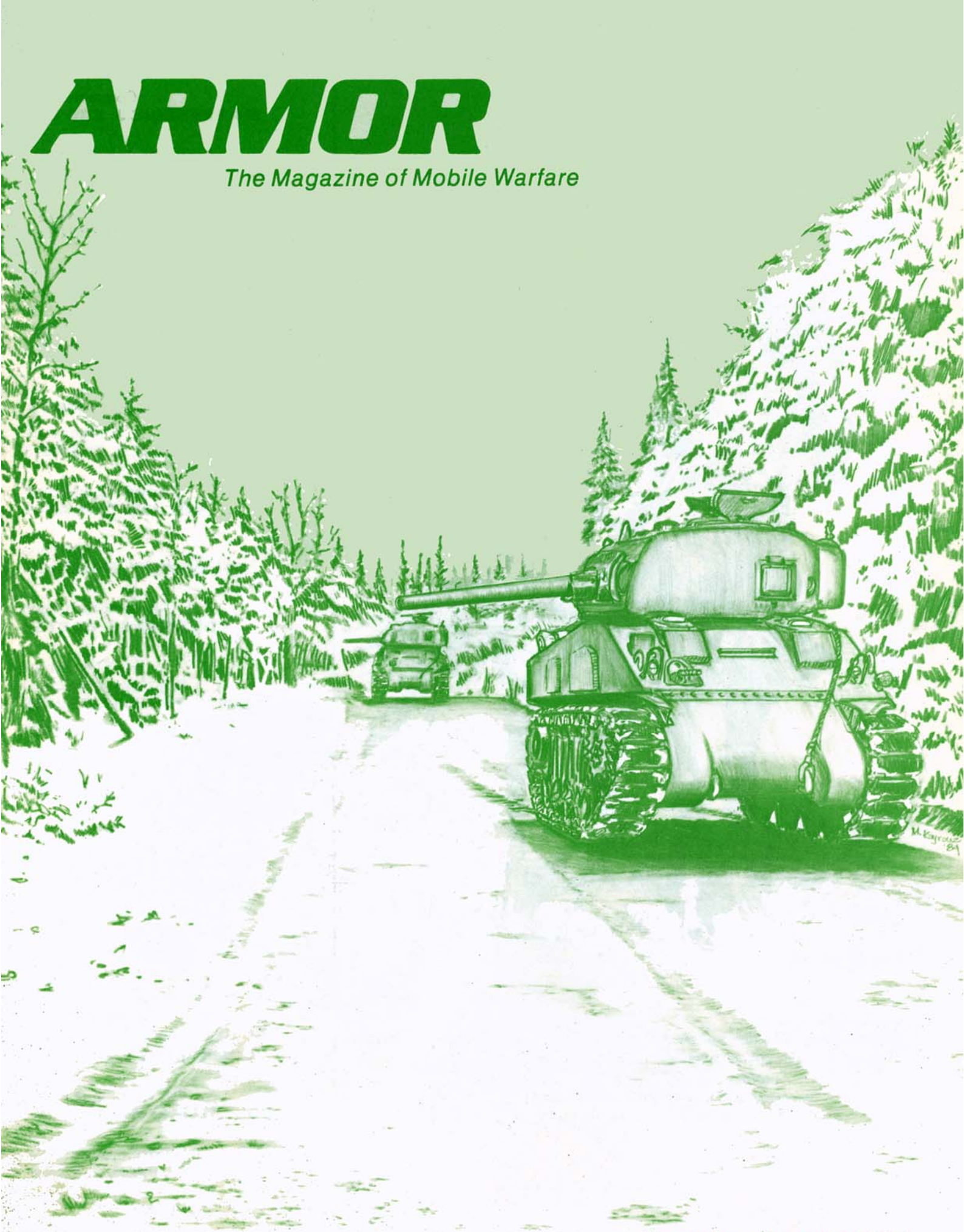
ARMOR

The Magazine of Mobile Warfare



November - December 1984

United States Army Armor School

"To disseminate knowledge of the military arts and sciences, with special attention to mobility in ground warfare, to promote professional improvement of the Armor Community, and to preserve and foster the spirit, the traditions, and the solidarity of Armor in the Army of the United States."

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FEATURES

DEPARTMENTS

COVER

Armor's stand at St. Vith, Belgium, in the winter of 1944 was put together hurriedly to stem the desperate German counterattack through the Ardennes. Today, this flexible style of defense is seen as a way to engage and defeat more numerous Warsaw Pact armies.

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LETTERS

Ammunition Shipping Problems

Dear Sir,

"Resupplying Armor the FASTARM Way" in the July-August issue of *ARMOR* Magazine was very interesting. I would like to discuss some aspects of ammunition packaging that may be unfamiliar to your readers. Specifically, the use of metal tanks, or canisters, to store and transport ammunition other than small arms ammunition.

The U.S. Navy has long used metal tanks to transport ship's gun ammunition. These tanks, long cylinders with raised rings at each end (the rings interlock to form a secure cordwood stacking arrangement), also form the basis of the shipboard ammunition stowage. They are lightweight, airtight, steel or aluminum cylinders. For those Navy guns used ashore, primarily older weapons for coast defense during WW II, wooden packing cases were used for ammunition stowage.

Once in place onboard ship, the metal stowage tank protected the ammunition from damage and prevented propellant fumes from collecting and posing an explosive hazard in the magazine. A special wrench is required to open the tanks in order to remove the cartridge or powder bag. The tanks themselves remained fixed in the stowage rack.

The metal tank is light and reusable. The supply of these tanks in wartime was considered to be critical due to the sheer numbers required and the ease with which the empty tank could be damaged or corroded. Wooden packaging was considered to be expendable.

One logistics problem of using metal tanks for ammunition, however useful, is the huge numbers required. During WW II some 7,980 5-inch 38-caliber guns were manufactured in twin and single mounts. This was the standard dual-purpose (antisurface/antiaircraft) gun for all classes of warships from destroyers on up, as well as auxiliaries and merchant ships.

For each of these guns, some 500 rounds of ammunition were carried — the so-called "load out" (basic load) of ammunition. To provide all 7,980 guns with one load out required a total of 3,990,000 rounds. Assuming a minimum of 10 load outs are on the ships and in the logistic pipeline from Stateside, a reasonable assumption and probably on the low side, we have a minimum of 39.9 *million* rounds of ammunition needed to support just *one* type of gun in the service (each round requires an ammunition tank for the powder cartridge).

Consider the logistic burden of providing so many ammunition tanks. The Bureau of Ordnance, the Navy organization tasked with ordnance and ammunition for the fleet, always emphasized that the ammunition tanks were to be preserved from damage and returned. The supply of these tanks was always critical. An empty tank is easily dented or corroded. Loss of even five percent of the 5-inch tanks per year could mean the replacement of some 1.995 *million* tanks. At perhaps 10 pounds each, we are talking about replacing 891.07 long tons, or 998 short tons, nearly equal to 70 percent of the displacement of a short-hulled destroyer escort of the *Butler* Class. This is a very significant amount of metal to be replaced when one's war industries are stretched to the limit.

During WW II, the Army had built for it and our allies some 8,536 105-mm howitzers, the standard division-level howitzer. If metal tanks had been used for this ammunition, truly incredible numbers of tanks would have been required as the number of 'returned' tanks would probably not have exceeded 20 percent, thus requiring the replacement of about 80 percent of the tanks per year. I am making the following assumptions: That the ammunition tank would weigh 10 pounds, that the equivalent of 500 rounds per howitzer is normal and that a total of 10 load outs are in the pipeline, and the wastage of tanks would be about 80 percent each year of the number in the pipeline.

If my assumptions are reasonable we could expect the annual replacement of some 34,144,000 tanks out of the 42,680,000 needed to fill the pipeline. This would require some 19,053 long tons, or 21,340 short tons of metal per year. This is over 13 destroyer escorts of the type noted above.

The above discussion is intended to illustrate how the logistic burden could well be increased by using the FASTARM combat replenishment method. We could speed up the reloading of our battle tanks, but swamp our logistic system with the requirement for virtually unlimited numbers of metal ammunition tanks. Our nation is not self-sufficient in steel production.

Given that we will probably consume very great quantities of munitions in any future war, could we realistically expect to be able to provide all the metal tanks? Perhaps another look should be taken at the existing wooden packing material for ammunition. A chemically-resistant coating on the same boxes could be useful. A redesign of the FASTARM system so that it is compatable with wooden crates may also be possible. Perhaps the most important lesson in this letter is that when one tries to 'improve' a system, he should look at the *whole* system: an improvement at one point may mean an increased burden on the whole system.

GORDON J. DOUGLAS, JR.,
Fullerton, CA

Italian Armor at Bir el Gubi

Dear Sir,

MSG Rogge's article, *"CRUSADER:* Slow Step To Victory," in the July-August issue of *ARMOR* Magazine was extremely interesting and enjoyable reading. I would like to take this opportunity to make a few minor observations, and to expand on one aspect of the article as well.

Insofar as minor observations are concerned, the first deals with reference to the German use of the 88-mm AA/AT gun, and the British failure to use their own 3.7-inch AA gun in the AT role. It should be noted that the Italians had a 90-mm AA gun (the 90/53), which was strikingly similar in appearance as well as characteristics to the German 88, which they used precisely as did the Germans in the AT role. The 90/53, manned by Italians, was undoubtedly responsible for many a tank kill mistakenly attributed to the 88. The second observation deals with the Axis command structure prior to the initiation of *CRUSADER.*

As of 15 August 1941, the German *DAK* and the Italian XXI Corps (commanded by General Enea Navarini, not Novarrina as indicated in the article) were consolidated under Rommel's command and designated *Panzergruppe Afrika,* as noted in the article; however, a separate Italian corps of two divisions ("*Ariete*" armored and "*Trieste*" motorized) known as the *Corpo d'Armata di Manovra* (CAM) remained directly subordinate to the Italian High Command North Africa (*Supercomando A.S.*), and was thus not under Rommel's control, which was probably fortuitous for the Axis. The CAM was commanded by General Gastone Gambara. The fact that the CAM did not come under Rommel's control until 24 November (when it too was integrated into *Panzergruppe Afrika*) was directly responsible for the action at Bir el Gubi alluded to in Rogge's article.

Rommel had wanted the "*Ariete*" division to move from the Bir (where it had been fortifying positions since 10 November) on the morning of 18 November, but Gambara refused to move (a position he was able to successfully maintain as he was not in Rommel's chain of command).

Italian intelligence reports had managed to predict the imminent British offensive much more accurately than had German intelligence (Rommel discounted the Italian reports as "excessive Latin nervousness"), and Gambara was convinced that the British would try to pass through Bir el Gubi on or about 20 November.

Bir el Gubi (known to the Italians as Bir

el Gobi), deserves much more than passing mention. The forces involved were very roughly equal: the Italian order of battle consisted of the *"Ariete"* armored division (132d Tank Regiment, 132d Artillery Regiment and 8th *Bersagliere* (light infantry) Regiment), reinforced by a 75-mm artillery group from the 17th *"Pavia"* infantry division, a 105-mm artillery group from Army level, and two batteries of truck-mounted 102-mm coastal artillery pieces. On the British side, 22d Armoured Brigade was comprised of three armoured regiments (2d Royal Gloucestershire Hussars, 3d and 4th County of London Yeomanry), supported by one battery of the 4th Royal Horse Artillery with 25-pounder guns, one troop of the 102d Royal Horse Artillery (Royal Northumberland Hussars) with AT guns, and one company of the 1st King's Royal Rifle Corps, as well as one South African infantry brigade. Tank-wise, the forces were almost exactly matched, as the Italians had 137 *M13/40* tanks with the 47-mm gun and the British had 136 *Crusaders* with the 2-pounder (40-mm) gun.

The battle itself developed late on the morning of 19 November when an Italian patrol ran into the advancing 2d Gloucestershire Hussars at Got el Dleua, south of Bir el Gubi. The Hussars pursued the remnants of the patrol back to the Bir and broke into the Italian positions but were checked by concentrated artillery and AT fire from the guns which had been skillfully dug in and sited. The British then sent the 3d and 4th CLY Regiments around the flanks of the Italian positions; these were, in turn, checked by more artillery/AT fire. At this point, the *"Ariete's"* 132d Tank Regiment, which had been held as divisional reserve, was committed against the 3d CLY, and the battle continued throughout the afternoon.

The Italians were much more proficient in their use of combined arms than were the British, and despite a number of very gallant cavalry-type charges by the British tank units, the 22d Armoured Brigade was forced to limp away from the engagement, rather severely mauled (it is interesting to note the reference by one British author to this engagement as "a slight brush with the enemy.").

The upshot of the battle was the loss of 34 tanks, 12 guns, and 205 killed, wounded or missing on the Italian side, and the loss of at least 53 tanks (well over one-third of the Brigade's total) for the British.

The Italian stubborness and skill at Bir el Gubi (which was by no means uncharacteristic of *"Ariete's"* overall superb performance in the desert) effectively ruined the original British plan of meeting the *DAK* and destroying it at Gabr Saleh. What was left of 22d Armoured Brigade, which continued on to Sidi Rezegh, was not enough to deal a mortal blow to the German forces there.

I would heartily recommend reading "The Sidi Rezegh Battles, 1941," by J.A.I. Agar-Hamilton and L.C.F. Turner; "The Sharpshooters" by Boris Mollo, and "Buche e Croci nel Deserto" by Giuseppe Rizzo for more detailed accounts of this particular engagement.

RAPHAEL A. RICCIO
Major, Infantry
Woodbridge, VA

Written Orders Come First

Dear Sir,

I was chatting (at the Armor Conference) with several young officers who were dismayed at the intensity of instruction they were receiving or had received on the matter of *written orders*. They asked me if, in combat, I prepared written orders. I told them I had never written one nor received one. They were delighted.

But I failed to point out that ability to give good oral orders was based on arduous discipline with *written orders*. In my case, it started at Norwich U. ROTC under General (then captain) Clark Ruffner...

JAMES M. BURT
Captain, USA (Ret.)
Wyomissing, PA

(Burt, awarded the Medal of Honor, was a recent visitor to Fort Knox during the 1984 Armor Conference.)

Morality - A Definition

Dear Sir,

Lieutenant Weber's letter in the March-April issue of *ARMOR* Magazine and Lieutenant Kingsley's letter in the July-August issue interested me. Both of these letters deal with morality, but I believe they pass by the most pressing issue of this complex subject.

Lt. Kingsley states, in essence, that the morality of an institution is determined by the morality of the individuals within that institution. The lieutenant is probably correct, but I think that a more basic concern is to define morality. I would like to offer as a definition that morality is the adherence to a code of right and wrong. If this is an acceptable definition, our problem quickly becomes of determining what is right and what is wrong.

The danger in this definition is that if the lieutenant and I have different ideas of right and wrong, we may both be moral in our own eyes even though our actions are contrary to each other's beliefs.

The articles I have read on morality and the discussions I have heard on morality have not gotten down to this basic issue, but have dealt instead with the need for members of the military to be moral and ethical people. This failure to deal with this basic issue means that young people entering the armed services are left without guidance in some vital areas.

Without a definitive statement of right and wrong, what does a young officer do when (or if) he is told by his superior, or encouraged by his subordinates, to take no prisoners or to kill the enemy wounded because they may be playing "possum"?

What about the young soldier who is told that an officer's word is to be respected and considered almost sacred and that young soldier observes that these "moral" people, with the knowledge of their superiors, do not have a private life that is parallel with such high principles? Are we to expect our private lives to be patterned by such high ideals, or are ethics and morality two different things?

I feel that these issues are much more important than whether or not the U.S. Army is a moral institution. I am sure other people have thought about this matter. I would like to know what conclusions they have come to.

CLARENCE L. BERKHAM, JR.,
Lieutenant Colonel
Missouri ARNG

"Steel" Tribute To Unknown

Dear Sir,

Your tribute to the Unknown in "Steel on Target" in the July-August issue of *ARMOR* Magazine echoed and resounded along the paths of memory — a haunting memorial to our comrades and friends.

You have called us to account to ourselves for ourselves — an accounting that pains even in its cleansing.

Thank you, for the Doug that each of us remembers.

DOUGLAS A. MARTZ
Major, USA
Ft. Sheridan, IL

More on TD Motto

Dear Sir,

In reference to Lieutenant Colonel Herman's letter to the editor in the July-August 1984 issue of *ARMOR* concerning the motto of the 63d Armor: I can attest to his claim that the motto "Seek, Strike, Destroy" originated with the Tank Destroyer Command. I served with Tank Destroyer units from their inception to their inactivation after World War II.

I am enclosing the masthead of the Tank Destroyer Newsletter published by the Tank Destroyer Association, which includes the Tank Destroyer logo with the words "Seek, Strike, Destroy"

WILLIAM L. BOYLSTON
Colonel, Armor (Ret.)
Charleston, SC

Improving the M240 MG

Dear Sir,

The *M240* machinegun used as the loader's machinegun on the *M1* tank, and as the coaxial machinegun on the *Bradley* IFV, could be made more versatile. This is the same machinegun as the *FN MAG* used by the British, Belgian, Swedish and 20 other armies as an infantry general purpose machinegun.

Personnel of my unit feel that there are some tactical situations in which the *M240* would best be used in a dismounted role.

These situations include, but are not limited to, listening or observation posts, dismounted patrolling, perimeter guard posts, augmentation of a dismounted assault force and abandonment of a vehicle in the case of a non-recoverable hit.

At present, the *M240* cannot be effectively used in any of these dismounted roles. It can be used as a hand-held weapon only with great difficulty because of the lack of a bipod, pistol grip, cocking handle, shoulder stock and sights. Used in this manner, the *M240* is a 'spray gun' weapon rather than a weapon that can quickly and effectively put rounds on target.

Most of the above parts are readily available from the manufacturer, Fabrique National. In fact, they are the only difference between the *FN MAG* and *M240*. They can be installed in minutes and the cost is low.

The biggest problem with converting the *M240* from a coaxial or loader's gun is the lack of sights. The *FN MAG* front sight is permanently mounted to the barrel, which makes it unavailable for the coaxial mounting. Any sight used must be receiver-mounted and not interfere with the feed tray cover.

Other armies have solved this problem with optical sights such as the "Aimpoint", made in Sweden. The Swedes have also developed a dual role ground/air sight, the *KS-2* prismatic sight, made by Bofors. The English have also developed specialized sights for the *FN MAG*. Their *L2A2 Trilux* sight has both day and night capabilities. The British *No. 100 LLAD* low-level air defense sight is made to fit the *FN MAG* and is also capable of use against ground targets. Both the *KS-2* and the *No. 100 LLAD* sights are lead-computing sights for use against fast-moving targets.

To be effective in its role as a loader's machinegun on the *M1*, the *M240* needs to have a front sight fitted, as in the ground role. At present, the loader is expected to expose himself from the waist up, brace the gun against his chest and adjust his aim by following the tracers; i.e., walking his fire into the target. Against aircraft or targets where a burst-hit effect is desired, such as a *Sagger* or *RPG* position, this is too slow and inaccurate.

A sight is needed. A pistol grip and a shoulder stock, such as on the machinegun on the German *Leopard* tank, would be extremely useful.

There are definite advantages to obtaining the kits of these parts. Each *M1* should have two and every *Bradley* one. With these additional parts, the *M240* would become a more effective all-round purpose weapon.

GILBERT F. WARNER
Sergeant, Armor
11th Armored Cavalry

Wants Acronyms Spelled Out

Dear Sir,

I am a civilian reader of *ARMOR* Magazine who contacts professional publications everyday. I would like to congratulate you on the very professional tone of your publication and on providing an open forum for the airing of views on tactics and the future of armor. The magazine is absolutely splendid.

It is reassuring that armed forces people have the dedicated professionalism reflected in the articles —and particularly in the letters —in *ARMOR*. I find it a thoroughly scholarly journal, but only because of the technically impeccable articles that emphasize action.

Please keep up the fine work.

Incidentally, in the Graham and Jones article in the March-April issue, I do not believe that it is completely clear from the text that the 3-D plots depict the difficulty of mobile movement —clearly most valuable information —and not elevation. The point is clear to those who could interpret the computer statements, however.

