skidgel Hall. We had little idea of what to expect. In retrospect, nothing could have prepared us for the intensity of what we learned was "AOAC 1990."

The class was divided into two battalions, each directed by a senior major. Each team consisted of ten officers, with a mix of CONUS and OCONUS assignments. Senior captains who had successfully completed at least one command were in the post of team leader. Initially, they introduced us to such everyday norms as policies, standards, physical training, and facilities. It was almost normal for the first 20 to 30 minutes. Then the initial prep began. "OK, I want you to select another student and tell us every-

hing you know about him", our team leader said. The nervous quiet was deafening. What, we thought, are we getting into? Suddenly I was overcome by the fear that I was in the wrong place. I had done some studying about encounter groups in my college psychology classes. Perhaps I had stumbled into the Drug and Alcohol Center by mistake. Surely no one could expect us to take the initiative and assert ourselves the first day of class. After all, our experience had conditioned us to spend the first days of a new course getting "acclimated". Wasn't that the instructor's job? Weren't we to sit and learn by osmosis? Something was different here.

We left class that first day bewildered and anxious. AOAC 1990 is a concept new to the Armor School, and it was even newer to those of us who found ourselves in the first class. The format was totally alien to most. Now the format was to be based on discussion, a concept of sharing ideas, experiences, and concepts. The team was to take an active role in the learning process, not just sit like a sponge and soak up the knowledge of the instructor. Indeed, the team leader became more of a guide, a

facilitator. Soon, he would become a mentor.

Group discussion and sharing experiences was the rule rather than the exception. Instructors would no longer give lectures to fifty or sixty officers in a large classroom. No longer could the discriminating officer who had (in a moment of weakness) partied too hearty the night before, hide in the back of Boudinot Hall and catch up on his eye defilade exercises. No longer could the mediocre or lazy officer skate through a course that was, as one senior captain so aptly put it before my departure from USAREUR, "the next best thing to chargeable leave". No, the situation was altogether different now.

How did all this work? For those of us accustomed to the "I'll talk, you listen" format of most military schools, it was a refreshing change. Having been issued copious amounts of FMs, TMs, FCs, ARs, programmed texts, and other reference materials, we soon dived deeply into offensive operations at the brigade level. Initially we expected to sit in the small group like mushrooms and be fed liberal amounts of doctrine. We quickly learned that was the wrong answer. If we were to get anything out of this course, it would be because we really wanted to, not because our team leader pursued a "canned program" of instruction.

Our team leader set the stage: "I don't corner the market on brains," he stated, explaining that he wanted us to use each other as references. Our mission was to constantly call upon our own past experiences and education to place new concepts and doctrine into perspective. We learned to use manuals as starting points, to view doctrine as the general guide it is intended to be. We learned to ask "Why?", and to search deeply for an acceptable

answer. We learned, painfully sometimes, not to accept a premise or concept merely because it was written in a book somewhere. Constantly questioning our reasons and procedures, the team leader became a "devil's advocate". No longer could we assume a certain tactic or maneuver was fundamentally sound because it was "what we had been taught" or "that's the way we did it at MY unit." Now the standard forced us to examine, dissect, and justify actions. If something didn't make sense, we found out why, and then selected alternatives. If an idea or plan had problems, we refused to blindly accept it. Instead, we fixed it or discarded it for another. If a plan had merit, we studied and refined it. The team discussed every point and every new concept. By the end of most days in AOB, we remembered being ready to party hearty. By the end of most days in AOAC 1990, we found ourselves mentally exhausted and spent. It was definitely not "a sham".

Having studied offensive operations at the brigade and battalion/task force level, we were ready for Test Point 1. Well, we thought we were. Team leaders had warned us that it was a "bugger", and that it would "blow us away". We partially believed that. That is, until late on the night of the first take-home operations order, when something called IPB (intelligence preparation of the battlefield) reached up and attacked us by surprise. Most of us had never heard of IPB before attending the course, but we had studied it thoroughly since the beginning of the team phase. Despite warnings from the team leader, we were confident that we were well versed. We soon discovered that few were prepared to apply the new techniques in a performance test. By Test Point 5, we had ensured that we were intimately familiar with a process that became almost second nature.