Finally, it would enhance the value of articles as training aids if more of the abbreviations and acronyms were defined in the text and charts. It would also help us civilians continue to learn about the armor branch. In this regard, the article by LTC Ash in the Nov-Dec issue comes to mind. While it's compact form is admirable, the use of "LD" and "PL" held me up awhile. I still do not know what "FEBA" is!

JOHN P. FAREWELL
Stamford, CT

("FEBA" is Forward Edge of the Battle Area. Ed.)

A New Look At Camouflage

Dear Sir,

I feel the need to reply to the Paul J. Hoven and Joseph R. Burniece article on camouflage that appeared in the July-August issue of *ARMOR* Magazine.

I think they missed the boat when they said that the main reason for using camouflage was the lack of air superiority. I say that the use of camouflage is dictated by an army's having to assume a defensive role, rather than an offensive role. Lack of air superiority would be just an additional factor in the use of camouflage.

Hoven and Burniece mentioned the 'splinter pattern' camouflage. The real reason for using this type of camouflage was not to hide a vehicle, but rather to confuse as to its identity, its path of travel and to make ranging on its disrupted outline more difficult.

A force on the defense must be a more static force than one on the offense; thus the former's camouflage patterns will differ from the latter's.

To be on the defensive is to hide, and the German 'ambush' camouflage was a near perfect example of 'hiding' camouflage.

When on the offensive, camouflage takes on a different value, for then you will be more concerned with air observation and your camouflage patterns will try to make your vehicles blend into their surroundings. However, aircraft are not looking for hidden vehicles so much as they are for tracks and shadows. Or they are working on information supplied by their ground forces as to the location of enemy vehicles.

The reason for the general lack of camouflage in Vietnam was the near total absence of Threat vehicles. Our armored vehicles faced primarily mines or RPG atttacks, and camouflage provides no defense against either of these.

GREGORY L. SMITH
Sergeant, Armor
4th Marine Div., USMCR

Ex-POW Seeks Help For Story

Dear Sir,

I was a prisoner-of-war of the Japanese during WW II at Los Banos Internment Camp south of Manila, RP. Now, nearly 40 years later, I would like to do an article about the liberation of that camp on 23 February 1945.

If any of your readers have any personal experience with this liberation, or can put me in touch with anyone who was there, I would appreciate it very much.

JASPER B. SMITH
1607 Walton Street,
Anderson, IN, 46011

The byline was inadvertently left off the fine Master Gunner's Corner column, "Send Us A Winner", that appeared in the September-October issue. The author was Sergeant First Class James M. Kirklin, of the Master Gunner Branch, USAARMS.

ARMOR Back Issues

Subscribers frequently wish to purchase back issues of ARMOR that they have missed or misplaced. This page can be used as an order form by checking the appropriate boxes. Each listing includes the titles of major articles in that issue. Many other issues published prior to 1982 are also available on request, but some are now out of stock. The following recent issues of ARMOR are no longer available:

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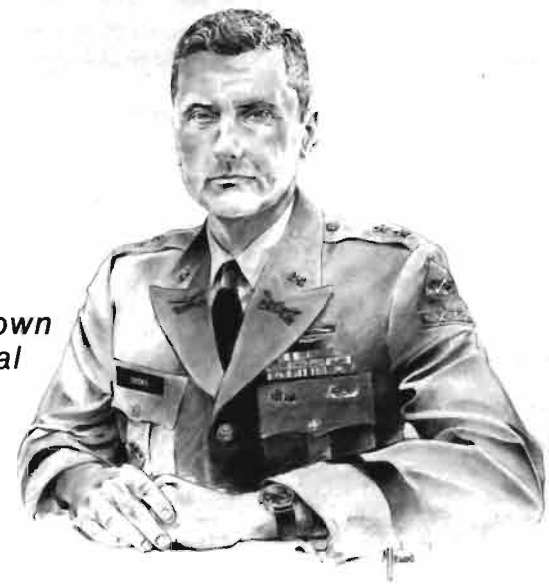
COMMANDER'S NOTEBOOK



MG Frederic J. Brown
Commanding General
U.S. Army Armor Center

Our Combined Arms Training Plan

In the two previous columns, I described in general terms the requirements for training the Armor force to meet the challenges of the AirLand Battle and how tank-pure training is conducted using the newly-written and redesigned tank combat manuals (FM 17-12-1 through FM 17-12-3). This article will outline how combined arms unit training is conducted by integrating the tank-pure environment with other weapon systems and combat support and combat service support elements.

The fundamental tenets of U.S. Army doctrine, as set forth in FM 100-5, *Operations,* underline the validity of the combined arms concept as a critical factor in fulfilling the primary mission of the U.S. Army: to deter war by being prepared to win on the AirLand battlefield.

The notion of a mounted combined arms force is certainly not new in our Army. From the Civil War dismounted cavalry and shock artillery of Nathan Bedford Forrest to the combat commands of the WW II armored divisions that maneuvered across the European continent, the concept of mutually supporting arms and services has always been well-founded in the mounted maneuver area. Today, AirLand Battle doctrine, redesigned heavy divisions, and the tremendous capabilities of the *M1/2/3* combat vehicles place the close combat heavy force on the threshold of unprecedented potential combat effectiveness. This potential can be unleashed only if we assign properly trained soldiers and leaders in armor units at the right time and in sufficient quantity, and if we train tank platoons, companies, battalions and brigades to operate in concert with other weapons systems as they integrate the full complement of combat support and combat service support functions. The challenge of manning will again be discussed in the next issue.

Training for combat establishes a clear peacetime challenge for all commanders: train and execute to doctrinal standards and those unique command standards inherent to the unit's GDP or contingency mission. Senior commanders — division and brigade — establish the environment in which this training will take place. Thus, a unit's success in training and its attainment of combat readiness directly relates to its ability to execute the tasks, under the conditions, and to the standards of combat-critical missions described in ARTEP 71-2. The process by which this training should occur is described in detail in the recently published FM 25-2, *Training Management in Units,* and is conducted in a system of finite, interrelated and generally sequential steps.

First, training in armor units must begin with adequately trained individuals. Training of soldiers, to include tankers, clerks, scouts, mechanics, and medics, builds upon the solid base of fundamental skills taught in Initial Entry Training and includes integration, sustainment, cross, and train-up training. Leader training is also conducted for individuals and includes officer and NCO developmental programs and battle staff training.

Second, collective training begins with primary emphasis on single weapons system or support function proficiency. It is critical to mission accomplishment that mortar squads, scout crews, maintenance teams, and medical platoons be as well trained in their collective specialty as are tank crews and platoons.

The third step, combined arms unit training, adds to the proficiency developed by individuals and weapons system-pure training by including other weapons systems and integrating the appropriate level of combat support or combat service support.

To assist commanders in training to mission proficiency standard, the Armor Center has developed several training strategies and training support products. As an overview document, FC 71-11, *The Armor Task Force Training Plan,* provides armor unit commanders (platoon through battalion) with *a* way to train for combat. Commanders will determine *the* way to train consistent with the needs of the unit and the chain of command. FC 71-11 has been validated for two years by the 194th Armored Brigade (Separate) in preparing for training at the NTC and includes the training requirements (what to train), the training sequence (when to train what), and the execution stage (how to train what)

of *a* way to train for war. The program described by FC 71-11 is multi-echeloned, utilizes a crawl-walk-run approach to training, and is designed for use by the total army.

To further assist combined arms commanders in training to the standards of ARTEP 71-2, mission training plans have been published: FC 17-15-1, *Division 86 Tank Platoon ARTEP Training Plan;* FC 17-16-1, *Division 86 Tank Heavy Company Team ARTEP Mission Training Plan;* TC 17-17-1, *Division 86 Tank Battalion/Task Force ARTEP Mission Training Plan* (Draft), and FC 17-16-2, *Division 86 Company Maintenance Team ARTEP Mission Training Plan.* Soon to be published is FC 17-98-1, *The Division 86 Tank Battalion Scout Platoon Mission Training Plan.*

These mission training plans provide a product that will assist the trainer at platoon through battalion level in *how* to train to specific standards contained in the ARTEP within the framework of a combined arms force in a free-play tactical problem. Far more than a product-improved encyclopedia of unit missions necessary for combat proficiency, the mission training plans place significant emphasis on leader training and how to conduct training by adding workable samples of training exercises and providing specific information on training requirements for the level being trained.

Unlike previous training programs, the mission training plans developed by the USAARMC are self-contained; that is, how-to-train instructions, training exercises, and training standards are all contained in one book, thereby reducing the amount of literature required to conduct training. In addition to formations, reaction drills and mobility drills, the platoon and company mission training plans present descriptive training exercises based on eight or nine selected ARTEP missions which are critical to all armor units. Other ARTEP missions that are critical to armor units in particular circumstances can be developed by the unit using the ARTEP to determine standards and the mission training plan for developing a format on how to execute training.

Each of the critical descriptive exercises is laid out in a scenario or situational environment and provides guidance on how to conduct and evaluate the training. These situational training exercises (STX) train soldiers, leaders, teams, and units in the preferred way to perform collective tasks that have a single objective. The STX is executed in a crawl-walk-run mode using any of the training exercises described in the recently published FM 25-4, *How to Conduct Training Exercises,* such as a map exercise (MAPEX), Command Post Exercises (CPX), or Command Field Exercise (CFX). The STX is a higher order exercise rather than a drill, and it may incorporate battle, crew, or special situation drills.

These exercises are mastered in a crawl-walk-run sequence and then practiced and repracticed until performance standards are obtained. STXs can be trained singly or in combination with other STXs in a field training exercise (FTX).

The battalion task force mission training plan includes STXs for the staff and command group in addition to tactical exercises. This concept lends itself to the multi-echelon training — the unit leadership can be in the initial stages (walk phase) of an STX while the soldiers are practicing crew drill or doing other exercises. As STX proficiency increases, exercise difficulty can be increased by using a well-trained OPFOR. MILES engagement simulation can be used to interject "casualties" and results of good or bad decisions and actions become more readily apparent.

Training resources and soldiers' time are precious assets. Leader training, therefore, must be conducted first to ensure maximum benefit from conducting these training exercises. It is not necessary for a task force to conduct "full up" training with all supporting systems or all soldiers until the chain of command and supporting element leaders have mastered the basics. In this regard, situational leader coordination exercises have been developed by Fort Knox to develop, sustain, and reinforce critical command and control skills. FC 71-7, *Logistic Situational Training Exercises,* has been published and describes how to train a platoon or task force the methods to rearm, refuel, refit, and report its status to higher headquarters. Yet to be published are FC 71-5, *Fire Coordination Exercise (FCX),* and FC 71-10, *Movement Coordination Exercise (MCX).*

The FCX trains a company team commander or task force commander to coordinate the combat power available to his combined arms force to hit the right target with the proper direct or indirect fire system at the critical time. The MCX trains the task force command group and staff to plan, coordinate, and execute tactical movement and to react to situations typically encountered while moving.

Mission training plan STXs and FTXs using MILES and a realistic OPFOR are but one way to train combined arms units to standards of combat proficiency. The Combined Arms Live Fire Exercise (CALFEX) conducted on a Multipurpose Range Complex (MPRC) is an essential second element in combined arms unit training. Field Circular 71-4, *Combined Arms Live Fire Exercise,* will be published this spring to provide units with specific guidance on how to conduct a company team live fire training exercise.

The crawl phase of CALFEX training includes weapon system-pure training and training exercises for leaders such as the FCX. The walk phase includes dry runs and simulation exercises using MILES or subcaliber devices. As Range 301, Grafenwoehr and MPRCs in CONUS come on line, many units will have the training facilities required to conduct a CALFEX annually. Through the full participation of the task force headquarters in the company level CALFEX, and the execution of an FCS at task force level, the command group and staff can sustain a high degree of proficiency in the command, control, coordination, and support of the combined arms task force. Reserve component units can execute the CALFEX using the tactical engagement simulation (MILES) or subcaliber devices.

Training to participate in CALFEX, like training associated with mission training plans, should not become an end in itself. The purpose of all combined arms training is to obtain mission standard proficiency. A combined arms task force that can fulfill the task, conditions, and standards of combat-critical tasks associated with their CDP or contingency mission, and the ARTEP, is prepared for war.

Training for a major training event such as the NTC should be viewed as an opportunity to identify training strengths and weaknesses and train to mission standard proficiency. In this regard, the tough, realistic, force-on-force training with MILES at the NTC is the best combined arms training, short of actual combat, that has ever been conducted in the U.S. Army.

The Future

The armor force is a vital link in deterrence and defense. We are responding to this most serious responsibility by participating in the most sweeping and revolutionary modernization effort in our Army's history. The challenge faced by armor and cavalry units is to optimize the tremendous combat potential of complex modern weapon systems, restructured organizations, and AirLand Battle doctrine. This challenge will be met if the partners in the combined arms team train efficiently and effectively together to create the synergy required of the close combat heavy force. We at the Armor Center are moving rapidly on this axis of advance. Forge the Thunderbolt!

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

The Test of Full Time Manning

We have heard numerous comments about the Reserve Component over the last several years. Of all the comments heard, fact or rumor, the positive ones were limited.

Over the last year I have had an opportunity to visit Reserve Component armor units across this great country, units both in the National Guard and Reserves. Over the last three years I have been able to work directly or indirectly with armor noncommissioned officers from our Reserve Components enrolled in armor resident courses; the ANCOC and the Master Gunner courses, in particular. Although I do not profess to be an expert, in my opinion, what I have seen does not deserve the negative comments I have heard.

The Active Component is responsible to ensure it supports the Reserve Component fully. It plays a very important role in training the personnel assigned in the Full-Time Manning Program. This article was written by CSM Joseph Bossi who, at the time, was CSM, ARMR IX.

The Full Time Manning Program is a very positive program in preparing the total force. We, as the Active Component, have a responsibility to ensure those assigned as full-time manners are qualified to do the job. If the person assigned to the Reserve Component is not fully qualified, the total force suffers. The Active Component soldier assigned in a Full Time Manning position is looked on as an expert in his field. If the position calls for a Master Gunner for the *M60A1* tank, then the noncommissioned officer must be a certified Master Gunner prior to final assignment. The credibility of the two components is at stake each time an unqualified Active Component soldier is assigned to the Reserve Component.

Sometimes the training requirements may not be spelled out in the job description. An example is when the job description calls for a tank commander, but in reality, the gaining company commander expects the soldier to manage the unit training program when the unit is not drilling at IDT.

Officers and noncommissioned officers inherit totally different problems when they are *M60A3* trained and are assigned to *M48A5* units. The Reserve Component commander expects them to be knowledgeable of the system when, in fact, they have never been assigned to the system. The officer and NCO that receives such an assignment has got to understand that there are no schools available to train down, and at the same time understand that the vehicle is still an effective weapons system and that they have the responsibility to learn that system.

Secondly, the Full Time Manner is introduced to a new personnel management system. If you think you did not have a very convenient program to assist you in your personal affairs on a military installation, then wait till you are

totally dependent on the community in which you will be living. Rental cost, no commissary, no PX, no hospital, and just being away from the military community, requires a great deal more personal time to be spent in family management than on a military installation. This problem adds another qualifying requirement that the losing commander must ensure that the Active Component soldier selected for Full Time Manner has demonstrated the ability to manage his personal affairs. The inability to do so places a burden on the gaining Reserve Component organization and will, eventually, lead to embarrassment to the total force and removal of the individual from the unit.

In order to assist those in high-cost areas without military installations, Cost of Living Allowances (COLA) should be added. Those allowances should be measured from where the soldier has to live, not where the armory is located.

Finally, let's discuss "setting the example." The importance of this principle cannot be overlooked. Setting the example is the application of standards while executing the training responsibilities and in executing those responsibilities.

Standards of training, maintaining, caring and leading are the same regardless of the assignment, or what component the soldier belongs to. Standards are not made for Basic, OSUT and schools, but for all levels of training. The selection of the right Full Time Manner for the Reserve Component to teach those standards are important to the total force.

We have increased our standards rapidly over the last few years. The standards of the 50's, 60's, 70's or even '82 are not acceptable today. The increased standards are there for mission accomplishment and survivability, not because someone dreamed them up. We must ensure that those assigned to the Reserve Component understand and apply those standards. That can only be done through the commander of the losing unit. He must certify every soldier being assigned to the Reserve Component: Certify the soldier is capable of training and managing the training needed. Certify that the soldier understands and has demonstrated high standards in the performance of training and is capable of supervising and transferring those standards without supervision.

Those individual traits associated with setting the example will be put to the test while assigned to the Reserve Component. The integrity and loyalty will be totally dependent upon the individual. Those influences we are accustomed to in an organization are absent, whether positive or negative. We stand alone.

You are probably wondering why we are concerned about only 10 percent of the Reserve Components. That 10 percent has a very important role in the mission accomplishment of the total force. We owe it to our nation that those personnel who will have the day-to-day contact in managing and preparing the unit for mobilization are the best qualified. The Full Time Manner who cannot train, manage and set the example will only result in our Army's failure to preserve our nation's will.

(CSM Joseph Bossi was CSM of ARMR IX, Sixth Army when he wrote this article. He had previously served as CSM, 2/36 Infantry and CSM, 2d Brigade, 3d Armored Division in Friedberg, West Germany. CSM Bossi is presently assigned as CSM, 6th Support Group, VII Corps in Stuttgart, West Germany.)

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A Gunner's Thoughts on the Tank Tables

Tank Table (TT) VIII has been around for a long time. It is the primary training tool used to evaluate the effectiveness of tank commanders and their crews. The results of TT VIII are used at every level of command to determine the proficiency of armor units subordinate to them. The question for the 1980s is whether to graduate into a fire and maneuver exercise, or to continue using TT VIII as the ultimate measure of an armor unit's effectiveness.

Ah. . .what about the old TT IX, Platoon Combat Qualification Course, you ask? Well, for those of us who were fortunate enough to have fired TT IX, we know that while qualification was important, the real emphasis was still placed on TT VIII. In fact, many armored units didn't even fire a TT IX.

After reviewing the Draft FM 17-12-1, Tank Combat Tables, M1, I am excited by the new innovations which the Armor Center is supporting. The inclusion of TTs IX through XII should greatly enhance every armored unit's training to prepare for combat.

TTs XI (Tank With a Wingman Combat Qualification Course) and XII (Platoon Combat Qualification Course) are definite steps in the right direction. Requiring crews to qualify on each range before moving on to a more difficult range is another step in the right direction. However, after reading FM 17-12-1 and speaking to many armor leaders who have been or are now in *M1* units, the primary emphasis is still on TT VIII. Additionally, the amount of main gun ammunition available is not always sufficient to fire the advanced tables.

I am not suggesting that we do away with crew and section evaluations. They are very necessary steps and should be used as a foundation for the ultimate measure of a unit's effectiveness; i.e, TT XII. We must ensure that sufficient ammunition is allocated to support this. Additionally, we should consider expanding the current tank gunnery tables to include a TT VIII, Company Combat Qualification Course.

Our training doctrine is simple and fundamentally sound. All soldiers, officers and enlisted, are given Initial Entry Training. This prepares them to perform certain critical tasks which will be expected of them in their units. The next step is Integrated Training.

Integration training is, however, a continuing process. Once that soldier becomes a member of a unit or team, he must not only perform his individual tasks, but he must perform collectively with the other soldiers of that unit. This is the basis of ARTEP. Ideally, when training collectively, we use a building block system. In other words, crews are trained and evaluated first, followed by platoons, companies, battalions and task forces.

Somewhere along the line, tank gunnery training has been overlooked in this application of the training doctrine. We evaluate the basics TTs 1 through VIII, and skim over the techniques needed to defeat the Threat, TTs IX through XII.

When in Germany, I had the pleasure of firing TT VIII five times and TT IX four times. Since being assigned to my present unit, I have fired TT VIII three times, TT IX once, and a CALFEX once. Additionally, we deployed to the National Training Center and conducted a three-day CALFEX.

That training at the NTC was the most beneficial I have received to date. The reasons are simple. All of the leaders had to do their jobs to produce success. Platoon leaders who placed effective fires on the enemy were successful. Those who failed to do so were not successful.

Our most recent gunnery training exercise at Fort Hood was both unique and, in my opinion, an extremely valuable training tool. Basically, we combined FM 17-12 and FM 17-12-1 to produce our version of tank gunnery training. This was done for several reasons. Our unit will soon have *M1* tanks, so it was an excellent opportunity for us to familiarize ourselves with some of the basic concepts of *M1* tank gunnery. Additionally, our commanders firmly believe in conducting realistic training; in other words, a fire and maneuver exercise as opposed to single tank or section duels.

Our basic gunnery training was pretty much standard to include evaluated dry-run tank crew qualification courses (TCQC), STOUR Board exercises with the M-55 laser and a tank crew gunnery skills test (TCGST).

However, beginning with TT VIIC Telfare, we integrated a team approach fire and maneuver exercise.

Basically, wingmen were paired with their normal wing leaders, given an operations order covering necessary guidance, and sent down range. Because this was a totally new concept to the majority, there were some problems. The root problem was control, or in this case, a lack of it on the part of the wing leaders. Once again, this supports the need to evaluate TTs XI and XII. After many runs on TT VIIC, we managed to iron out most of the control problems.

Then we moved on to a different range complex and calibrated the primary direct fire control systems. Once satisfied that all weapons systems were operational, we conducted TT VII.

TT VII was held in much the same manner as TT VIIC. The range itself was, of course, much more challenging. Although communications and control problems did resurface, they were much less pronounced. Without question, that particular TT VII was the most aggressive and spontaneous tank gunnery range that I have observed or fired to date.

The lessons we learned in control and communication, coupled with some pretty good shooting, actually caused us as a unit to feel that TT VIII was not a challenge. Our TT VIII was administered in much the same manner as TTs VIIC and VII. However, it was set up and run by an outside unit. At that point, as a unit, we were prepared to move into platoon fire and maneuver exercises. Ideally, that should have been the next step. Unfortunately, we were not able to fire a TT IX.

Hopefully, I have been able to communicate what I feel is a serious training deficiency that requires immediate attention. Undoubtedly, many will scoff at this concept. Nine years ago had someone told me that a tank could shoot accurately while moving cross-country at 30 mph, I also would have laughed.

Staff Sergeant David M. Gray
B Co., 17th Cavalry
Fort Hood, Texas

RECOGNITION QUIZ

This Recognition Quiz is designed to enable the reader to test his ability to identify armored vehicles, aircraft, and other equipment of armed forces throughout the world. *ARMOR* will only be able to sustain this feature through the help of our readers who can provide us with good photographs of vehicles and aircraft. Pictures furnished by our readers will be returned and appropriate credit lines will be used to identify the source of pictures used. Descriptive data concerning the vehicle or aircraft appearing in a picture should also be provided.

(Answers on page 48)

Establishing Disengagement Criteria

by Major David Ozolek

Task force defensive missions conducted against the OPFOR motorized rifle regiment at the National Training Center have repeatedly shown that in order to stop the regiment's attack and maintain sufficient combat power to be able to engage the next echelon regiment, a maneuver defense must be fought.

Since Soviet doctrine stresses a continuous buildup of combat power at the point of least resistance, a static, position-oriented defense is quickly overwhelmed at its weakest point. Once penetrated, the surviving elements of the task force are attacked from the flank or rear, or completely bypassed, while the regiment conducts a high-speed exploitation through the less densely defended rear areas.

A maneuver-oriented defense forces the attacking regiment to deploy earlier than it had planned to, reduces the speed of its attack, provides for its continuous attrition, and makes it difficult for the enemy to focus on the decisive defeat of a portion of the defending force. It provides a constantly changing situation that repeatedly frustrates the top-down planning and centralized control necessary to make the regiment function effectively.

Detailed defensive planning is necessary to ensure that a sufficient force ratio can be maintained throughout the battle, and precise execution of the plan is required for success and survival. Such a defense, however, can become a command and control nightmare, for the Soviet attack will include a significant electronic warfare effort or even a nuclear EMP which will disrupt all electronic communications. Tremendous indirect fire support and smoke will be employed and a high-speed attack will be mounted which significantly decreases the reaction time available to the defender. Since much of our capacity to fight depends heavily on a flexibility made possible through an extensive command and control system, the Soviet assault on this system can prove devastating unless a means for decentralized and virtually automatic execution is provided for in every operation.

Repeatedly at the NTC, the loss of command and control results in forward defensive elements being overrun before they can reposition to subsequent battle positions. The most common cause for such unfavorable outcomes has been the failure of the forward elements to receive permission to withdraw, either because communications have been completely disrupted, or because a lack of information, or inaccurate information, caused the commander to fail to issue the order in time to have it successfully executed. This invariably results in a piecemealing of defensive forces that allows the OPFOR to generate a tremendous force ratio, sometimes as much as 10 to 1, against indivdual company-teams and to defeat the task force one team at a time.

For these reasons, the defensive concept must be based on the assumption that command and control at task force level is going to be extremely difficult, if at all possible. But this inability to communicate with traditional means can be partially, and usually successfully, offset if the task force commander in his order clearly establishes specific disengagement criteria for his elements that both allows them to complete an achievable forward mission and to survive intact for subsequent and perhaps more decisive actions deeper in the defensive sector. When this criteria is met, the unit automatically displaces with no further permission necessary. All other elements of the task force and the commander are aware of why and when this movement will happen, and the withdrawal of one element can actually be used to key subsequent events for other elements.

In establishing this disengagement criteria, the commander must first determine exactly what he wants the forward element to accomplish and at what degree of risk. Deploying a portion of his main defensive force forward is inherently risky because at the beginning of the battle the mass of the task force is dispersed and the force is more vulnerable to piecemeal engagement by superior massed enemy formations. Forces lost in the forward battle area are not available for battle deeper in the sector, and forward defensive actions must usually be considered necessary preliminaries to decisive battle, and not as decisive actions in themselves.

Planning begins at the point the commander feels will be most decisive. Based on a METT analysis of the situation, he must compute how many weapons systems he will need to totally

". . .Determination of the exact location of this trigger line requires a considerable amount of battlefield arithmetic. . ."

destroy the enemy in the primary engagement area. Total destruction of the enemy is a necessary rule of thumb when computing force ratios. Although the enemy will be combat ineffective when 30-40 percent of his force remains, the defending commander must assume that his own force will be proportionally attrited. When the battlefield arithmetic shows that the time, space, and relative force ratios will not allow for total destruction of the enemy here, then a forward engagement by a portion of the defending force — either to change the force ratio by attriting the enemy forward of the time and space factor by slowing his movement —becomes necessary. The planned force ratio at the decisive point of the battle thus dictates the risk assigned to the elements with forward defensive missions.

The lowest risk forward mission requires the unit to force the enemy to deploy, but allows the element to withdraw when the enemy begins to penetrate a pre-established line — a *trigger line* — usually at the point where the defender's stand-off advantage begins to deteriorate. This criteria results in little actual damage to the enemy in terms of casualties, but allows for virtually no losses to the defender. Its chief purpose is to buy time for the main defensive force to reposition to meet the enemy's threat as he commits himself to an identifiable scheme of maneuver.

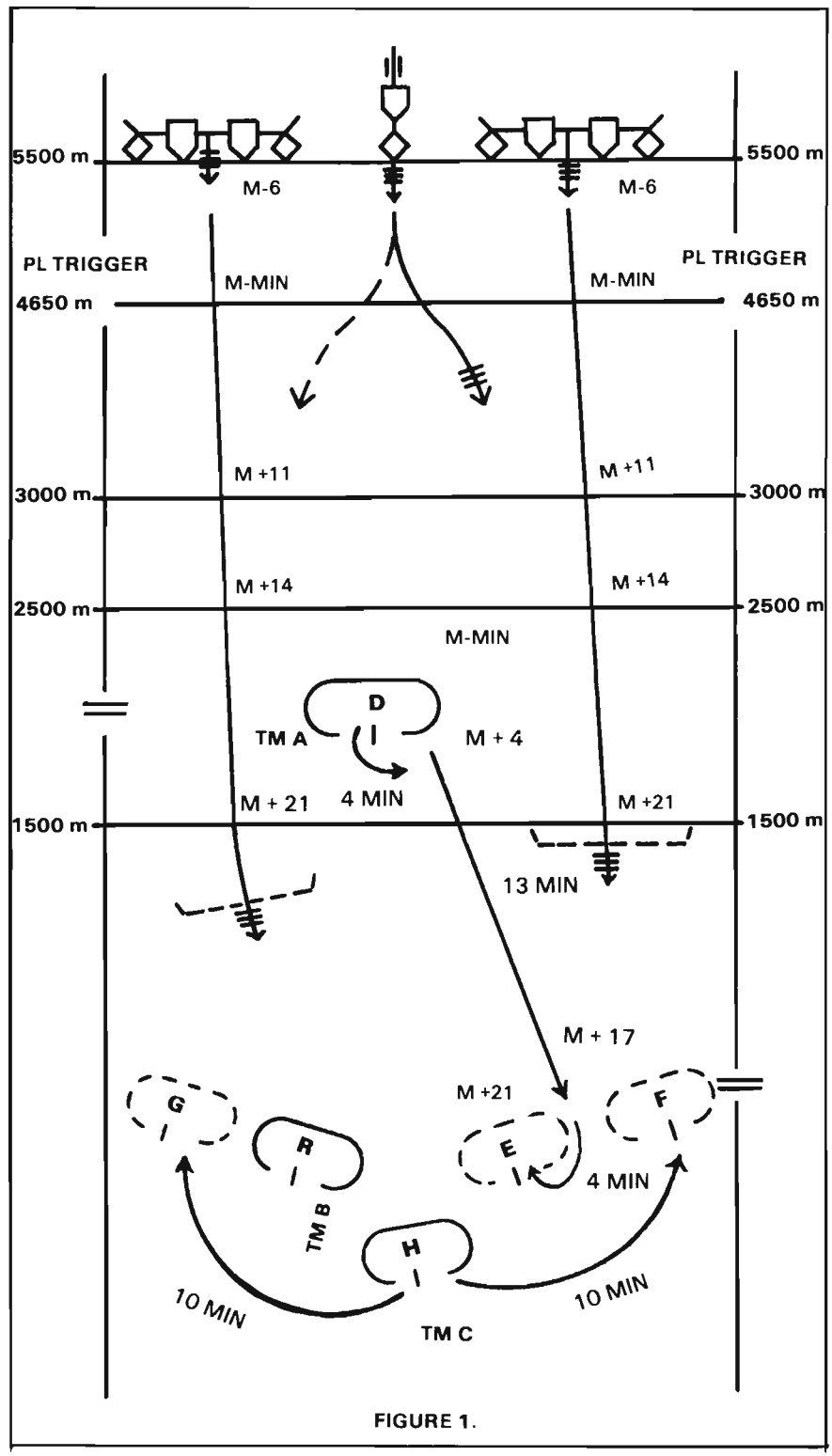

FIGURE 1.

Determination of the exact location of this *trigger line* requires a considerable amount of battlefield arithmetic. First, the commander must determine exactly how much time the forward element needs in order to break contact, vacate its position, move to its subsequent position and begin firing, all the while remaining outside the maximum effective range of the assaulting enemy's weapons. Next, he needs to compute the speed of the enemy's movement and the distance he can cover in the time it will take the forward element to reestablish itself in combat posture in the subsequent position. He must also factor in the relative ranges of both his and the enemy's weapons and the amount of time the enemy will be exposed to his forward element's stand-off fires without being able to return effective fire.

An example of this process is illustrated in figure I. In this situation the commander of a three company-team task force is defending in a sector with two motorized-rifle battalion avenues of approach. The commander has determined that it will take two teams to defeat the enemy's main attack while

". . .The next step requires the commander to assess what damage the forward element can realistically expect to inflict. . ."

one company team will be sufficient to hold the other avenue of approach against the enemy's supporting attack. The problem he faces is having enough time to determine which axis is the main attack and to position forces in sufficient time to defeat the enemy's high speed advance. Initially, the commander has placed one team in the best defensive position in the sector (BP R). He has elected to keep his second company team (Team C) in reserve with the mission to defend on order a battle position on either axis. From its initial position, Team C will require ten minutes to move to and occupy either battle position. The commander has determined that without forcing early deployment of the regiment, he will have insufficient time to determine the enemy's main attack, order the move of Team C, and allow it to occupy its fighting position in time to engage the enemy at the decisive point.

To force early deployment and to buy additional reaction time, the commander has assigned Team A a battle position approximately 2,500 meters forward of the task force main defensive positions. His intent is to use the long range direct fires of Team A to force the enemy from the column on high speed routes to a combat formation requiring cross-country movement with a reduction in the speed of his advance from 300 meters per minute to 150. Assuming that the depth of the forward engagement area will be out to the maximum range of the TOWs, 3,000 meters, it will now take the enemy 20 minutes to traverse the engagement area under fire rather than 10 minutes, the time he could cross it in if left unmolested. The additional 10 minutes offsets the time it will take Team C to reach its final fighting position.

But since the full participation of Team A in the decisive battle is necessary for the successful execution of the overall task force plan, a *trigger line* which allows Team A to disengage before receiving significant losses must be established. A rehearsal of the move from the forward to the subsequent battle position indicates the team requires four minutes to break contact, thirteen minutes to move on prepared routes to BP E and four additional minutes to occupy the position and be prepared to fight. The same move by the enemy will take 17 minutes, deployed and cross-country. Additional rehearsals, if possible, may further decrease the time required for repositioning and buy additional precious minutes.

Next, the commander must determine the standoff advantage he must maintain to guarantee the survival of Team A. This determination is always situational, based on terrain and weather, and must be confirmed by an actual rehearsal of the enemy's advance toward the defensive positions from the attacker's perspective. In this case, the commander determined that these factors and the relative advantages of thermal imagers and stable, hull-down firing positions with pre-planned engagement areas placed the standoff advantage at 1,500 meters. This determination means that the forward element must at all times keep at least 1,500 meters between itself and the enemy until it reaches BP E and is prepared to fight.

The battlefield arithmetic necessary to determine the disengagement criteria begins at the point in time that Team A must leave BP D. This time is minute M. At M + 4 the team will have completed its withdrawal and will be enroute to the subsequent position. At M + 17 it will have reached BP E and at M + 21 will be prepared to engage the enemy.

At M + 21, then, the enemy will have reached the 1,500 meter line and is now being engaged by all the defending force elements. The commander must then compute backwards to determine where the enemy was at minute M, and this will become the trigger line for Team A's withdrawal from BP D. Figuring 21 minutes times a deployed speed of 150 meters per minute, the enemy can cover 3,150 meters, which places him 4,650 meters from the main defensive positions. Since the forward battle position was 2,500 meters out, the *trigger line* should be marked at 2,150 meters forward of BP D.

The next step requires the commander to assess what damage the forward element can realistically expect to inflict on the enemy. In this case, using a planning range of 3,000 meters for TOW and 2,400 meters for tank fires, the commander determined that the enemy will be in the forward engagement area for six minutes for TOW fire and two minutes for tank fire. By then, factoring in the number of systems on the position, their demonstrated rate of fire in the battle environment, and their proven probability of hit/kill, he can determine what the forward element can actually accomplish before it must begin its withdrawal.

In some situations, the overall defensive concept may require more killing of the enemy in the forward engagement area than the forward element can accomplish with its assets. The commander then must consider other options to increase the amount of destruction possible:

- He can increase the number of systems he commits to the forward element.
- He can attempt to keep the enemy in the standoff kill zone longer by emplacing obstacles which must be breached under fire, or
- He can establish an engagement criteria which requires greater risk for the forward element by increasing its time of stay in the forward defensive position.

By modifying his task organization and increasing the number of systems forward, the commander can expect to increase the number of enemy kills forward in the same proportion that he increases the size of the forward force. For example, if his experience indicates that his ITV crews can average 1.5 rounds per minute with a probability of kill of 70 percent, by adding an additional TOW section to the forward element, in the six minutes the enemy is in the TOW fan of the engagement area, he can expect to achieve another 6 x 1.5 x .70 x 2 kills or about 12 more enemy systems destroyed. However, every time a combat system is added to the forward battle, it must be subtracted from the number of systems that can be totally relied upon in the decisive defensive battle in the primary engagement area. Every forward element runs the risk of either becoming an early casualty, suffering automotive failure, or of being misoriented in the

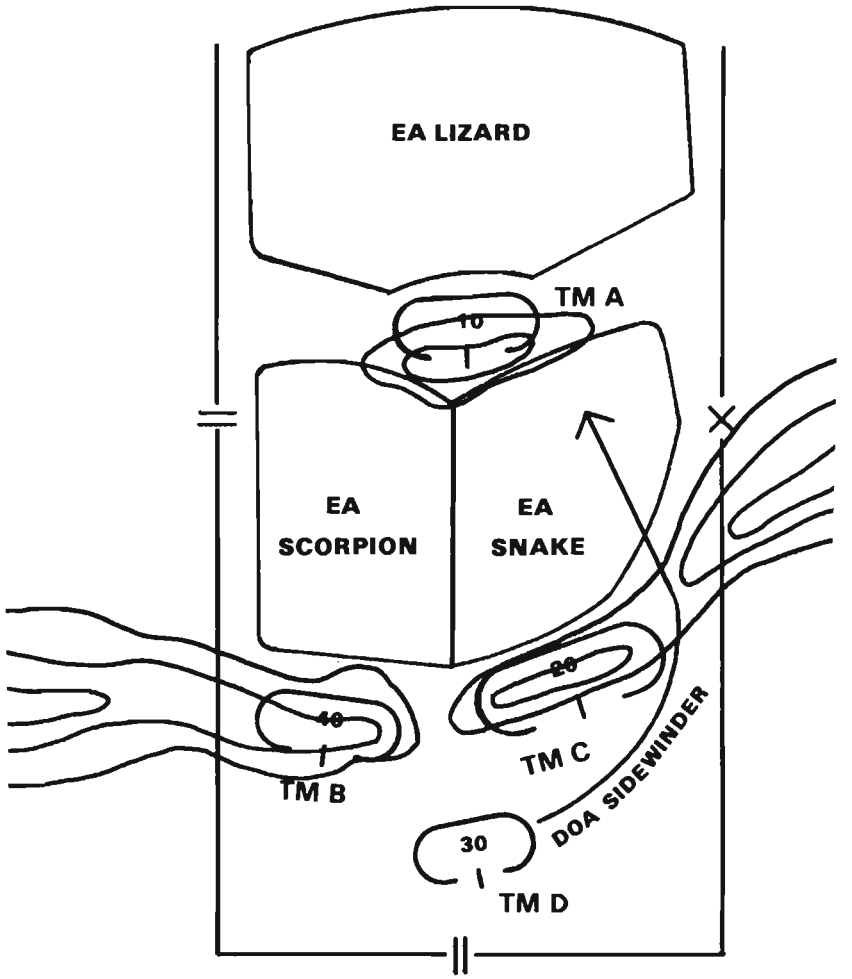

Figure 2.

smoke or darkness and missing the primary battle position after the displacement. The commander must constantly assess the relative value of both courses of action, based on his concept of how the battle must be fought, and determine accordingly the assets he is willing to devote to the forward battle.

The placement of obstacles in the forward engagement area can also hold the enemy in the killing zone for additional time, or it can lengthen the time the forward defending elements can stay in position. Since the relative low density of assets in the forward position will reduce the amount of assets that can be directed toward counter-mobility work, extensive barriers across a wide front can be impractical. Once again the commander must determine his intent for the forward force. If the team is to cause the enemy to deploy, but survive while doing so, the priority of available engineer assets should be given to survivability. If the team is to destroy the enemy while risking decisive engagement, then priority of engineer assets might better be assigned to countermobility. The commander should also consider the possibility of employing FASCAM minefields forward to assist the mission of the forward elements or to further slow the enemy or separate his echelons to reduce his ability to mass.

Further guidance on the amount of risk to be accepted can be expressed in terms of an "either - or" mission statement such as "defend from BP 16 until the enemy crosses PL Blue (the trigger line) or until your element is attrited to not less than 70 percent of its initial combat strength." Such instructions, while not eliminating the risk inherent in the forward mission, at least clarifies the commander's intent and allows the subordinate commander to make decisions maintaining the integrity of his

". . .The placement of obstacles in the forward engagement area can also hold the enemy in the killing zone for additional time. . ."

force for successive missions as important as his initial forward assignment. The criticality of the forward element's remaining a combat effective force with a subsequent role in the decisive battle must be considered whenever the mission statement for a forward element is developed.