With most of us still "smoking" from Test Point 1, we launched (cautiously now) into offensive operations at the company/team level. Finally, we thought, this was something we knew about! Certainly a group of officers, all of whom had extensive experience as platoon leaders and executive officers, would have little problem with maneuvering the very element they knew the most about.

We could have skated had it been that easy. But now, it was clear that simply giving answers to questions and filling in blanks was not enough. We needed to be able to justify what we were doing. We were forced by skeptics to look into the manuals for support, and to substantiate plans with sufficient details to actually SHOW that we knew what we were doing. We had to study and understand doctrine, and reference historical examples to lend substance to our choices. It wasn't enough to sit like a bump on a log and regurgitate information. Nor could we impress each other by liberally peppering our professional jargon with acronyms. AOAC was teaching us something most of us were ill-prepared for. It wasn't just teaching us to be unit commanders and primary staff officers. It was actually teaching us to THINK.

We need to digress here for a moment, as this is the meat of the matter. (The proverbial "bottom line", for those of you now versed in the Army Writing Program.) We were shocked. AOAC 1990 was not just dispensing information like pills anymore, nor was it requiring the widely accepted method of learning we had grown so comfortable with. Things had clearly changed. Now the advanced course was geared toward the process of thinking more than the process of input/output. Regurgitation didn't cut it anymore. Blind faith in manuals didn't cut it anymore. Acceptance of doctrine

without understanding of the "whys" and "hows" was no longer the approved method. This new process of thinking was the core curriculum of the course.

We got wise about the time of Test Point 2. We learned to creatively and thoughtfully "sharpshoot" each other; not in a trivial or destructive manner, but rather, in a constructive way.

We learned to ask "why are you doing that?", and "how do you plan to do that?", in ways that demanded a thought process and a sensible response. We picked apart troop leading procedures and learned to plan offensive operations at a detailed level. We learned to work in groups with other officers and to rely on others' experience and knowledge. We consistently questioned each other's methods, forcing complete planning methods based on the principles of war.

We were assigned staff positions (S1, S2, S3, etc.) with responsibilities to the team. Briefings by students were a daily occurrence. Staff positions would brief updates and status of projects. Student briefings of tactical operations and estimates were commonplace. The vast majority of work done by the students was presented to the team leader, and sometimes distinguished visitors, through formal briefings.

Routine last minute selection of the briefer forced every student in his working group to be fully knowledgeable about the plan. Tough questions followed, by team leader and contemporary alike, with suggestions for improvement and recommendations for change. Critiques of student presentations included substance, method, style, and appearance. An operation was never accepted at face value. A thorough, and oftentimes bloody, dissection inevitably followed.

We persevered through Test Points 3, 4, and 5. The course progressed through defensive operations at brigade and task force level, culminating in defense and delay missions at the company/team level. Such studies as NBC, OPFOR doctrine, fighting vehicle identification, counter-reconnaissance, and intelligence gathering were integrated throughout the course in day-to-day operations. Terrain walks for every major operation gave us real time and real terrain appreciation for maneuver, logistics, and fire support. By the time we reached Test Point 3, we understood the focus of AOAC 1990.

A completely new and revised curriculum awaits the young captain or lieutenant at AOAC. He is no longer taught to simply react correctly in a given situation, nor is he able to passively attend class and receive input in order to graduate. The AOAC 1990 student is thrust into an intellectual exercise that will force him to learn to THINK in a way foreign to most. He learns to research, check, wargame, question, and critically examine his courses of action to the point that he is satisfied not only with the final answer, but also his method.