A high-risk forward defensive mission for a sub-element is sometimes expressed in terms of a specific number inflicted on the enemy before the sub-element can withdraw. An example is a defensive situation in which defensive positions in the sector are limited because of terrain or boundary restrictions. In this case, the task force may not be able to mass sufficient combat power to destroy the enemy in the primary engagement area unless the enemy has been sufficiently attrited forward to allow for his defeat at the decisive point. In this case, the forward element must be prepared to accept decisive engagement if necessary and be prepared to withdraw under pressure to its next position, or even to retain the forward position until relieved by the task force counterattack element. If withdrawal is possible, a logical subsequent mission for the forward force in this situation might be to provide the task force counterattack force.

Figure 2 illustrates this situation. Here, a four-team task force is in a defensive sector which does not allow the massing of more than the fire of two teams in the decisive engagement area. The commander has determined that the maximum enemy force that can be defeated in engagement areas Scorpion and Snake is two motorized rifle battalions. In order to retain the decisive terrain of battle positions 40 and 20, the equivalent of at least one MRB of the attacking regiment must be rendered combat ineffective forward, before the enemy reaches the decisive engagement area.

The commander's defensive concept places Team A forward, reinforced with sufficient combat power to destroy an MRB, with the mission of retaining BP 10 and destroying at least 40 enemy combat systems in engagement area Lizard. Priority of the task force engineers' blade effort will go to the prep-

Precise planning and coordination are necessary if a force is to fight a maneuver defense. Here, umpires assess the success of a mission during Reforger '84.

aration of survivability positions at BP 10. The task force commander believes that the logical enemy objective of the day is the decisive terrain at BPs 40 and 20, and that the enemy will attempt to bypass BP 10 and to focus his combat power on his objective of the day.

If bypassed by the first echelon, Team A will continue to fire into EA Lizard to destroy or slow the regiment's second echelon MRB to deny the enemy commander the ability to mass his combat forces in his attack on BPs 40 and 20. As soon as the enemy is halted in EAs Scorpion and Snake, Team D will counterattack along direction of attack Sidewinder to restore contact with Team A so that consolidation, resupply, and evacuation of wounded can take place and BP 10 can be prepared, if necessary, to engage a second echelon regiment.

Under no circumstances is a forward element ever given a mission that accepts its destruction because of the overall impact on the total force. The defensive concept must always provide for continuous action based on a plan for the survival of the force. The concept may require a forward element to be bypassed at some point in the battle, but then a counterattack to restore contact is mandatory as soon as possible.

In summary, the task forces which have defended successfully against the onslaught of the OPFOR motorized rifle regiment have been those that have executed a precisely planned maneuver defense which has incorporated the following points:

- Early engagement of the enemy from the far edge of the defensive sector.
- Continuous engagement of the enemy to slow and attrite him and to force him into the primary engagement area where a decisive force ratio can be achieved by massing sufficient combat power to guarantee his destruction.
- Development of a plan which provides for automatic execution under conditions of the loss of direct command and control.
- A willingness to accept a reasonable risk which carefully balances the advantages gained by inflicting early damage on the enemy and the chances of survival of the forward force.

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The Syrian Tank Battalion

by Joseph S. Bermudez, Jr.

Although Syria's use of armored units has been a major factor in past Arab-Israeli struggles, most recently in Lebanon in 1982, little has appeared in the Western press about Syria's armored forces, how they are organized and how they fight.

This situation is puzzling because much information is available in open literature on Syrian armor doctrine and organization and even more can be gleaned from open sources in both Syria and Israel.

In addition to these published sources, which range from military journals to newspapers, there are hundreds of first-hand sources: Living in the New York area, for example, are many Israeli and Syrian veterans of the Mideast wars, some visiting relatives and others who have emigrated here permanently.

Subordination

The tank battalion is the basic subunit within Syrian armored and mechanized divisions. It is subordinate to a brigade headquarters that, in turn, is subordinate to a division headquarters, then a corps headquarters (if the division is attached to a corps) and ultimately to General Headquarters (GHQ) in Damascus, the capital.[1]

Tank battalions belonging to independent brigades are subordinate to that brigade headquarters that, in turn, is subordinate to GHQ. In the case of an independent brigade attached to a division or corps, the brigade is subordinate to that headquarters and then to GHQ.

An exception is a subunit called the Armored Defense Force (ADF) a reinforced division-size combat unit, also known as the Republican Guard or the Assad Guard.[2] This is in a reference to its major role of protecting Syrian president Assad. Stationed in and around Damascus, it receives administrative support from the Damascus Territory Command and is subordinate to an internal security force called *Serayiyah al-Difa* (defense companies) or *Defenders of the Regime.* This security force is under the direct control of Rifaat al-Assad, the president's brother.[3,4]

Last March, Colonel Maan Nassif was appointed deputy commander of the ADF. Nassif is Rifaat al-Assad's son-in law.

While most Syrian tank battalions, including the ADF units, operate as part of the brigade, there are several exceptions, including a small number of GHQ-level independent tank battalions. Additionally division commanders have, on occasion, detached tank battalions for specific missions under their control.

Organization

The tank battalion is organized into headquarters, three companies, and a technical support group (figure 1). The tank battalion organic to the tank brigade of a tank division has 31 tanks, 10 per company, plus a command tank. The battalion strength is about 182 men.

A tank battalion organic to an infantry or mechanized infantry brigade or an independent tank brigade has 40 tanks, 13 per company, plus a command tank. Its strength is about 226 men, (or 163 if the unit is equipped with *T-72s.*)

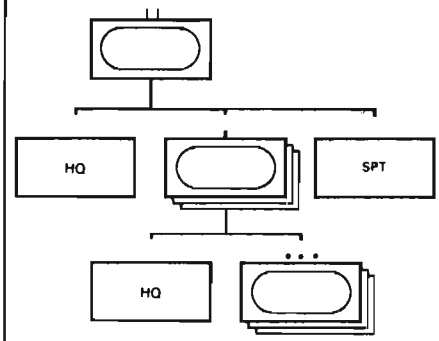
The organization and strength of the training battalions and the reserve independent tank battalions is unknown.

The strength of the infantry and mechanized infantry brigades is either 40 or 44 tanks. U.S. intelligence sources state that there are 41 tanks (the 40 organic to the the tank battalion plus one for the brigade commander), while Israeli sources, including the chief of the Israeli Armored Corps, Major General Moshe Bar Kochba,[5] claim that there are 44, the additional three tanks assigned to the headquarters company of the brigade.

Although it is not a tank battalion, the division-level reconnaissance battalion has armor assets (figure 2). It may have a company of 10 *PT-76* light tanks and three trucks with a strength of 36 men, or 10 *T-55* medium tanks, three trucks, and about 46 men.

Until recently, the Syrian Army comprised six divisions: two armored, three infantry or mechanized infantry, and the ADF, plus six to nine independent tank and infantry brigades. Now, two additional armored divisions have been formed, possibly from the independent brigades and reserve assets.

These two units, the 10th and 11th Armored Divisions, are still considered by the IDF to be only marginally ready.



Organization of the Syrian Tank Battalion

Figure 1.

Equipment

The main battle tanks of the Syrian tank battalions are Soviet-built *T-54/55s* (all versions), *T-62s* (standard, "M" and "K" versions), and the *T-72M.*

In general, the type of tank assigned depends on the type of division the tank battalion is organic to. The *T-54/55s* are assigned to infantry and mechanized infantry division while the ADF, the armored divisions, and the majority of the independent tank brigades are equipped with the *T-62* and *T-72M.*

The equipment used by training and reserve independent tank battalions is unknown, but it is probable that these units use older *T-34/85s* and *T-54/55s,* according to the Syrian reservists. This would coincide with past experience: in the 1973 war, the reserve tank battalions fielded a variety of obsolete equipment, including the *T-34/85, IS-3* and the *ISU-152.* (Among the tanks captured in that struggle were WW II-era German *Pzkpfw IVs.*)

Conversations with Israeli armor officers indicate that the only units equipped with the *T-72M* were the 73d Tank Brigade (3d Armored Division) and the elite ADF unit. The IDF has estimated that the Syrians had approximately 400 *T-72s* in June 1982, and about 600 by May 1983. The IDF has estimated that there are now about 600-800 *T-72s* in Syrian armored units.

Command

The Syrian tank battalion is normally commanded by a lieutenant colonel or a major, with companies commanded by captains, platoons by lieutenants, and individual tanks by either a lieutenant or a sergeant.

The Syrian Army now suffers a shortage of qualified junior officers, due to inadequate training, slowness of advancement, or political reasons. All officers must be considered politically reliable by the Assad regime and if one aspires to high rank, he must be an Alawite Moslem, like president Assad and the majority of senior officers. Alawites represent only about 11 percent of the Syrian population.

U.S. sources indicate that an effort is being made to broaden the experience base of the Syrian Army "by rotating leadership jobs so that even the newest recruit gets to lead his squad. . . (platoon or company)... at least part of the time..."[6]

The Syrian style of command gives the tank battalion commander and his company commanders little opportunity to interpret how they will follow an order. Individual initiative is not encouraged and orders are commands. This is clear in reading *Jesh-Al-Shab*, the Syrian equivalent of *Military Review*.

However, there have been exceptions. In one well-documented incident during the 1973 war,[7] the commander of a reinforced tank company (composed of 15 *T-55* tanks and three *BTR-60* armored personnel carriers) of the 452d Tank Battalion showed great initiative while conducting a reconnaissance mission. His unit encountered

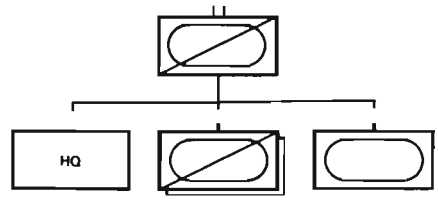


Figure 2. Organization of the Syrian Division-level Reconnaissance Bn.

and bypassed Israeli defensive positions, managing to penetrate 14 kilometers into the Israeli rear before being stopped. The unit was finally halted within six kilometers of the critical Arik Bridge, one of three strategic bridges across the Jordan River. Control of this bridge could have significantly affected the outcome of the battle, if not the war.

Because training of the individual soldiers is usually inadequate and because Syrian doctrine discourages individual initiative, a heavy load falls on battalion and company commanders. They are critical to the operation of the battalion. They are expected to be with their units during all phases of combat operations, providing positive examples, insuring effective command and control, and overseeing the completion of the mission. As a result, many junior officers were killed in action during the 1973 war and in the 1982 fighting.[8]

This doctrine also apparently extends up the chain of command. There are significant examples at both brigade and division level of the death or capture of higher-ranking officers while leading their units, including the capture of a tank brigade commander in 1982.

During the 1973 war, Brigadier General Omar Abrash, commander of the 7th Infantry Division, was killed on the forward battlefield when his tank was hit by Israeli fire. He had been in the process of rallying and regrouping his division, which had been badly battered during its previous assaults against the Israeli 7th Armored Brigade. The attack which he was preparing was subsequently launched by his second-in-command, Brigadier General Said Berakdar, and failed. The death of General Abrath significantly affected the fighting capabilites of the 7th Division.

Foreign Advisors

Since its earliest agreements with the Soviet Union, Syria has made extensive use of Soviet — and later, Cuban — advisors. During the period 1967-70, Soviet advisors were normally attached to Syrian division and brigade HQs, but would typically work at the battalion level. Following the abortive Syrian invasion of Jordan in September 1970, the Soviets began a massive reequipment and reorganization plan which saw Soviet advisors attached at the battalion level and the introduction of Cuban advisors at the army level.[9]

With the Syrian defeat in 1973, the numbers of both Soviet and Cuban advisors increased dramatically. In fact, during 1974-76, an estimated 500 Cuban military personnel were directly attached as advisors to the 47th Tank Brigade (Independent).

Since then, the number of Soviet advisors has continued to increase so that by January 1983, there were 4,000, of which 500 were working with the Syrian units in Lebanon. In October 1983, this number had risen to 7,000, and by December of that year to 8,000. It is presently estimated that there are one to three Soviet advisors per Syrian battalion.

Through the years, there have also been small contingents of advisors from other Warsaw Pact countries, although their contributions to Syrian tank battalions have been minimal.

Battalion Headquarters

The tank battalion consists of the following sections: Headquarters; Communications and Intelligence and Security.

The tank battalion headquarters is equipped with a *T-55* or *T-62* tank for the battalion commander (usually a "K" model), two personnel carriers

UNIT	OFCS	MEN	T-55/62	BTR-50/60	RPG-7	TRUCKS
HQ	6	16	1	2	2	1
Tank Co (3)	12	108	30			
Support Svc	4	36				9
TOTAL	22	160	31	2	2	10

Notes: Trucks could possibly include BTR-40/BRDM.

Figure 3. Tank Battalion organic to a Tank Brigade.

UNIT	OFCS	MEN	T-54/44	BTR-50/60/152	RPG-7	TRUCKS
HQ	6	16	1	2	2	1
Tank Co (3)	15	141	39			
Support Svc	4	42				11
TOTALS	25	201	40	2	2	12

Notes: Trucks could possibly include BTR-40/BRDM.

Figure 4. Tank Battalion organic to an Independent Tank Brigade, Infantry or Mechanized Infantry Brigade.

This Syrian T-62, of the 91st Tank Brigade, 1st Armored Division, was knocked out near the village of Snobar in the southern Golan Heights, the furthest Syrian penetration of the 1973 conflict.

(either *BTR-50s* or *BMP-1-PUs*) and a *GAS-69* truck or *BRDM* scout car.

During offensive operations, the battalion commander is mounted in the tank so he can participate in the attack. During defensive operations, the commander's tank and the other headquarters vehicles are colocated for security reasons.[10] The commander may be the battalion commander or a tank commander specifically designated by him.[11]

The two personnel carriers, under the control of the battalion chief-of-staff (normally a major) are considered the nerve center of the battalion. The first APC carries the headquarters and intelligence and security sections, including the deputy battalion commander,[12] the battalion chief of staff, the operations officer, intelligence and security officer,[13] two intelligence sergeants, vehicle driver, radio operators, and artillery forward observers, if any, are attached.

In the second APC are the communications officer, radio operators, the driver and commander. The truck or scout car, manned by a driver and commander, is used primarily for communications and for liaison between the battalion's subunits and its brigade headquarters.

Evidence gathered in the Lebanon fighting indicates that a third and possibly a fourth APC are being added to the tank battalion headquarters. Articles have appeared in *Bamachane* and *Maarchot*, two IDF publications, of this speculation and the IDF has declassified a photo and information that seems to suggest that the added vehicle or vehicles are intended to integrate antiaircraft and artillery more effectively and possibly to carry equipment to negate the Israeli's increasingly intense electronic warfare efforts.

Technical Support Group

This group includes the supply and maintenance platoon and the medical section, mounted in nine trucks of various types and an armored recovery vehicle, either the *BTS-1*, based on the *ISU* chassis, or the *T-54/55* -based *BTS-2*.

The supply and maintenance platoon is responsible for supplying the battalion with all its ammunition, fuel, lubricants, food, and non-technical supplies, in that order. There are supply points located at battalion, brigade, division or army levels. During combat operations, ammunition resupply is carried out when required under cover of artillery fire or during lulls. Refueling is done during battle lulls, with tanks pulling back 1-2 kilometers to a central fueling point.

Both Syrian and Israeli accounts of the 1973 conflict indicate that the Syrians had difficulty resupplying combat units. Apparently, there were also shortages of supply vehicles.

There were several instances of tank companies running out of either fuel or ammunition. In several instances, the Israelis managed to ambush and destroy Syrian companies only to have elements of the supply and maintenance platoon arrive shortly after at the same ambush site.

According to comments by the Israeli Air Force chief of staff, reported by *Cheyl Havair*, the IAF journal, Syrian supply columns are particularly vulnerable to air strikes, having suffered heavy losses in both the 1973 war and the most recent fighting.

But by 1982, the Syrians had apparently made progress in correcting their resupply problems. According to Israeli reports from Lebanon in 1982, "massive amounts of ammunition and equipment" were found in overrun defensive positions. Said an Israeli brigade commander after the capture of Ayn Zahlta:

UNIT	OFCS	MEN	T-72M	BMP BTR-50/60	RPG-7	TRUCKS	ARV
HQ	6	17	1	2	2	1	
Tank Co (3)	12	78	30				
Support svc	4	46		1		11	1
TOTALS	22	141	31	3	3	12	1

Notes: Trucks could possibly include BTR-40/BRDM. The HQ tank is a command version (possibly a T-62K). There are some reports that there is also an ARV in each battalion; however, these might be from brigade or division. The ARV is either an ISU-TC, D, or E; or a T-54/55-T.

Figure 5. T-72M Tank Battalion

PROJECTILE	T-54	T-55	T-62	T-72*
HVAPDS-T or HVAPFSDS-T			20 (50%)	20 (50%)
APHE—T or APC-T	11 (32%)	15 (35%)		
HEAT-FS	6 (18%)	7 (16%)	6 (15%)	6 (15%)
Frag-HE	17 (50%)	21 (49%)	14 (35%)	14 (35%)
TOTAL	34	43	40	40

*Estimated

Figure 6. Syrian Tank Ammunition Basic Load.

". . .The Israelis captured large numbers of tanks from the Syrians, many abandoned with only minor mechanical malfunctions. . ."

"We moved into the village where there were at least two Syrian battalions, a commando battalion and an armored battalion. They were organized and deployed like an army in every respect. They had modern uniforms and equipment, *RPGs, Saggers,* machineguns, tanks and a massive amount of ammunition. . ."[14]

The supply and maintenance platoon has a very limited capability to perform maintenance and minor repairs on the battalion's equipment. Normal repairs are carried out at division level, while major repairs are performed only at the major armor centers located at the Syrian bases at Al Kiswah, Al Qutayfah, or Qatanah. Evacuation is necessary for two reasons: repair personnel are scarce, and the bases are relatively close to the fighting front. The base at Al Qutayfah is 120 kilometers from Beirut and the other two bases are within 45 kilometers of the Golan Heights.[15]

Vehicle maintenance and repair has always been a problem within the Syrian Army and the efforts of Cuban and Soviet advisors have only had limited success in changing this situation. To bring up the level of unskilled or semi-skilled maintenance personnel, the military academy at Homs expanded its motor vehicle maintenance course after 1973, yet it is still a very basic course.

The battle record reflects these difficulties. During the 1973 war, Cuban technicians were attached to the maintenance bases at Al Kiswah and Qantanah.[16] And in both the 1973 and 1982 conflicts, the Israelis captured large numbers of tanks from the Syrians, many abandoned with only minor mechanical malfunctions, indicating a low level of crew maintenance.

The medical section provides basic first aid and casualty evacuation to a division-level clearing station and from there, if necessary, casualties are transported to a hospital at army level. This is possible because of the short distance to the front lines from Damascus, and because there are not enough qualified medical personnel to station them closer to the front.

A wounded Syrian tanker can expect to receive basic first aid quickly, be treated by a doctor within one to three hours, and be admitted to a hospital within four to 12 hours. But the level of Syrian medical treatment is significantly lower than similar treatment in the U.S. and Israeli forces.

Communications

The Syrians use Soviet communication equipment and methods of operation almost exclusively. They rely greatly on land-line communications in addition to radios, probably because they are aware of the Israelis' considerable sophistication in electronic warfare and signals' intelligence. Land lines are laid as soon as possible during an operation and are frequently put in during the operations. In Lebanon, for example, there was extensive use of land lines between units from battalion level up.

The importance of communications security is stressed at all levels with the battalion communications officer and security/intelligence officer responsible. But in both 1973 and 1982, Syrian COMSEC started strongly but deteriorated rapidly under the strain of combat operations.

During operations in Lebanon:

"Syrian lines were frequently tapped by the Christians, and Syrian personnel did not seem particularly concerned about security, as the lines were strung quite visibly and with little apparent attention to their vulunerability. . ."[17]

Communication equipment in the Syrian tank battalion includes two models of receiver-transmitters, the R-112 and R-123, and the R-311 receiver. The R-112, used on armored vehicles, is an AM instrument transmitting and receiving in the 2.8 to 4.99 megahertz range. The R-123, also used on armored vehicles is an FM system operating in the 20-to-51.5 megahertz range. The R-311 is an AM-band receiver only used on antiaircraft and fire-control nets.