AOAC 1990 isn't easy. As the Command and Staff Department of the Armor School strive to make it better, it will become even more of a challenge to the motivated company grade officer. A prospective AOAC attendee should be prepared for a different type of learning environment than he is probably accustomed to. He will likely be subjected to a more intense and in-depth course of instruction than his predecessors. He must arrive at Fort Knox ready to question and be questioned; to challenge and be challenged; to confront and be confronted. The AOAC student must be able to think on his feet. He must know his material inside

and out, apply it realistically to the situation at hand, and diligently work to improve even the best plan. He must be able to write clearly and distinctly, for the Army Writing Program is alive and thriving at the Armor School. The officer who comes into the course with a positive attitude, ready to assert himself and aggressively pursue learning will do well in AOAC 1990.

AOAC 1990 accomplishes its mission. For the officer with the "warrior spirit," it teaches the one subject we all need to excel in — WAR-FIGHTING.

CPT Gordon L. Wiborg, Jr.
3d ACR, Fort Bliss, TX

New Manual On Leadership Now Available

FM 22-102, Soldier Team Development, is now available and can be ordered through normal 12-series distribution.

Written to assist company-level leaders and below in developing soldier teams to meet the challenges of the AirLand battlefield, the manual complements FM 22-100, Military Leadership, which is the Army's basic leadership manual. The new manual uses the same BE-KNOW-DO leadership framework.

Account holders who are on 12-series distribution for FM 22-100 will automatically receive FM 22-102. For more information on the new manual, write to Center for Army Leadership, ATTN: ATZL-SWC, Fort Leavenworth, KS, 66027-6935 or call AUTOVON 552-4690.

At right, the AH-64 Apache

New Book on AH-64 A Useful Reference For Armor Soldiers

MODERN FIGHTING AIRCRAFT
Vol. 12, AH-64. Doug Richardson.
Prentice-Hall Press, New York, 1986. 64
pages. \$12.95.

It is good that U.S. armor soldiers know the caliber of the antitank aerial support they will have if war breaks out in Europe or elsewhere. This outsize (15- x 10-1/2-inch) hardbound volume in the ARCO Modern Fighting Aircraft series shows and tells in clearcut prose, excellent color photographs, and cutaway drawings how the AH-64 Apache, "the most potent attack helicopter ever to see service," will provide the aerial tank-killing support that armor and cavalry will need in war.

Doug Richardson is a longtime expert in military electronics and has edited portions of such erudite publications as National Defense, Flight International, Military Technology, and in this series, the F-16 Fighting Falcon and F-4 Phantom.

He continues his excellent work in AH-64.

The AH-64 can fly and fight in daylight or darkness, is armed with an impressive array of munitions that range from a 30-mm chain gun to the tank-killing Hellfire laser-guided missile. The Apache is air-deployable by various Air Force cargo planes or can be flown in stages from the U.S. to Scotland. Fully armed with Hellfire missiles, the AH-64 can destroy up to 16 armored vehicles on each mission, no small help to the ground armor troops.

Its chain gun can dispose of APCs and such mobile AA systems as the ZSU-23-4, but will most likely be used in a troop suppression role while the Apache carries out its main mission — tank killing.

The AH-64's wide variety of armament fits it for a number of aerial roles including antiarmor, covering force (an air cav mission) and airmobile escort.

The author has presented another exceptionally well-done volume that will be of great personal interest to the armor soldier, a volume that he should own for his own constant reading.

ROBERT E. ROGGE
Assistant Editor



**THE OTHER DESERT WAR:
BRITISH SPECIAL FORCES IN
NORTH AFRICA 1940 - 1943** by
John W. Gordon, Westport, CT. Green-
wood Press Inc. 1987, 241 pages. \$39.95

Professor John Gordon has provided the true story of the old fictionalized TV series "Rat Patrol." In this case, truth is better than fiction. This extremely well-researched story traces the British use of special forces in the desert from WWI until the end of the fighting in North Africa in 1943.

The author examines the roles of three special forces that were developed for the North African campaign: the Long Range Desert Group, the "L" Detachment of the Special Air Service, and the No. 1 Demolition Squadron/PPA. You have to admire the initial group of officers led by Captain Ralph Bagnold who, in the late '20s, decided to explore the desert as a hobby, using motor vehicles. They had heard all the stories of the camel corps and Light Car Patrol (LCP) of WWI and decided to experiment with modified Model Ts of the day. Bagnold later became the original commander of LRDG when the war in the desert began.

The beginning of the SAS is linked directly to Captain David Stirling and his group of raiders. "Rat Patrol" had to be based on many of the real life exploits of the SAS. For a modern day study of audacity in combat, you cannot beat these stories. The raids on the German airfields and surprise attacks 600 miles behind the lines are models for future use.

The exhaustive research sources of this work make the high price worth it for serious students of military history. I highly recommend that future fighters who want real life examples of boldness on the battlefield read this book. The lessons learned are countless, to include how to select leaders for these type operations.

Quality, quick reading, hard to put down.

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**AMERICA'S FIRST BATTLES:
1776-1965**, by C.E. Heller and W.A.
Stofft. Univ. Press of Kansas, Lawrence,
KS, 1986. 416 pages. \$13.46 (paperback).

The editors test a hypothesis: how the Army prepares, mobilizes, and executes in its first battle, and then adapts, makes a difference. They test the hypothesis in 10 battles — Long Island, Queenston Heights, Rio Grande actions, First Bull Run, San Juan Hill, Cantigny, Buna, Kasserine, retreat into Pusan Perimeter, and the Ia Drang Valley.

The concept grew out of a seminar at the General Staff College. The papers present the battles in easily understood ways, so the neophyte has an easy time. The styles are excellent. The maps leave something to be desired. Blobs represent higher ground, etc.

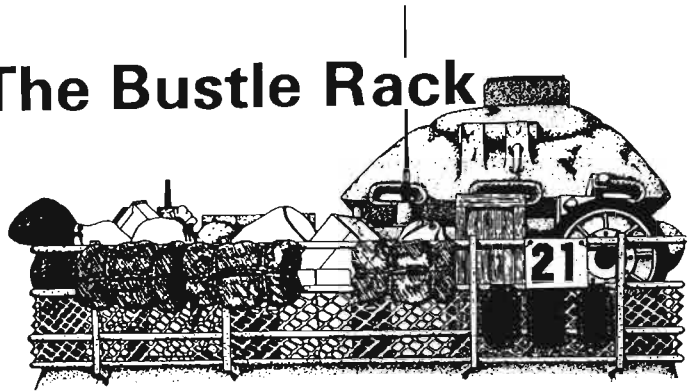
The lessons drawn are many. For instance, don't go into battle unprepared. A lack of combat experience is a problem, but not overwhelming. Large-scale exercises are a must, especially for headquarters: "...Units can often be relieved or replaced in time, headquarters almost never..." Command and control aspects are irremediable.

The other big elements are the personnel in the middle — NCOs and field-grade officers. They provide the "good leadership" that is so important for a reasonable to superior showing. Many problems have been eliminated over the years, such as the problems posed by the militia and the artillery closing with the enemy lines. The essays all show pre-war and post-battle lessons. Some still hold validity; others have become military history. The mechanized forces will find some battles of particular interest.

It's a good book and worth the price.

PETER C. UNSINGER
San Jose State University

The Bustle Rack



Big-Time Dustbuster

A new cleaning wand for the M1 Abrams V-pack air filters is now being delivered to some units in the field and will be a basic issue item on M1s produced next year.

The wands allow a crewmember to clean his tank's air filters, using compressed air from another tank. Limited numbers will be available through the supply system, beginning in September. Partial issue is already being made to units at Fort Stewart and Fort Bliss.

120-mm KE Ammo Cleared

All suspended lots of 120-mm KE ammunition in the hands of users have been inspected and 71 defective rounds were found out of more than 93,000.