Footnotes

[1] *U.S. Army Human Engineering Laboratory Memorandum* 11-79; IDF spokesman.

[2] Although some sources continue to refer to the ADF as a brigade, it was reorganized into a division-size unit in 1979-80. *Al-Nahar Alarabi Wa Al-Duwali*, Jan. 28 and Feb. 3, 1980; *Ha-Aretz*, Jan. 13, 1980, May 22, 1981, and April 16, 1982.

[3] *Middle East Journal*, Summer 1981, "Some Observations on the Social Roots of Syria's Ruling Military Group and the Causes for its Dominance," by Hanna Batatu: *Middle East Journal*, Spring 1982, "Political Integration and Regionalism in Syria," by Michael VanDusen.

[4] Al-Majallah (in Arabic), March 1984.

[5] Interview with MG Bar Kochba, *DAVAR*, (in Hebrew), Sept 3, 1982.

[6] Israeli press reports and declassified DIA report, *IIR 6-891-0061-75.*

[7] Interviews with members of the IDF. *Facts and Documents on the Treatment of POWs in the Yom Kippur War, Syrian Front*, Ministry of Defense, Israel, 1977.

[8] DIA Report, *Visit to the Syrian Military Academy, IR 6-891-0075-75 (U)*; also interviews with Syrian and Israeli veterans.

[9] DIA Report, *Order of Battle Summary, Ground Forces, Syria, DDI 1100-SY76*; Foreign Report, March 8, 1978; *London Times*, December 6, 1973; *Jerusalem Post*, April 2, 1974.

[10] *Jesh Al-Shab*, the Syrian equivalent of *Military Review*, has carried numerous articles on these doctrinal points, which are confirmed in Israeli unit histories.

[11] The crew that mans the battalion commander's tank is usually the best in the battalion, according to interviews with Syrian veterans.

[12] In some cases, the deputy battalion commander and chief-of-staff positions are held by the same person, veterans say.

[13] Almost all intelligence officers have a working knowledge of either French, English or Hebrew in addition to Arabic. The intelligence officer also functions as the internal security officer and in this role reports directly to the General Intelligence Section of the General Staff. *Facts and Documents on the Treatment of POWs in the Yom Kippur War, Syrian Front.* Also, author's interviews with IDF members and former members of the Syrian armed forces.

[14] *Bamachane*, 7 July 1982 (in Hebrew).

[15] Financial Times, March 16, 1983; According to both Western sources (*New York Times, Washington Post*, etc.) and Middle East Periodicals (*Al-Watan, Al-Arabi*), numerous convoys of tank transporters and lowbed trucks were observed hauling tanks and APCs from Lebanon to Syria along the Beirut-Damascus highway in the week following the June, 1982 fighting.

[16] By January, 1977, all Cuban advisors had left Syria, according to the unclassified DIA Report *DDI-1100-SY-76.*

[17] *U.S. Army Human Engineering Laboratory Technical Report 11-79*, p-46.

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Introducing the Spears Device

by Captain Michael Spears and SFC James Gale

New training devices such as the Unit Conduct of Fire Trainer (UCOFT) (See "Armor Training Simulators are on the Way," May-June 1984 *ARMOR* Magazine) will serve as valuable resources to better our tank gunnery training. Such devices are critical to the training of crewmen in Europe due to the limited opportunities to live fire at local and major training areas.

Use of *Telfare* and other subcaliber training devices at local training areas is not the best measure of crew proficiency with the *M60A3* fire control.

The *M60A3* MBT is a complex weapons system. When the fire control works properly and the crew is well-trained on the fire control, the *M60A3* will guarantee a target hit. However, if something is wrong with the system and the crew does not recognize it, or the crew makes fundamental mistakes in the manipulation of the controls, the *M60A3* will guarantee a target miss.

The complexity of the *M60A3* turret, coupled with personnel turbulence, set the priorities for tank gunnery training. The first goal when training tank crews in numbers (17 or 14) is *standardization* — all crews must be trained the same. Secondly, training must focus on the *M60A3* fire control and must be *objective* and not dependent on the subjectivity of the evaluator. Lastly, the need at company/platoon level must be directed at *sustaining* gunnery skills despite the lack of resources.

The *M60A3* Crew Drill Simulator, which has become known as the "Spears Device" in the 1st Armored Division, is a training device with these priorities in mind to sharpen and sustain individual and crew-critical tasks necessary to increase proficiency inside the *M60A3* turret.

In training tank crews to put steel on target, the trainer cannot overlook the fundamentals of the *M60A3* turret. Several of these basics the crew encounters on a given engagement which, when performed incorrectly, can lead to target miss are addressed in the table of crew duties below.

A trainer functioning as a TCE (Tank Crew Evaluator) cannot evaluate these duties thoroughly on a tank negotiating a subcaliber or main gun course. The basic actions of the crew mentioned above are critical to consistent target hit and were the basis for the development of the training device described in this article.

The Spears Device has in essence put the TCE in a position where he can observe the target array but yet place

TABLE OF CREW DUTIES

TANK COMMANDER

- Did the Tank Commander supervise the turret setup prior to the engagement?
- Did the Tank Commander get a crew report prior to the engagement?
- Did the Tank Commander give a correct fire command?
- Did the Tank Commander drop to the rangefinder and evaluate the gunner's lase?
- Did the Tank Commander check the gunner's sight picture prior to commanding "fire"?
- Did the Tank Commander reset the rangefinder and index battlerange after each round?

GUNNER

- Did the Gunner index the appropriate ammunition and check the set up of the GCUto include placing battlesight range on the manual wheel in case of primary fire control system failure?
- Did the Gunner respond to the fire command in the correct manner?
- Did the Gunner lase to the target?
- Did the Gunner relay the reticle prior to firing?
- Did the gunner understand the 105D reticle or primary sight reticle (whichever in use) and can he apply the correct sight picture to stationary and moving targets using precision and battlesight techniques?
- Did the Gunner "dump the cadillacs" after each round to erase the current solution or does he understand when this is not necessary? (When targets are at same range)
- Did the Gunner understand automatic lead? (How long did he track the target and did he relay/retrack the target after lasing)

LOADER

- Did the Loader respond to the fire command in the correct manner?

himself inside the turret at an advantageous position where he can evaluate the critical crew duties. The schematic at right gives the basic layout of the device.

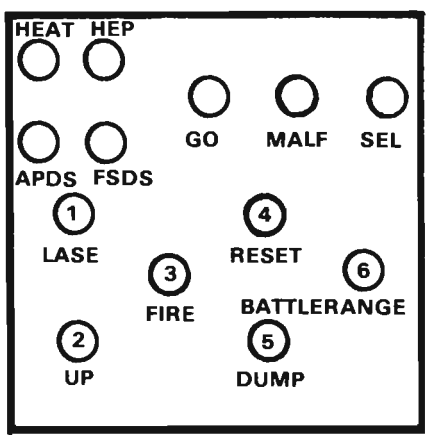
The training sequence used with the device is as follows:

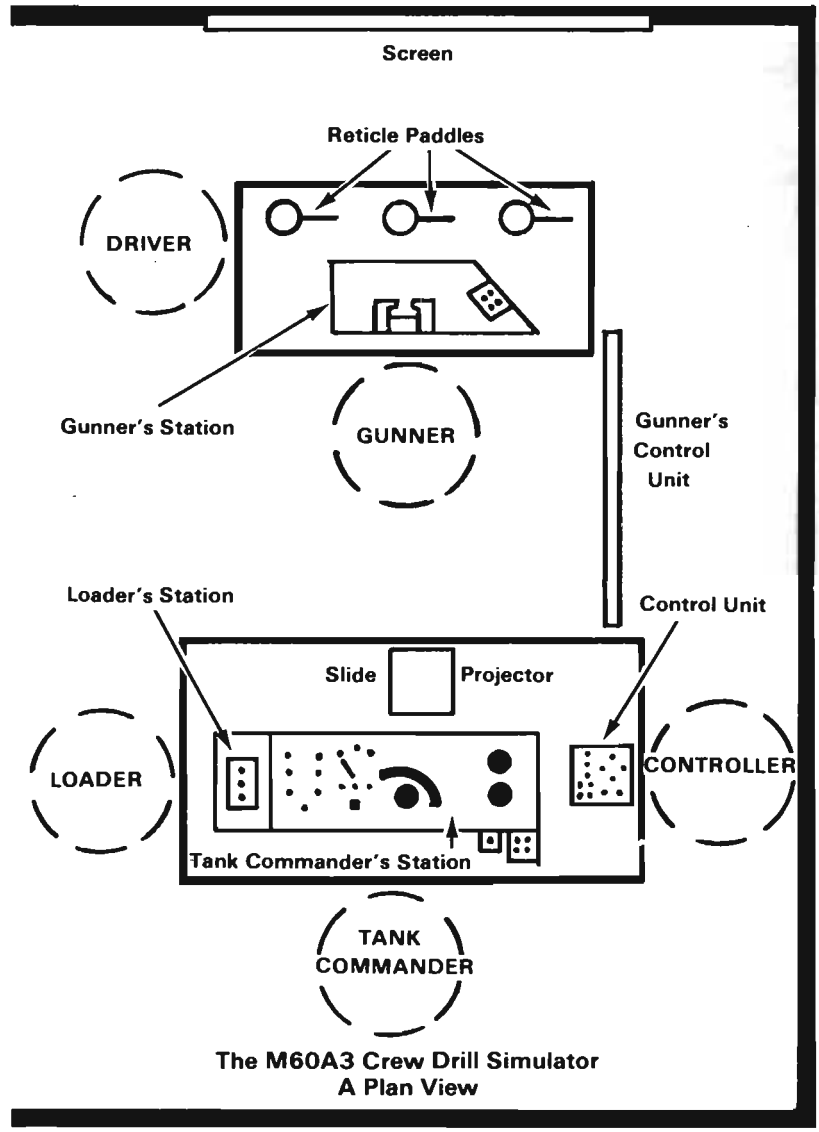
- TCE announces ammunition and engagement.
- TC supervises turret setup and receives crew report.
- TC gives fire command/crew engages target.
- TCE evaluates actions using control box.
- Following *cease fire*, TCE evaluates gunner by having gunner choose the correct reticle and take the sight picture with the reticle on the targets present on the screen.
- TCE critiques the crew on the engagement to include time, control, manipulation, and sight picture.
- TCE repeats engagement if necessary to reinforce critique or moves on to new engagement.

The TCE evaluates the crew's actions during the engagement using the control box shown below. The control box is the most important component of the training device as it allows the TCE to instantaneously evaluate the crew's actions. As the crew proceeds through an engagement, they manipulate the fire control. As they perform the manipulation, the appropriate light on the control box will light. Noteworthy is that the lights not only correspond to the appropriate fire control component, but they are in sequence from left to right as the engagement proceeds.

The upper left of the control box lets the trainer see that the correct ammunition has been selected. The three toggle switches at the upper right allow the trainer to give the TC a lase evaluation (a "go" light, a "select" light, or a "malfunction" light) after he has seen the gunner has lased the target.

SPEARS DEVICE CONTROL BOX





The M60A3 Crew Drill Simulator A Plan View

A further explanation of the control box follows:

When light 1 goes on, you know the gunner has lased, or the TC has lased from the rangefinder.

When light 2 goes on, the loader has armed the main gun. (Incidentally, the simulator will not fire with the main gun in the "safe" position).

When light 3 goes on, you know the gunner has fired. (This is connected to a buzzer to simulate the blast for engagement timing.)

When light 4 goes on, you know the TC has reset the rangefinder.

When light 5 goes *off*, you know the gunner has dumped the cadillacs.

When light 6 goes on, you know the TC has indexed the battlerange.

The device described in this article is easy to build. Parts and materials cost about $60 dollars.

(Editor's Note: The Spears Device is currently being manufactured in quantities for one per each tank company in the 1st Armored Division. Units in USAREUR can request orders through their local TASC on a work order. The first prototype made by the USAREUR TASC was displayed and demonstrated at the Armor Conference, 7-11 May at Fort Knox, Kentucky, and was left at the Armor School for further development/production.)

After describing the device, I believe that two major questions are in order. How effective is it, and how can it be integrated into an overall gunnery program?

The initial results of the device showed that first round hit percentage increased an average of 8 percent on a company-wide basis for the one company that used the device. The device was then developed for use by all companies in the battalion with a resulting increase of 7 percent first round hit capability, with all tank companies showing an improvement over their last performance.

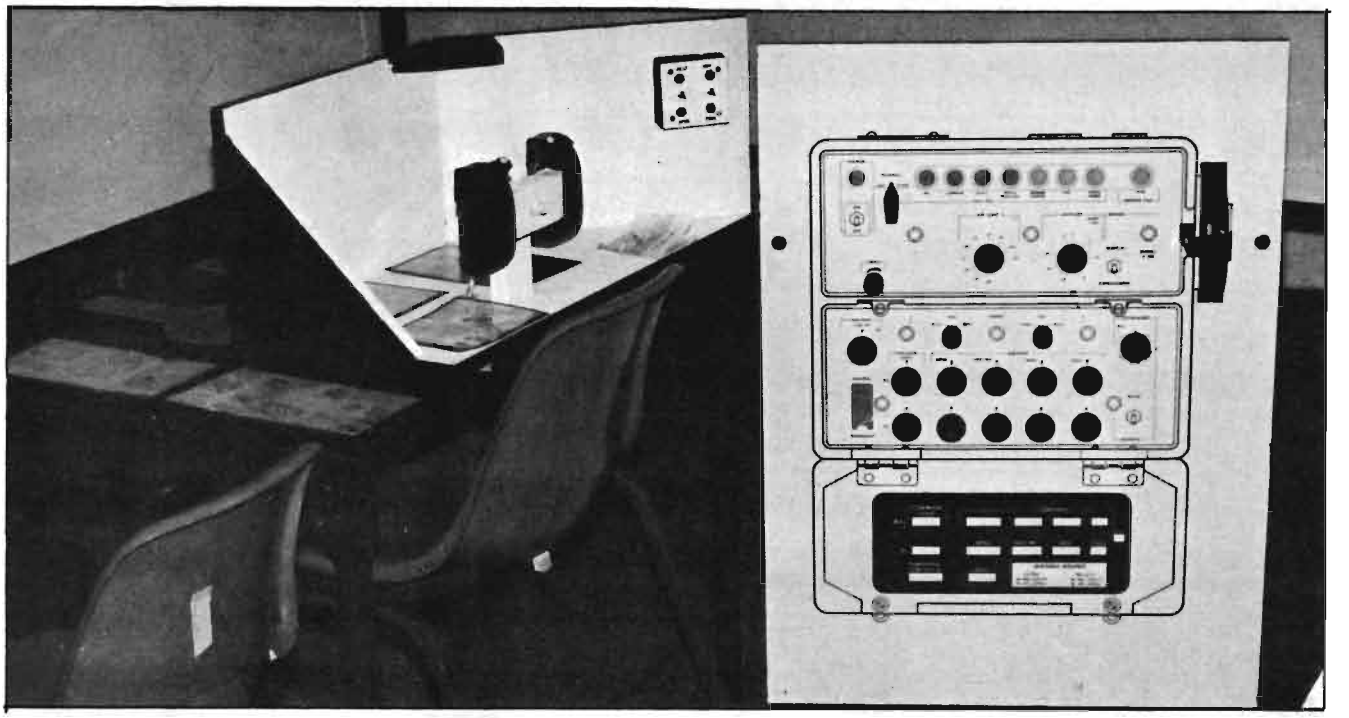


Photo shows relatively simple floor setup of Spears trainer. Diagram at left shows how the components fit together.

The first integration of the device into a gunnery program starts with its potential as a resource for individual training. The components which come with the device are great training aids in themselves; for example, the Gunner's Control Unit, the Rangefinder, the slides of vehicles (friend or foe), the reticle mock-ups, and the reticle mock-ups used in conjunction with target arrays for sight picture training.

The crew application was given earlier in the article. However, this training should be done in conjunction with a tape recorder to record the crew's performance for instant feedback.

Crew drill sustainment training was conducted by the authors by evaluating one crew per evening on a rotating basis. Platoon leader's rotated their crews through the engagements on a weekly basis.

Incidentally, platoon leaders who have used the device have commented that they have learned a tremendous amount themselves, just watching the mistakes of their crews.

The device has also increased leader's confidence in their knowledge of the fire control and has allowed them to become more effective trainers. In essence, the device can be used for individual and crew tasks, and allows for the conduct of initial training on the *M60A3* fire control, or for repetitive sustainment training, especially when ranges and ammunition are not available.

It is my belief that this device is ideal for use at company level, due to its simplicity, its cost and above all, its *availability*. Additionally, the device could be a tremendous asset to our reserve components whose training resources are scarce.

In summary, this device has proven itself a valuable training tool in sustaining gunnery skills. The company commander and platoon leaders can integrate the use of this device into all gunnery training and can further sustain gunnery skills by rotating crews through the engagements on a recycling basis. Evaluation is *standardized, objective* and *repetitive*. The device can be the bridge between the training devices you are currently using and the new ones, such as U-COFT, as they become available.

The Spears Device is introduced as a device for the training of tankers, built and designed by tankers, with the hope that it can help *M60A3* crewmen around the world reach a common goal — go to war today, hit targets, and win!

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Armor's Stand at St. Vith

by Captain Stephen D. Borrows

The German Army, in a totally unforeseen move, launched a precipitous offensive in the middle of their war with the Western Allies. The Ardennes Battle of December 1944 (more familiarly known as the "Battle of the Bulge"), was the greatest battle fought by the American Army as it suffered some 78,000 casualties. The similarities between this last great German offensive and a Warsaw Pact conventional armor-heavy breakthrough attack with little warning provided to NATO forces are significant and very relevant to a study of possible Central European conflict in the 1980s.

If such an event should occur, the concept of operations and pattern of battle might just as well possess the same elements of this 1944 winter clash — surprise, cut-off units, bad weather, logistical problems, breakdown of communications and the many other components of battle mechanics which constitute the complexity of modern combat.

Fortunately, the American soldier of 1944 was able to meet the situation at hand and his example is deserving of great praise.

Between 16 December and 23 December 1944, the small Belgian town of St. Vith was defended by a heterogeneous force of lost units, stragglers, and an extremely resourceful armored brigade of the 7th Armored Division, commanded by General (then Colonel) Bruce C. Clarke.

Because of a lack of understanding of this battle by the media, not much information was given to the American public at the time. What did seize the attention and imagination of the country was the drama being played out further to the south in Bastogne where the 101st Airborne Division was cut off and surrounded. The day-to-day suspense connected with watching the progress of General Patton's rescuing armored columns has made Bastogne the symbol of the obstinate, gallant, and ultimately successful American defense in the Battle of the Bulge.

But there were other crucial actions

which better deserve attention. The shoulders of the German penetration were held by tenacious infantry encounters at Monschau in Belgium, and at Echternach in Luxembourg. However, the battle, above all others, that derailed the German timetable by

six days was the action at St. Vith —the fiercest defensive battle ever fought by American forces on the Western Front.[1]

The Allies had broken through the German western defenses and were advancing well ahead of their timetable in a mood of high optimism and cocky overconfidence. As they charged across France on the heels of the retreating, yet elusive, German Army, the cost of the Allied advance began to mount as the months of continuous battle took their toll on American men and equipment.

By October, the Allies were also troubled by the fact that the warm and hazy days of the previous month now gave away to early fall rains and cold temperatures that interfered with mobile operations. With these changing circumstances critical to the conduct of tne war, the American High Command was forced to take stock of their situation after the heady successes since the Normandy invasion in June.

Casualties came to more than 2,300 since D-Day, and German resistance had been stiffening ever since mid-September. It was all but certain that the war could continue for at least another winter. Others argued with supreme confidence that the troops would be in Berlin by Christmas.

General Dwight D. Eisenhower, Supreme Allied Commander in the European Theater of Operations, had missed a great opportunity in early September to strike at the Ruhr, the northern industrial center of Germany, as was proposed in a plan by British Field Marshal Bernard L. Montgomery. This was accompanied by simultaneous failure to free the mouth of the Scheldt Estuary and the all-important seaport of Antwerp, Belgium. Up to this point, the Allies were proceeding with an advance on a broad front and were now roughly on Germany's pre-1940 boundary, but with a severely weakened force.