Some ammunition at Letterkenny Army Depot is still being inspected. All inspected lots have received an alphabet suffix with explanatory information on the ammo data cards. All ammo currently being produced uses primers which have undergone newly-initiated quality controls.

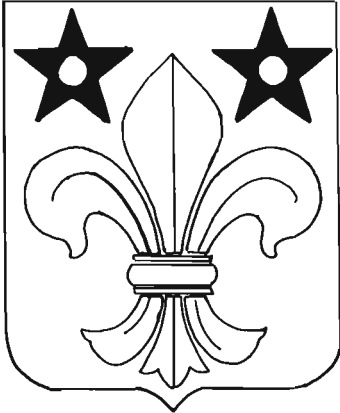
Armored Gun System Is "On" Again

Shortly after assuming his new post as Chief of Staff of the Army, General Carl E. Vuono approved a program strategy aimed at getting an armored gun system into the hands of light forces by 1992. The weapon is to be air-transportable by C-130/141, will mount a 105-mm cannon, and will include provision for add-on armor tailored to the expected threat.

New Formula May Double Track-Pad Life

Scientists at the Troop Support Command's Belvoir Research, Development, and Engineering Center at Fort Belvoir, VA, have developed a new track pad formula after checking more than 300 compounds and testing six of them. The new track pads, composed of a nitrile polymer, is highly resistant to heat and aging, offering a shelf life of up to 20 years, compared to the 5- or 6-year life expectancy of present pads.

The new pads gave 1,600 miles of service, compared to 1,200 for the Army standard pads. Scientists expect as much as 4,200 miles in cross-country use.



Symbolism

The red of the chief and wavy partition line allude to the unit's origin as coast artillery. Campaign participation credit by elements of the regiment are shown by the gold fleurs-de-lis, denoting campaigns in WWI in France, and the dragon, representing WWII campaigns in Europe and Africa. The barbs on tongue and tail of the dragon, symbolic of arrowheads, signify assault landings in Sicily and Southern France by certain elements of the regiment.

Distinctive insignia

The distinctive insignia is shield and motto of the coat of arms.

263d Armor

Never Surrendered

Lineage and Honors

Organized in eastern South Carolina and Federally recognized 6 March 1947 in the South Carolina Army National Guard as the 263d Coast Artillery Battalion with Headquarters at Florence.

Converted and redesignated 1 February 1949 as the 263d Heavy Tank Battalion and assigned to the 51st Infantry Division. Location of Headquarters changed 17 March 1949 to Mullins. Redesignated 1 September 1950 as the 263d Tank Battalion.

Consolidated 1 April 1959 with the 2d Battalion, 218th Infantry (organized and Federally recognized 7 February 1947 with Headquarters at Rock Hill); consolidated unit reorganized and redesignated as the 263d Armor, a parent regiment under the Combat Arms Regimental System, to consist of the 1st Medium Tank Battalion and the 2d Reconnaissance Squadron, elements of the 51st Infantry Division. Reorganized 1 April 1963 to consist of the 1st Medium Tank Battalion and the 2d Battalion, nondivisional units. Reorganized 30 April 1964 to consist of the 1st, 2d, and 3d Battalions, nondivisional units. Reorganized 1 January 1968 to consist of the 1st Battalion, a nondivisional unit, and the 2d Battalion, an element of the 30th Infantry Division.

Campaign Participation Credit

Company B, 1st Battalion (Dillon), entitled to:

World War II - EAME

Tunisia	Northern France
Sicily (with arrowhead)	Southern France (with arrowhead)
Rome-Arno	Rhineland
Normandy	Central Europe
	England 1944

Headquarters Company, 2d Battalion (Rock Hill [Catawba Rifles]), and Company B, 2d Battalion (Fort Mill), each entitled to:

World War I

Somme offensive
Ypres-Lys
Flanders 1918

World War II

Northern France
Rhineland

Decorations

None