One major handicap was logistics. Ninety percent of all Allied war materiel landed in France was still on the Normandy beaches due to the retention of Antwerp by the Germans and the inadequacies of the English Channel and French Riviera coastal ports.[2] Ammunition was so short that it had to be rationed and, owing to shipping shortages and miscalculations in Washington, even minimum requirements were not being met.[3] The American forces each month used up ten percent of their armored fighting vehicles and eight million rounds of mortar and artillery ammunition and one hundred artillery tubes were consumed monthly. In September alone, they were burning up twenty thousand tons of supplies, six million gallons of gasoline and two thousand tons of artillery ammunition a day. Every bean and bullet came down a long supply pipeline from Cherbourg on the French coast to the front. The famous Red Ball Express was one desperate means of keeping the supplies coming. But by September, the Allied war machine was rapidly losing steam. The simple fact was that supplies could not keep up with the rapid advances.

The 7th Armored Division, for example, was stalled for six days in front of the fortress town of Metz in southern France before it received enough gas to resume its attack. The situation was the same for Colonel Bruce C. Clarke's "CC A" of the 4th Armored Division. It was estimated that this division, on the average, consumed seventy-four tons of petroleum products daily, or, as Clarke sized it up later, about a thousand gallons of fuel to move the division one mile.[4] Logistics, therefore, was the one element in all the Allied planning that failed at the crucial moment.

At the same time, Hitler laid his plans for a massive counteroffensive through the seemingly impassable Ardennes. It was here, had Allied planners thought back, that the Germans had broken the boundary between the British and French armies in 1940. They were about to try exactly the same maneuver in the winter of 1944.

The Germans assembled 20 divisions under Generals Dietrich and Manteuffel for the counteroffensive of December 1944. The halt in the advance of the American Army enabled them to do this with little interruption or even Allied knowledge of the preparations.

American intelligence had a poor opinion of the state of German equipment and availability. That same source also failed to discern any signs of the massive German buildup:

In the public mind, the encirclement of the 101st Airborne Division at Bastogne became synonymous with the drama of the Battle of the Bulge. But the skillful mobile defense mounted at St. Vith upset the German timetable and snubbed Hitler's last great offensive. Above, a street scene at Bastogne after the battle.

How History Assessed Clarke's Stand at St. Vith

The German offensive was predicated on three conditions: The attack had to be a surprise; the weather had to preclude Allied air strikes on the German columns and, progress of the main effort through and beyond St. Vith had to be rapid. Two conditions were met — surprise and weather. The third was not met and the German offensive failed.

Careful planning went into the offensive preparations. The Germans established the sequence and range of American patrols on the attack front. They located boundaries between regiments and battalions and they called off a planned 1½-hour artillery preparation because they did not want to "wake up" the Americans.

The attack was launched with platoon columns down the boundaries between regiments and battalions because they were the weakest points in the defense line. After penetrating 3-4 kilometers, the attacking columns closed behind the Americans and took 8,500 prisoners.

Here we have the classic penetrate and surround maneuver, an early version of the Deep Strike tactic of AirLand Battle doctrine. Pre-attack intelligence established the American patrol's ranges and frequencies and the location of boundaries was essential to the initial success of the offensive.

The amazing factor in the St. Vith battle was that the defenders were not a homogeneous force. Rather, they were a hodge-podge of battered, in-place units, and relieving units. The leadership of brand-new Brigadier General Bruce C. Clarke (he had been promoted only 10 days before) not only welded the disorganized units into a cohesive fighting force, it held St. Vith and destroyed the German's timetable and hopes for success.

Years later, when questioned as to the principal duty of a general in such a battle, General Clarke replied, "It is to prevent the confusion from becoming disorganized."

Clarke established a fire base in the St. Vith sector with a tank destroyer company dug in. He set up a mobile counterattack force to be used when the Germans had created a serious situation. The force would counterattack the Germans, then retire to its original positions and prepare for its next foray.

Criticized by General Ridgeway for his "hit and retire" tactics, General Clarke replied in effect that he was not holding ground, *per se*, he was delaying the enemy advance at its most critical point for as long as possible with the least expenditure of American lives. "We are winning; he is losing," he told General Ridgeway.

After seven days of futile attempts to break through the St. Vith sector, General von Manteuffel recommended to Hitler's adjutant "that the German Army give up the attack and return to the West Wall."

Early in the battle, General Eisenhower placed British Field Marshal Montgomery in command of the U.S. First and Ninth Armies, temporarily replacing General Bradley. The ramifications of this act are beyond the scope of this article, nevertheless, General Montgomery had nothing but praise for the American soldiers he commanded in the battle. In the *New York Times* of 8 January 1945, Montgomery said of the Americans who had fought in the Bulge: "The American troops, isolated and cut off, were fighting and holding on to centers of road communication, making it extremely difficult for the Germans to move any flow through the gaps they had created..."

"...The American soldiers of the U.S. Seventh Armored Division and the 106th Infantry Division stuck it out (at St. Vith, Ed.) and put up a very fine performance. By Jove, they stuck it out, those chaps."

Clarke's "hit and retire" tactics were not only successful in delaying the German offensive, they also won him the post-war plaudits of his opponent, General von Manteuffel, who wrote to Clarke on 9 November 1975, "...possession of the ground or capture of ground does not garanty (sic) victory! Loss of ground does not mean defeat — withdrawal is not disgrace, but a method of fighting! *Your fighting around St. Vith ist* (sic) *one of the best model of this method of fighting!*" (italics von M's. Ed).

The Battle of the Bulge remains the hardest fought battle the Americans knew in Europe in World War II. It epitomizes the bravery of the fighting troops, but more than that, it holds many valuable lessons to the commander of today's fighting troops.

—ROBERT E. ROGGE
ARMOR Assistant Editor

(Ed. Note: Readers desiring a more detailed account of the battle of St. Vith may write to: Mr. J. Coppersmith, Chief, Army-wide Training Support, Fort Knox, Ky., 40121-5000, and request a copy of "The Battle at St. Vith, Belgium, 17-23 December 1944.")

- The German Army is in a poor condition—we will finish it in the early spring.
- The German tanks have been greatly reduced in numbers and are in a poor state of maintenance.
- We know immediately if the Germans move a division, and are able to report it to General Bradley at the next morning's briefing.

Before pursuing the battle further, let us consider some questions that may have been raised at the time, but certainly came to light following the battle:

• Why did the Allied Army run out of gasoline in September 1944?

• Was General Eisenhower aware of the problem on 15 September when he wanted Field Marshal Montgomery to push forward and take Berlin?

• Why did the Allied G2, 12th Army Group, not detect the preparations for the counteroffensive of 16 December 1944?

• Why was the 106th Infantry Division placed where it was (to the east of St. Vith) without any armor support attached?

• What was to account for the condition of the 106th Infantry Division's training?

• Why did the 101st Airborne Division move into Bastogne and make no plans to break out?

• How effective was the handling of the First Army (where the Bulge was) by General Hodges?

• Why did General Eisenhower relieve General Bradley of command of the First and Ninth Armies on the evening of 19 December 1944?

• Why did he give these armies to Montgomery—a Briton?

• Why did Ike's Chief of Staff (General Smith) on the evening of 19 December tell Bradley that his relief from command was only for the length of the "Bulge" but, in fact, General Hodges would be under General Montgomery for a month, and General Simpson's Ninth Army until after the Allies crossed the Rhine?

• Could the battle of the Bulge, encompassing a great area of maneuver, be adequately directed from Ike's headquarters which was as far away as Versailles, France?

". . .A major lesson of armored warfare was demonstrated

• Did the false report pervading Eisenhower's headquarters on 18 December, that Clarke's command had been destroyed at St. Vith, lead to the replacement of Bradley (an infantryman) by Montgomery (a tanker)? Their opponent, General Manteuffel was the top German *Panzer* general, with a distinguished reputation in the armor field.

• To what degree did Patton's Third Army affect German operations *after* it relieved Bastogne on 26 December 1944?

• Had the Allied Army not been delayed in the fall of 1944, and then subsequently surprised in the Battle of the Bulge, would the Allies have overrun a greater part of Germany before the Russians got there? Would Germany have necessarily been split in two and would we have needed to keep some 200,000 Army and Air Force personnel in Germany for the last 38 years at great expense?

There are other questions. It may require that these questions be considered in another article or book. It would involve a lot of research. This is difficult since Eisenhower would be 93 now if still alive and his senior commanders generally of the same age. There are few who have experienced high command in the battle to be able to discern the correct answers to these questions.

The greatest defensive battle fought by American forces in Europe had some unique moments to it:

• It was commanded by a British general after the third day.

• While all U.S. commanders from corps level and above were all infantrymen, the officers of the 7th Armored Division and its attached units ("CC B", 9th Armored Division) were a field artillery division commander (Hasbrouck) and two engineer combat commanders (Hoge and Clarke).

It was no small achievement in military history that a small force of 8,020 American soldiers had warded off over 87,000 enemy troops and had prevented them from controlling St. Vith and the vital area east of the Salm River for a period of six days.[5] Throughout this ordeal, the 7th Armored Division, with

At left, tanks and infantry rush to relieve Bastogne late in December, 1944. At right and below, a knocked-out Panther tank, U.S. troops and tanks moving over the snow that complicated the battle, and a wounded German prisoner getting helped to an aid station by his comrades.

at St. Vith. . ."

the 14th Cavalry Group and "CC B" of the 9th Armored Division attached, sacrificed nearly 3,400 officers and men either killed, wounded or missing.

Colonel Clarke's plan of action during this engagement was to cause maximum delay of the German advance, and at the same time, prevent the destruction of his combat command.

A major lesson of armored warfare was demonstrated at St. Vith: that an armored unit can stage an awesome mobile defensive action if required to do so by force of circumstances. By the aggressive employment of small unit counterattacks, an armored task force can harass an enemy and confuse him as to its actual size and composition. This example was witnessed in more

With the pressure easing, U.S. infantrymen trudge through snow-covered Belgian fields in the wake of the Bulge fighting. The German attempt to sweep through the Ardennes to the Channel was stymied.

recent times during the Arab-Israeli War of 1973. To stand and defend every inch of ground does not apply in all situations.

By the time the last of Clarke's troops pulled out of the St. Vith salient, the German offensive was eight days old, and General Patton's Third Army was counterattacking along the entire southern flank of the German "Bulge." From the German point of view, St. Vith was far more important than Bastogne during the Battle of the Bulge.[5] The main German effort was to bypass Bastogne and turn north.

What, in effect, was accomplished by the Ardennes Offensive of 1944 was to delay the Allied offensive operations by only about six weeks, but with a loss to the Germans of nearly 250,000 men, 600 tanks and assault guns, and about 1,600 *Luftwaffe* planes. Furthermore, the offensive had caused a serious reduction in war materiel stocks and the depleted state of German supply reserves precluded any further large-scale offensive. Allied victory, therefore, was guaranteed.

The Ardennes, in a very real way, had been the birthplace of German 1940 lightning tactics. Now, four years later, the town of St. Vith became the burial place where the once potent German *blitzkrieg* came home to die.

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Footnotes

[1]William Donohue Ellis and Colonel Thomas J. Cunningham, Jr., (Retired), *Clarke of St. Vith: The Sergeant's General.* Dellon, Liderbach, Inc., Cleveland, 1974. p. xi, Introduction.

[2]Peter Elstob, *Hitler's Last Offensive.* Macmillan Co., New York, 1971. p. 39.

[3]Arthur Bryant, *Triumph in the West.* Doubleday & Company, New York, 1959. p. 239. (In fact, in the middle of November, General Eisenhower was forced to broadcast an appeal to the American people for more ammunition.)

[4]Brigadier General Bruce C. Clarke and Lieutenant Colonel Creighton W. Abrams, *The Principles of the Employment of Armor.* U.S. Army Armor School, Ft. Knox, KY. p. 5. Written while General Clarke was assistant commandant of the Armor School and Colonel Abrams was working under him as the command and staff director, U.S. Army Armor School, 1948-49.

[5]*History of the Seventh Armored Division and the Seventh Armored Division Association.* Taylor Publishing Co., Dallas, TX, 1982. p. 103.

[6]NORTHAG videotapes, reel no. 8, the meeting of General Hasso von Manteuffel, German Army, retired, and General Bruce C. Clarke, U.S. Army, retired, was conducted as part of a Department of the Army project entitled the "NORTHAG Terrain Study" on 12-15 June 1976. The discussions on the battle of St. Vith, Belgium, 16-23 December 1944, were recorded on videotape which is in the posession of the author.

The Division 86 Maintenance Platoon

by 1st Lieutenant William E. Riker, Jr.

The Army is going through a major organizational change known as Division 86. The general guidelines have been presented to staff to interpret and reorganize accordingly.

Perhaps one of the most challenging tasks of Division 86 is the reoganization of the maneuver battalion maintenance program. The following presents a working model for the Division 86 maintenance platoon as well as some additional guidelines for the transition phase. The primary focus is directed at the armored and mechanized infantry battalion, with special emphasis on maintenance operations in the field and in garrison. This article is a discussion of a working solution to the Division 86 maintenance platoon and is by no means the ultimate solution.

Scope of the Problem

One of the primary concepts driving the Division 86 reorganization is the need for a highly flexible and mobile combat battalion that can deploy and sustain the maximum number of combat elements. In order to meet these requirements, a solid maintenance program is required and it must be as flexible and mobile as the maneuver forces themselves. The battalion maintenance team must also be capable of training and maintaining itself in garrison. If used and organized effectively, the new battalion maintenance team can offer the commander more training time and allow for a more efficient and productive maintenance program.

Under the old, or H-series MTOE, the tank and infantry assets generally came under the control of each line company. A battalion maintenance platoon retained additional assets, usually handling such specialties as services and coordination for direct support. Generally, the program was decentralized with the BMO maintaining control over a very limited number of the maintenance assets. Under the Division 86 maintenance organization, the maintenance assets of the battalion are consolidated into a single platoon. The platoon is broken down into eight distinct sections, under the control of the BMO who is responsible to the commander.

The headquarters section, composed primarily of BMO, BMT and BMS, directs the actions of the platoon. An administration section is responsible for all TAMMS and PLL. The recovery section supports services in garrison and provides a highly versatile recovery team in the field. The service section is responsible for the services within the battalion and can be organized into special maintenance contact teams in the field. The four tank or line company teams are responsible to the BMO for their respective company maintenance operations. The tank battalion maintenance platoon consists of 95 men, 11 tracks and 21 wheeled vehicles. Under the Division 86 MTOE, the mechanized infantry battalion maintenance platoon will consist of 111 personnel, 27 wheeled vehicles and 13 tracked vehicles.

There are several major advantages that the new, or J-series, MTOE will provide the company and battalion commander. First, the structure of the maintenance platoon enables the commander to easily task-organize his maintenance assets. Assets for one line company can be augmented by another section or team by just a change in mission. The organization also gives the commander the capability to easily tailor the maintenance resources for particular garrison maintenance programs. Line company commanders are responsible only for operator maintenance and need only coordinate for additional support. Thus, the comman-

". . .There is the need to ensure a combat ready atmosphere is consistently maintained within the platoon to prevent a "Joe's Garage" syndrome. . ."

der is more able to dedicate his efforts to training his maneuver elements and not be concerned with the mechanics who are repairing his equipment. Since the BMO is responsible for the organizational maintenance and has control of all maintenance assets, he is more able to provide responsive quality support to whoever needs it. Finally, another major advantage of the Division 86 maintenance platoon concept is that it allows for better training and morale of the maintenance personnel. Since all maintenance personnel are under the control of one individual, training time can be effectively scheduled and conducted without the interference of mission-support requirements.

The Division 86 maintenance program is certainly not without problems, but they can all be solved with a little planning and leader involvement. First, the immediate reaction of many company commanders is one of a feeling of maintenance nakedness since they don't have immediate control over their own mechanics. Extra effort must be taken to ensure that responsive and consistent quality support is delivered upon request.

Another problem is the actual size of the platoon. A 95-man platoon is significantly large enough to cause control problems. The BMO and BMS must be in charge and responsible for the platoon's personnel and equipment. Strong NCO leadership and a supportive platoon chain of command are absolutely essential for the platoon to function properly.

Finally, there is the need to ensure a combat-ready atmosphere is consistently maintained within the platoon to prevent a "Joe's Garage" syndrome developing. With these particular danger areas in mind, the planners and leaders should be ready to tackle the actual transition to the new battalion maintenance platoon.

Transition From Old to New

The actual reorganization of the Division 86 maintenance program must be accomplished quickly and efficiently to minimize down-time of maintenance assets. The battalion staff and company commanders must coordinate closely to ensure the smooth transition of people, property and mission. The complete transformation cycle for the battalion to the Division 86 concept is very much dependent upon equipment and personnel movements within the division. However, the on-hand personnel and equipment can be reorganized and mission-ready within three months.

In order to prevent confusion and keep the maintenance program mission-capable, it is best to transfer people, property, and mission in complete units. Under Division 86, headquarters company becomes a mammoth company of over 300 men. The maintenance personnel and equipment are all signed for by the headquarters company commander. To prevent overburdening the company supply room, all equipment must be as serviceable and complete as possible at the time of transfer. Therefore, during the first month of the transition, company commanders are responsible for equipment inventories and resolving discrepancies. Commanders must also ensure that all personnel-related matters are identified and completed prior to the actual transfer to headquarters company.

The BMO must brief his new motor pool and platoon organization plan to the commanders to ensure all of the users understand how the system will function. Building materials should be ordered at the earliest possible convenience, and new shop areas designated by section. A list of bumper number changes needs to be drawn up and distributed, along with changes to the maintenance SOP, thus preventing confusion about mission and equipment during transition. A company PLL must be ordered by the BMT and the PLL listing of HHC scrutinized to accommodate the scouts, mortars, and other additional equipment. During this time, the mechanics are assigned to a specific section and the S1 notified of additional requests for authorized personnel. Billet plans must be drawn up to house the on-post personnel, preferably by section within the platoon. Finally, the BMO should coordinate to get all of his future personnel together and fully brief them on their new organization along with specific goals and training objectives. It is imperative that the platoon chain of command is informally established prior to any movement to ensure that there is no question of who is in charge and where people get their instructions.

The actual movement of the maintenance personnel and equipment to headquarters company occurs during the second month. A one to two-day period must be designated for shop movement and rearrangement of the motor pool; this will keep shop downtime to a minimum. Once the shops are set up, the commanders can begin property inventories and the personnel can be moved to headquarters company. Approximately three days should be allowed for completing the transfers, and following this period, the maintenance platoon assumes responsibility for the section. It is important to realize the vast amount of property within the platoon, and that control and resupply will be difficult. It works well if each section sergeant signs for his section's equipment from the headquarters supply room, with the BMO and BMS retaining supervisory responsibility for monthly inventories and serviceability.

Generally, the immediate mission of each maintenance section will not be significantly affected by the reorganization; however, the administration section must be prepared to absorb all of the TAMMS and PLL for the battalion. The administration section will be the most difficult section to organize due to the volume of paperwork needed to reorganize each PLL. The PLL parts trucks and office area require a lot of time to reorganize and consideration

"...For field problems, or additional support, the company commander must coordinate with the BMO for a support package..."

should be given to moving the clerks as soon as possible. With listings prepared by the BMT, the HHC PLL should be fairly complete from components of the CSC PLL. Special considerations should also be given to TAMMS, since the newly-activated D Company will be formed from the existing companies and some problems will occur. If conducted efficiently, the formation of a functional administration section should only take about two weeks, with additional time allowed for working out operational problems.

Two other aspects need to be recognized. First, with an emphasis on maintenance skills and change, the importance of training mechanics as combat soldiers cannot be overlooked. Secondly, since the mechanics are no longer a part of a line company with a specific combat mission, morale can suffer if they are regarded simply as a 'service support.' There are several ways of combating morale problems with the maintenance platoon. One way is to quickly establish an identity as the maintenance platoon and establish feelings of pride, *esprit de corps*, and unity.

The final phase of the transition requires a final month of ironing out the unexpected problems that will surface. Feedback and suggestions from platoon members can help to identify and resolve these problems. Bi-weekly maintenance meetings with the company XOs and section sergeants can help with solving problems.

Personnel control and mission assignment can become problems following the transition. Due to the fact that mechanics are now assigned to the maintenance platoon instead of the line companies, company XOs must remain the liaison for maintenance support in the companies and to coordinate through the BMO.

Finally, services and weekly maintenance priorities need to be planned at least one week in advance to allow section sergeants time to react to keep their personnel informed.

Operations

The maintenance platoon is charged with the mission of supporting the battalion in and out of garrison. Smooth operation depends upon good planning and realistic command and control. The headquarters section, composed primarily of the BMO, BMT and BMS, run the battalion maintenance operations.

As before, the BMO is responsible for the maintenance operations and for advising the commander on maintenance-related matters. He is also the platoon leader of the maintenance platoon and must ensure that his personnel are technically competent and combat ready.

The BMT is the battalion's technical expert. He is responsible for finding solutions to maintenance problems and for supervising the PLL/TAMMS section.

The BMS runs the motor pool and is responsible for the daily maintenance operations. As the platoon sergeant of a 95-man platoon, the BMS is more of an administrator and manager than ever before. He also ensures that the shops and men live up to the platoon standards. It is crucial that these three leaders of the platoon work well together to direct the actions of their subordinates and that they fully delegate their responsibilities.

Another portion of the headquarters section is a small 3-man staff. Due to the size of the platoon, it is necessary to use an additional member of the platoon to help handle the paperwork and routine matters required of the section. A good prospect for this is one of the section's drivers who can be rotated back as a mechanic when not needed. The battalion dispatcher is retained in the section for tight control of off-post vehicle dispatch. Finally, a common tool clerk, under the direction of the BMS, provides additional availability for tools and test equipment. This small staff is very worthwhile since it provides the headquarters section with additional control over important operational assets of the platoon.

The administration section is responsible for all the battalion vehicle TAMMS/PLL. There are four PLL clerks designated to handle the line company PLL and TAMMS. The PLL needs to be standardized to allow the parts trucks to be interchangeable between companies. Each clerk is normally assigned to a line company contact team and handles all dispatches, PLL and TAMMS for his respective vehicles. Two clerks are assigned to the HHC PLL/TAMMS due to the density of equipment in that particular company. A PLL liaison clerk is designated for the sole mission of picking up and submitting requisitions from the local LSA. This frees the other clerks to keep up with their work and gives the section an extra member to help out where needed. An E6 supervisor is in charge of the section and is responsible directly to the BMT.

The backbone of the maintenance platoon is the four line company maintenance contact teams. In the field and in garrison they provide the commander with a self-sufficient maintenance team; complete with PLL, automotive, turret, and recovery assets. Each team consists of a tool truck, *M88A1* and *M113* personnel carrier. In garrison, each contact team is assigned to a specific line company. Vehicle commanders work with the motor sergeant for daily PMCS and command motor stables operations. All 2404s go through the motor sergeant who, in turn, reports problems or equipment trends to the platoon headquarters. The team conducts Q_1 and Q_3 services along with all of the company's wheel services. For field problems, or additional support, the company commander must coordinate with the BMO for a support package.

The administration section maintains a colocated PLL. All the clerks are located in the same office but separate from the maintenance section. During weekly motor stables, the clerks move to their respective shops to update de-

". . .Depending on the type of mission, a company's PLL is either located in the field trains or moving with the company trains. . .In addition, each tank company contact carries a few essential parts from their PLL for immediate repairs. . ."

ferred maintenance 2404s and confirm part requests. Parts are ordered and picked up by the crews in their own maintenance sections. Motor sergeants and shop foremen only are allowed in the administration office to pick up parts and review maintenance records. The motor sergeant is responsible for verifying parts requests and for submitting high priority requisitions to the BMO/BMT for approval. Similar action occurs in the HHC except that the service section NCOIC accepts and maintains the company's 2404s and command motor stable responsibilities.

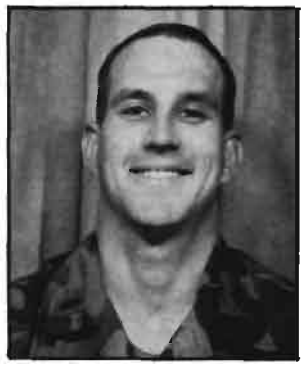
Depending upon the type of mission, a company's PLL is either located in the field trains or moving with the company trains. For example, if a company is cross-attached to another battalion, the detached company gets a complete support package. However, if the unit is working within the battalion boundaries, the PLL remains in the field trains. Each motor sergeant or contact team has a numerical PLL listing. If someone needs a part they merely contact the trains and ask for that part number. In addition, each tank company contact carries a few essential parts from their PLL for immediate repairs. Thus, the commander can expect to have his vehicle's minor repairs promptly fixed and still have access to a complete PLL section for parts.

The seventh section of the maintenance platoon is the recovery section. In a tank battalion, this section is composed of two 5-ton wreckers, a welding section, a GOER wrecker and three *M88A1*s with crews. In garrison, the section maintains their vehicles and provides support to the service section. Under the direction of the team NCOIC, the section trains and works as a team, especially in the area of combat recovery operations. In the field, the section can be tasked to augment whatever section needs additional assistance. Normally, the GOER wrecker, welding crew and 5-ton wreckers remain in the field trains under the control of the BMS for 'on call' missions. Two of the section's *M88A1*s maneuver with the BMO and the other with the BMT in the combat trains or along predesignated maintenance routes. It is this recovery section that provides the versatile recovery support essential for a highly mobile battalion.

The service section is the largest in the platoon and is responsible to the BMT for quality control and productivity. The wheel section performs the HHC wheel services and daily operational support. The track section handles Q_2 and Q_4 track services along with the HHC track organizational support. The turret and communications sections are responsible for their portions of the services and prepare equipment for direct support assistance. The generator shop maintains all of the battalion's generators and special equipment. All of this equipment is signed out and dispatched through the section NCOIC. In the field, the service section NCOIC is second in command to the BMS and organizes his sections into small contact teams and a security force for the field trains. The track section complements the recovery crews and can act as a reserve to bulk up depleted contact teams. Otherwise, they remain 'on call' to maintenance collection points at the discretion of the BMO or BMT.

In the field, the BMO controls the maintenance situation forward of the combat trains. He monitors the battle and deploys the maintenance assets as necessary. His contact teams maintain a minimum of combat-essential PLL to fix as far foward as possible. Depending upon the combat situation, if a vehicle cannot be repaired in a specified time, the BMO is notified and he decides whether or not to evacuate it to a maintenance collection point. On recovery operations, the team leader must recover only what is immediately recoverable so that he can keep up with his parent company. The BMO has a recovery team to help evacuate and recover vehicles and will do so as the situation allows. Repairable vehicles are evacuated to predesignated MCPs. Under the direction of the BMT, smaller contact teams from the service section repair or cannibalize to restore the maximum number of vehicles to operation. If the situation allows, damaged vehicles are further evacuated to the field trains for further repair under the direction of the BMS and direct support. Finally, all three members of the headquarters section must maintain an accurate vehicle status for commander's SITREPS and for logistical reports to the S4.

There are certainly other versions of what the Division 86 maintenance platoon is supposed to be. This is merely an example of what works well and gives some of the answers to questions regarding transition and mission.



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Battle Stress: Are We Prepared?

by Captain Robert L. Maginnis

"The ultimate limiting factor for the maintenance and endurance of organized and competent forces on the battlefield is man." [1]

The environment of combat creates a situation in which each man knows that at any moment he may be killed, a fact kept at the center of his attention by the sight of dead and wounded buddies. Each moment of combat thus adds to the accumulating stress that can become so great that almost any man will eventually break psychologically as the intensity and duration of exposure to combat continues. The conclusion is clear: battle stress casualties are as inevitable as gunshot and shell fragment wounds in warfare.[2]

Battle stress has many symptoms: severe tremors, shaking, muteness, hallucinations, uncontrollable crying, hysterical (psychological) blindness, stupor and uncontrollable panic. These symptoms can be exacerbated by alcohol or drug reactions, pre-existing psychotic disorders, or be the result of injuries or wounds. The results are obvious and the victim becomes a liability to his unit.

The Army's Field Manual 26-2, *"Management of Stress in Army Operations,"* delineates seven sources of battle stress:[3]

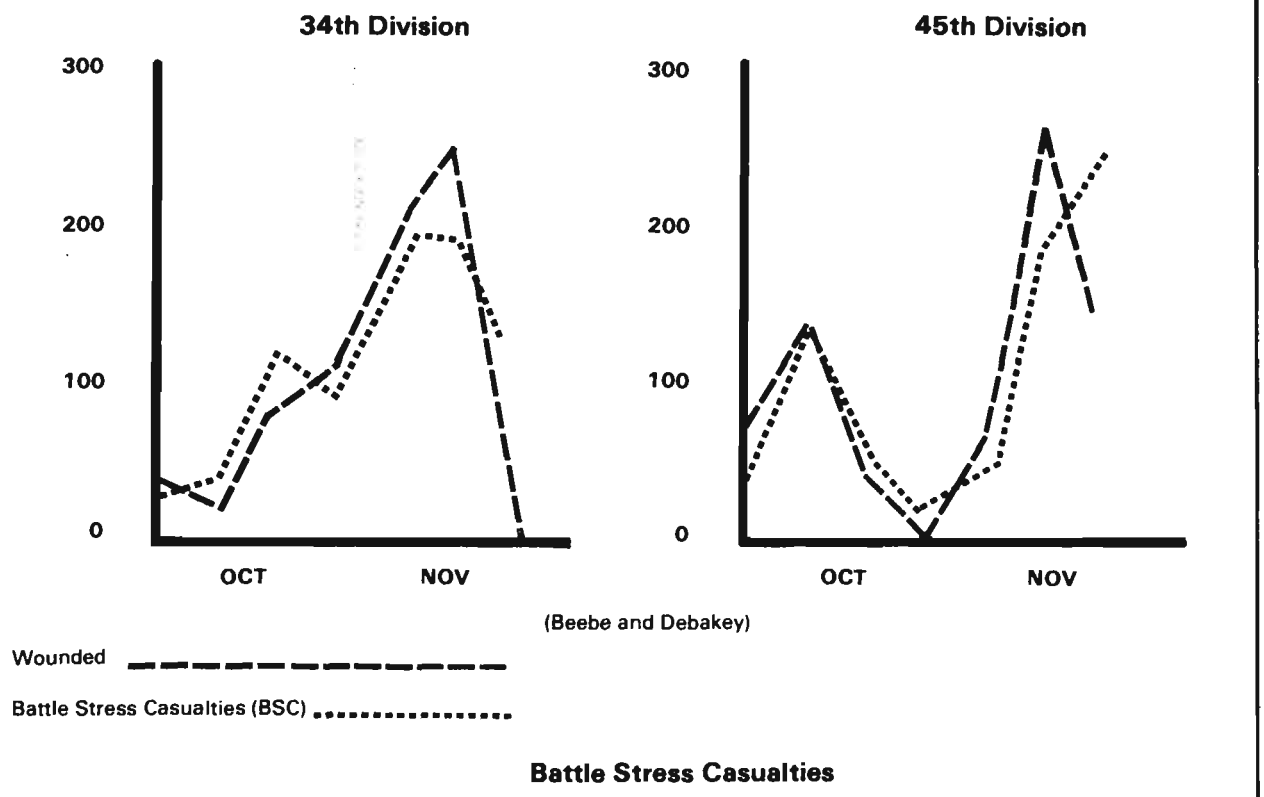
- Fatigue (fighting without sleep and rest).
- Mental stress (the need to be alert, evaluate situations, and make decisions in too little time).
- Low light levels (cause stress when more light is needed for performance).
- Battlefield demands (for example, operating in an NBC environment).
- Isolation.
- Adverse conditions.
- Day/night rhythm interruption.

There may well be other ingredients to the battle stress equation. More research is necessary to identify these factors. The issue here is that battle stress is debilitating and the commander or leader cannot afford to neglect its impact.

Battle Stress and Past Wars

History provides ample accounts of gallant actions by soldiers in combat. Their successes should be lauded, but the human costs which precipitated these successes are not always captured by the historian. Too often the spectacular results hide the costs in casualties to the troops involved.

One seldom noted example of the hidden costs associated with victory occurred in September-November, 1944, during the Battle of Metz. In addition to its considerable losses in killed and wounded, the 5th Infantry Division experienced approximately 1,000 battle stress casualties (BSC). Fully 92 percent of these were members of the division's three infantry regiments. (This amounted to approximately one BSC for every nine of the nearly 9,000 infantrymen.) One account of the battle indicates that the infantry soldier, constantly exposed to combat, ran a significantly higher risk of becoming a BSC than his peer in the



Battle Stress Casualties

Figure 1.

combat support or combat service support units.[4]

This experience suggests that battle stress is directly related to battle intensity. Evidence from another WW II battle also indicates that increases in BSC rates are directly related to combat intensity. In particular, the 6th Marine Division's battle on Okinawa, 12 - 21 May 1945, attests to this relationship. During the battle, the Marines suffered 1,289 BSC. (The 1,289 BSC as a percent of the 2,662 WIA is 48.4%.)[5]

Figure 1 displays the relationship between BSC and the density of WIA for the 34th and 45th Divisions during the Italian Campaign in the fall of 1943 and further supports the suggested correlation between BSC and battlefield intensity.[6] During this period, the divisions were part of the VI Corps, 5th U.S. Army, participating in a sustained attack. The early October action was moderate and the late November action consisted of diversionary attacks as the 5th Army prepared to resume the offensive in early December.[7] Figure 1 implies that the number of WIA increases in proportion to battle intensity. Correspondingly, battle stress casualties follow the WIA rate.

The impact of psychiatric casualties is not intuitively obvious from a cursory study of the total U.S. casualties in WW II. What the figures do not show is that the primary impact was at the level of the line company, battalion and regiment; units in direct combat. The overall rate for the Army during WW II was 101 per thousand BSC per annum. Interestingly, line regiments often suffered BSC rates as high as 1,600 per 1,000 per annum during the heavy engagements. (This statistic includes an unspecified number of multiple recurrences.)[8]

Army Field Manual 26-2 indicates that overall U.S. Army stress casualties appeared at a relatively constant ratio of one stress casualty to between four and five WIA during WW II and Korea.[9] Unfortunately, the manual presents this information in such a sanitized form that little inference can be drawn regarding the BSC relationship to battle intensity and duration.

The examples of the impact of BSC in past wars are not alarming. We managed to cope. However, the current danger for Army planners (considering our announced doctrine) is the tendency to disregard stress casualties as an acceptable and treatable product of the next war. The risk here is that Army planners might come to this conclusion after reflecting upon personal experiences gleaned from the war in Vietnam.

Vietnam is not a good battle stress model. Lest we forget, the Vietnam battle environment, according to Lieutenant Colonel Brian H. Chermol, USA, in his July 1983 *Military Review* article entitled "Psychiatric Casualties in Combat" noted these characteristics:[10]

- Low WIA and KIA.
- A policy of restricted combat tours of 12 months.
- Available rest and recuperation opportunities.
- Excellent support and supply systems.
- Allied air superiority.
- Low lethality and intensity of battle.
- Brevity of most combat operations.
- Rapid and dependable medical evacuation systems.
- Mostly light infantry operations.

These factors contributed to reducing the stress, fear, and fatigue commonly associated with previous wars. Fortunately, our Vietnam experience did not parallel the commonplace WW II experience of units such as the 4th Armored Division, which in September 1944 suffered 355 BSC.[11] Those

At right, battle stress statistics compiled by the Israeli Defence Force based on the experience of four battalions in the 1982 Lebanon fighting. Short, intense actions cause casualties to rise, the study concluded.

BN	KIA/WIA	BSC	BSC as % of WIA/KIA	BSC as % of Total Casualties
1	36	31	86%	46%
2	23	3	39%	28%
3	10	1	10%	10%
4	12	0	0%	0%

Note: Bns are ranked from highest to lowest in terms of battle intensity.

Figure 2.

Battle Stress Casualties

losses were attributed to the lack of many of the above-mentioned factors.

In summary, the intent here has been to present several combat examples and the impact of battle stress. Several logical questions follow this discussion:

- Should the U.S. Army base stress abatement policies upon the recent Vietnam experience?
- Are WW II experiences still valid?
- What about the Israeli experiences in 1973 and 1982? Do they apply to a future NATO/Warsaw Pact war? Just what is a valid reference point?

The Israeli Experience

The IDF has concluded that as conflicts become shorter, more intense and more fluid, the numbers of battle stress casualties emerge more rapidly.

A case in point is the Yom Kippur War of 1973. The war lasted four weeks. Initially the fighting continued 24 hours a day. The revolution in warfare quickly became apparent: the war was very mobile and fluid. Closely coordinated multi-sourced firepower was constantly employed and casualties grew in proportion to the battle intensity.

The end result in terms of BSC reveals an interesting story. The IDF experienced 30:100 ratio of BSC to non-fatal casualties. Their highest stress losses occurred during the Suez crossing when artillery and rocket fire was most intense.[12]

The IDF experience in Lebanon during June-December 1982 resulted in 600 BSC, or a 23:100 ratio of psychological casualties to WIA.[13] However, the limited nature of this conflict does not present an accurate account of the battle stress impact.

An IDF study of four battalions during the Lebanese war better illustrates the seriousness of battle stress. The IDF ranked the four separate battles in which these battalions were engaged in terms of battle intensity. The intensity judgements were based upon expert ratings concerning preparation (enemy location, mission, false alarms); battle (field artillery, air attack, ambush and minefields); support (tactical, logistical and material); enemy resistance (strong, adequate, weak); trust by the commander in his higher command (unjustified pressure, some pressure, adequate support).

These casualties seem to support the case for correlating battlefield intensity with increased BSC rates. This certainly reinforces the evidence from the 6th Marine Division's Okinawa experience.

The IDF also found (as a result of their past wars) that reservists tend to be more vulnerable to battle stress than active duty soldiers, and support units more than combat troops.

The results of the Israeli combat experiences are clear:

- Modern warfare will be continuous.
- Modern weapons are more lethal.
- Casualty rates increase with intensity.
- Battle stress is a serious problem.

Doctrinal Implications

If, based upon the IDF's recent experience and a few past American experiences, we accept that stress is a serious problem and will play a significant role in any future war, then we ought to look at the issue of how we anticipate fighting, surviving and winning on the future battlefield.

Army FM 100-5, *"Operations,"* portrays the Warsaw Pact (WP) doctrine as characterized by rapid advance, deep penetration, relentless attacks and bypassing strong points.[15] Army studies show that the WP forces outnumber NATO forces five-to-one in armor, four-to-one in artillery and three-to-one in combat aircraft. Couple this with a perceived WP willingness to use large and available inventories of chemical and nuclear munitions and we justifiably foresee a formidable foe for any future European scenario.

FM 100-5 describes this future battlefield in terms of: non-linear maneuver battles, lethal systems and instant intelligence. The battle will include the use of chemical and nuclear weapons to alter the balance of power and increase the tempo. Electronic countermeasures will segment and confuse our forces, requiring subordinate commanders to take the initiative. The air war will be in depth and rear areas will be threatened with airmobile and airborne forces and long range fires.[16] Put together with Soviet doctrine we can anticipate something coined as continuous operations. This is a new concept of "modern warfare that is made possible by the almost complete mechanization of land combat forces and by the technology that enables effective movement and combat at night, in poor weather and under low visibility conditions."[17]

A war between NATO and the WP translated into human factors means: high lethality, high disability, high stress, significant casualties in the rear areas, severe sleep deprivation, low light levels and operations during normal sleeping hours.[18] According to FM 26-2, this translates into a ratio of at least one BSC for every three WIA.

(This article will not provide a parallel projection concerning the possible impact of battle stress on WP armies. This deletion should not be interpreted to mean that the impact will be unilateral. We expect the WP to sustain significant BSC as a result of their execution of a doctrine of deep penetration,

sustained attacks and massive use of extremely-lethal systems. The impact of battle stress on WP forces should not, however, be as debilitating due to their shorter support lines and significant reinforcement capability. We might also note the presence of a political officer in each unit. This individual is armed with psychological tools of persuasion without parallel in our force and has the potential to remedy stress-producing situations.)

An Approach to Battle Stress

Reconstitution programs typically contain three categories of measures: dissipatory, compensatory and anticipatory. Dissipatory measures are the traditional means of addressing the impact of stress for combatants: provide creature comforts, religious services, provide sufficient and effective fire support, and rotate units out of the front for periods of rest.[19] Compensatory measures are designed to reduce stress associated with intense exposure to the rigors of combat during the battle: simplication of equipment, time limits in the war zone, rest and recuperation, ready availability of medical treatment.[20] Anticipatory measures are used to reduce battle stress casualties by proper actions taken before the battle: physical and psychological conditions, selection of leaders who are best suited for each role, unit *esprit de corps,* discipline, education and skills for coping with stress.[21]

If we plan for a high-intensity short-duration war in Europe, then Army reconstitution measures (dissipatory and compensatory) will be too late or prohibitively expensive and will have a negligible impact on abating stress on a future battlefield. It would thus appear that future war in Europe will place the primary burden for coping with the problem of combat-induced stress on the respective battlefield commanders and their staff rather than any one program of reconstitution.[22] The interim solution seems to be in terms of anticipatory measures.

At present, Army leaders are not equipped with the training and experience to manage the levels of stress anticipated. Two alternative actions appear to address this deficiency: One is to provide sufficient training to all Army leaders to enable them to understand stress, its impact, and how to cope with and treat organizational and individual victims. Another is to assign specially trained personnel to each unit likely to be affected.

A precedent for the utility of leader training as a stress abatement function is provided by the IDF. After the 1973 Arab-Israeli War, the IDF conducted scientific appraisals of morale, leadership, unit cohesion, and their relationship to combat effectiveness. It concluded that pre-combat unit morale and readiness are highly correlated with:[23]

- Trust in the unit commander.
- Unit functioning during combat.
- Unit morale in combat.
- Self-appraisal as a soldier.

The "key" to unit morale seems to be the effectiveness of the unit commander in projecting himself and preparing his unit. The IDF submits that units with high trust in the commander also had high morale which together sustained the unit as it went into combat.

The IDF defines trust in the commander in terms of competence. Trust was earned by[24] belief in the professional competence of the commander, belief in the credibility of the commander, and the soldier's perception of how caring the commander is.

The study also indicated the commander's professional competency becomes the primary ingredient of trust in combat. The IDF defines professional competence in terms of what the

commander does in combat. His critical combat behaviors are redefined in terms of specific measurable competencies. Those competencies are: assertiveness, decisiveness, ability to delegate, ability to develop subordinates, self-confidence, influence, judgment, ability to plan and organize, positive expectations, willingness to take initiative, ability to develop teamwork, technical proficiency, tolerance for stress and effective use of resources.

These competencies were instrumental in creating the perception of professional competence. Soldier perception, according to the IDF, correlates most highly with combat effectiveness. This list looks suspiciously like a competency-based model for a company-level commander.[25]

This discussion is especially relevant because BSC are statistically less prevalent in units with high morale. Commanders (leaders) who have the critical competencies and content expertise play the key role in the process of unit effectiveness, and thus stress abatement.

The second alternative action is to provide a staff member (to each battalion) who has sufficient training and experience to assist and train the commander and his subordinate leaders. This key officer would act as an organizational psychologist. His patient is the unit and its members. His job would be to train all leaders in accordance with the intent of the first alternative. Additionally, he would act as an advisor to the commander to help with decisions concerning movement and placement of units and the retention or replacement of leaders.

(This could be a special course for prospective executive officers. A seventeen-week specialized course for prospective XOs would cost in OMA and MPA dollars approximately $1,542,000 annually. The estimate is based upon a course similar in resource requirements to the Armor Officer Advanced Course. The estimate also includes the addition of 17 personnel to an existing staff.)[26]

The importance of a person trained to identify the stress symptoms and the impact of stress is critical to unit effectiveness. A case in point was the Cuban Missile Crisis. Recently declassified materials indicate that if President Kennedy had gone with his first inclination, as he was advised, a serious situation might have been resolved in a very different manner. (The initial advice was to bomb Cuban missile sites.) Presidents, generals and field commanders must be perpared to face important (time sensitive) decision situations permeated with stress. They require the ability to make sound decisions despite the impairing consequences of stress. The proposed XO would be on hand to help the commander consider his decision in terms of the pressures.

Personnel policies and the nature of the conflict helped keep battle stress casualties relatively low during most of the Vietnam fighting. But the stress of combat clearly shows in the picture above.

This officer would also conduct and supervise the periodic training and checks required for sustainment of the stress abatement program. Using a "stress test", he might provide subordinate leaders and his boss with accurate measures of how they are doing. Even more important, how are they preparing the unit for combat?

Preparing the Army to Cope

Army preparations should include the ongoing dissipatory and compensatory programs as well as increased emphasis on anticipatory measures. Specifically, the Army should realize the best return for the tax dollar from a three way investment in stress abatement training. The IDF's study (in the previous section) suggests that properly trained units are more effective in combat and suffer fewer BSC. The recommended programs complement an ongoing effective unit combat training effort:

Leadership development: There are sets of leader competencies (skills, traits, characteristics) which discriminate between the outstanding and average combat leader. The identification and subsequent training of these competencies will significantly enhance Army combat leader effectiveness. (The scope of this article precludes a full discussion of available competency-based models, their origin and deve-

lopment.)[27]

Leader Evaluation: If we are to focus the leadership community on the reinforcement of combat correlated leader competencies, we must tie this effort to an ongoing evaluation process. The first step is the alteration of current personnel evaluation instruments. The alterations will permit specific competency oriented (by role) evaluations.

Stress Management in Army Units: Army leaders should participate in practical exercises which improve their ability to manage levels of stress. Leaders need to view stress in terms of a unit program rather than unrelated individual problems. Some of the skills should include psychological preparation for combat, the relationship of "proper" physical conditioning to stress coping, the costs and benefits of rest and relaxation in combat and how to make this happen. Leaders should learn how to reintegrate treated and returned BSC, how to implement a buddy system in a unit, how to insure proper lateral and vertical communication to quench rumors and bolster stress abatement efforts, how to analyze leadership effectiveness prior to and during combat, how to gauge unit morale, confidence and will to fight prior to combat and what to do if problems surface. They must know how to ensure cohesion in a turbulent environment. What should leaders do at different organizational levels? A number of cohesion models are currently available. One of the most recent was developed by CPT (P) Dan Braun.[28]

Conclusion

The Army recently published material concerning the frequently overlooked subject of battle stress. The material provides a starting point for a major effort to focus attention on how best to reduce the possible catastrophic impact battle stress could have on American units in a future high intensity war.

If we accept the supposition that a future high intensity war has no reference point in our past, then the battle stress problem takes on a disturbing dimension. (Even recent Israeli combat experiences provide only a few clues concerning the probable impact of battle stress on unit effectiveness.) What, then, should be our reference point for stress abatement plans? Should we choose a combination of dissipatory (creature comforts, rotation of units out of the front), compensatory (simplification of equipment, ready availability of medical treatment), and anticipatory (physical and psychological conditioning, education, leader selection) measures? Where do we invest our limited resources to best prepare units to cope with the psychologically debilitating stress associated with the future battlefield?

This article makes a case for a balanced stress abatement program of dissipatory, compensatory and anticipatory measures. The demonstrated high payoff potential of anticipatory measures received special emphasis. Specifically, the article suggests that competency-based leader training can make the difference as we prepare for the high-intensity battlefield. Leaders trained in critical combat competencies, coupled with stress-abating skills, can significantly reduce the impact of battle stress on unit effectiveness. This relatively inexpensive alternative emphasizes the human multiplier which is frequently neglected by military analysts. The analyst projects the confrontation of forces and extrapolates outcomes without incorporating a basic qualifying ingredient, leader effectiveness and unit morale.

The Israelis label unit morale and leader effectiveness as their "secret weapon." Israeli combat experiences indicate that units with this "secret weapon" experience fewer BSC and are generally more combat effective. For this reason (and others) it is recommended that U.S. funds earmarked for stress abatement programs be invested in programs which train leaders and their units to cope with significant levels of stress. This investment will ultimately pay dividends in terms of unit effectiveness and fewer BSC. This translates into an investment in America's own "secret weapon" — the American soldier.

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A Rededication to Values

The Army is doing well. The quality of soldiers, NCOs and officers has never been higher. Ninety percent of our recruits are high school graduates. Discipline continues to improve. People-oriented initiatives are under way to foster cohesion at unit level, to enhance *esprit* and morale, and to improve the quality of life for families. New tanks, infantry fighting vehicles, and helicopters are entering the Army. At the same time, training has become more challenging and demanding. Units have responded superbly, proving their professional competence in Grenada, in the Canadian Cup tank gunnery competition, along freedom's frontiers around the world, and during exercises in Egypt, Europe, Central America, and Korea.

At a time when we are all blessed with so much opportunity and challenge, I believe we should rededicate ourselves to the fundamentals responsible for the Army's success — the core values that have served our institution and our nation so well. Let me explain.

The significance of these values was brought home to me a few weeks ago when I witnessed the moving ceremonies at Normandy commemorating the 40th anniversary of D-Day. On Utah Beach the sand was clean as far as the eye could see. As the tide rushed out to expose more and more of the beach, the phrase "time and tide wait for no man" had special meaning. With time, the sea had swept the beach clean of the ravages of war. In a similar way, the time and tide of human life are blessings because they wash away the grief and difficulties of life. But time and tide can also obscure the bitter lessons of the past, and condemn us to repeat our earlier mistakes if we do not learn from them. Time and tide can wash away personal opportunities to expand our horizons and cause us to compromise our personal as well as professional values, thereby eroding our ethical moorings. We need to guard against this.

The ceremonies at Normandy remind us of the sacrifices made 40 years ago. Those sacrifices, made by the soldiers of an earlier generation, underscore the moral and ethical roots of Army service. Our profession involves deep ethical values because we are dealing with matters of life and death — for ourselves, for those who serve shoulder-to-shoulder with us, for our nation, for our families, and for adversaries and noncombatants.

As in the past, our service must rest upon a solid ethical base, because those who discharge such moral responsibilities must uphold and abide by the highest standards of behavior. That ethical base is the cornerstone of our Army because it governs the faith that our subordinates have in our relationship, because it governs the support and resources that our citizens are willing to entrust to our stewardship, and ultimately because it governs our human capacity to prevail on the battlefield.

In times of danger, it is the ethical element of leadership which will bond our units together and enable them to withstand the stresses of combat. This is an irrefutable lesson of history. The same ethical element ensures that in times of national emergency, our country will have confidence in its military leaders. There must be no doubt about the fundamental importance of Army ethics to our nation and to our institution.

Several years ago we codified the Army ethic in FM 100-1, *The Army*, setting forth those values and principles which govern our behavior both as a group and as individuals. We identified four fundamental and enduring values to which the Army holds: *loyalty to the institution* —which implies recognition that the Army exists solely to serve and defend the nation; *loyalty to the unit* — which acknowledges a two-way obligation between those who lead and those who are led; *personal responsibility* —which connotes the obligation of all individuals to accomplish their assigned tasks to the fullest of their abilities and to abide by all commitments; and *selfless service* —which requires each of us to submerge emotions of self-gain in favor of the larger goals of mission accomplishment and welfare of the unit.

The Army ethic does not displace but rather builds on those soldierly qualities which have come to be recognized as absolutely essential to success on the battlefield. FM 100-1 highlights *four soldierly qualities: commitment* — to some purpose larger than oneself; *competence* — in both an individual sense and as a team member; *candor* — in our dealings with

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PS Form 3526, Mar. 1977 *(Page 1)* (See instructions on reverse)

one another; and *courage* — the essential ingredient for dominating fear and the enemy.

This is the Army ethic, and these are the soldierly qualities which all soldiers should strive to emulate in their personal and professional lives. The intent of these formulations is not to slight other ethical values such as trustworthiness, honesty, dedication, self-sacrifice, and truthfulness. Indeed, the Army ethic and the four soldierly qualities encompass these other values associated with character and honor. Rather the intent is to establish a foundation which represents the bedrock values of military service in the professional sense. Because they help clarify how we differ from the broader society which we serve, they serve as a point of departure for the professional development of our soldiers and leaders to ensure our continued honorable service to the nation.

For example, the Army ethic has helped us make heartening progress in standardizing our ethics and values instruction at all levels of professional military education. It is reassuring to see the emphasis given in the "schoolhouse" to ethics. This is essential.

But unlike soldierly skills, ethics and values are more "caught" than "taught." They are "caught" by young soldiers from their leaders and their peers, from the ethical climate that exists in their squads, platoons, and companies. They are "caught" by West Point and ROTC cadets and OCS candidates. They are "caught" by children in families where moral values are lived day in and day out. Schoolroom discussion can never take the place of practical example. That is why I place so much emphasis on leader's teaching by personal examples of excellence and caring counsel of subordinates. It is the most important legacy we leave.

Therefore, *the establishment of an ethical climate in units*, the examples set by leaders, and the enforcement of ethics by peer pressure, are essential in an Army of excellence. Our program of instruction in ethics should enable us to know what is right and to equip us to choose right over wrong. Then we must ensure that what we do is right. None of this has ever been easy.

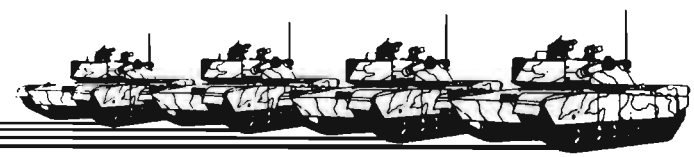
Ethical decisions almost always involve tough choices. They are not merely cases of mechanical application of academic principles. They frequently invoke difficult dilemmas of conscience and strong feelings. All soldiers, for example, must resolve for themselves the conflict between legitimate ambition and excessive concern for self-advancement. We, as part of our institution, must collectively achieve a balance between unswerving loyalty to our institution and healthy internal criticism. These are difficult issues, but the Army ethic provides us with a framework that allows us to come to grips with them. We must learn "to choose the harder right instead of the easier wrong and never to be content with the half truth when the whole can be won."

Our goal as an institution should be to maintain and improve the ethical climate in which we operate. Some examples of what we must do come readily to mind. We must eliminate the mindset that produces such directives as "I don't care how you do it, just do it." Such an approach is the opposite of that for which we must strive. We must continue to insist on honesty and integrity in reporting. We need to eliminate these systems which seem to drive young officers and NCOs, in particular, to expedient solutions of a questionable ethical nature. *We have to get away from the zero-defect mindset.* We must be willing to admit errors and to tolerate honest mistakes in the training environment. We must encourage professional self-criticism and analysis in our journals, in our schools, and in our units. Above all, we must never forget, in the rush of day-to-day activities, that our profession deals with the most profound moral issues, and that the strength of character, in our personal and professional lives, which we and our country seek in time of war, must be fostered in times of peace.

A man of character in peace is a man of courage in war. As Aristotle taught — character is a habit, the daily choice of right over wrong. It is a moral quality which grows to maturity in peace and is not magically developed on the battlefield. Rededicating ourselves to the Army ethic and to the professional soldierly qualities can help us to maintain an Army of excellence. Only in this way can we be prepared for the ultimate challenge that somewhere, sometime, the success or failure of national policy may rest in the hands of soldiers of character, activated by principles of honor.

I expect every leader in our Army of excellence to understand the intent of this article and to abide by it in his or her personal as well as professional life.

JOHN A. WICKHAM, JR.,
General, USA
Chief of Staff



Combined Arms — Lessons Learned

During a recent field problem in West Germany, my platoon and I were afforded the opportunity to train with a mechanized infantry company.

When I was first told by my commander that my platoon had been chosen to supply armor support to the infantry, I was somewhat apprehensive. Granted, I was anxious to expose my platoon to some hands-on combined-arms training; however, rumor had it that the mechanized infantry was not very well versed in armor doctrine and tactics, let alone the logistical needs of tankers and their equipment.

The infantry company commander quickly allayed the bulk of my fears when he assured me that I would not be required to compromise my platoon integrity.

We coordinated Classes I, III, V, CEOI data, compared overlays, and went over the day's activities. We then mounted up and set out for our objective. Our first mission was to act as an aggressor force in the attack.

My platoon and I soon experienced, first hand, what it was like to maneuver with personnel carriers that were capable of greater speeds, that had greater maneuverability and could climb greater inclines than our *M60A3s*. Initially, the infantry displayed a desire to travel terrain that provided excellent concealment for personnel carriers, but would silhouette the higher profile of the *M60A3*. This fact is just one of the many reasons why it is imperative that the armor platoon leader

accompany the infantry commander on a leader's reconnaissance. This will ensure the armor support being provided can handle and exploit the terrain to its maximum potential.

Due to the size, firepower, and shock effect of tanks, many infantrymen naturally assume that armor units are more or less impervious to destruction. It is essential that these soldiers are trained in their ability to protect tanks in densely wooded as well as urban areas. Further, the mechanized infantry is better suited to patrol and reconnoiter rough terrain, as well as clear obstacles and/or minefields.

When addressing the varying ranges of infantry guided missile elements versus attached tanks, care must be taken when integrating platoon/company fires. Platoon leaders must ensure that tank-killing teams are tied in with armor firepower.

When traveling over open terrain, tanks are usually best suited to lead. The reverse is true in heavily wooded areas which must first be cleared by the infantry before maneuvering tanks through.

As a rule, armor support travels with the mechanized team during deployment. However, good cover and concealment is essential, as well as the necessity for the armor support to remain detached from the most forward units.

One subject that often sends chills up the spines of armor people is the thought of dismounted infantrymen operating near or around tanks. Should this situation arise, whereby the infantry elects to dismount, armor personnel must be notified at once of the presence of these dismounted troops. This information is especially necessary during times of dense fog, at night, or when screen smoke is used.

An armor platoon leader's primary duty, when attached to the infantry, is to brief the gaining commander and his staff on the assets he is receiving. In the eyes of the infantry commander, screening smoke, antipersonnel fire, night vision capabilities and laser ranging often take a back seat to the shock effect and tank-killing abilities of the tank's main gun.

During the conduct of assembly area procedures, it is imperative that the tanks are tied in with the personnel carriers via hot loop.

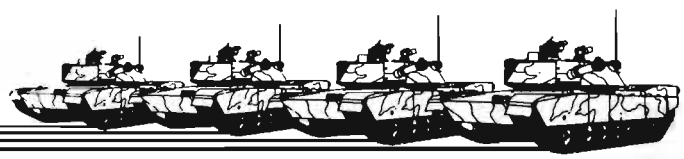
Tank 'down time' affords the armor platoon leader the chance to brief his personnel on the day's activities, mounted infantry tactics, and to acquaint infantry personnel with the tank's weapon systems.

A point of very great importance is the necessity to always emphasize the necessity to integrate and coordinate all available resources into a concentrated effort to defeat the Threat. All personnel must fully realize that they are now members of a combined-arms team, not separate units, but that they are a homogeneous force whose sole mission is to meet with and destroy the enemy.

The lessons learned from this experience demonstrate the need for combat arms personnel to regularly train and interact together.

The education of armor and mechanized infantry personnel in their joint capabilities, strengths and weaknesses is the key to final success in combined-arms success on the battlefield.

JOSEPH G. JARRETT
Second Lieutenant, Armor
CO A, 2/37 Armor



Attack Helicopters in Pursuit

"The great diminution which has thus befallen the cavalry with regard to their value in battle, makes it necessary to shift their standard of importance, and to regard it with reference to the pursuit. . ."

Letters on Cavalry,
Prince Kraft Zu Hohenlohe, Ingelfingen, 1892

Prince Ingelfingen couldn't foresee the advent of battle tanks, *TOW* missiles, or attack helicopters as cavalry weapons. He did, however, realize that as mobility and lethality increased on battlefields, tactics capitalizing on cavalry's mobility advantage would allow outnumbered but aggressive forces to win.

Pursuit, the tactician's final move on the offensive chessboard, gives maneuver commanders opportunities to use attack helicopter units in decisive concert with ground forces to destroy the enemy force. Our advantage is the organization and employment of our attack helicopter force.

Ideally suited as an armor-killing building block, the attack helicopter's mobility, flexibility, and firepower give the encircling force a dimensional lethality unavailable to other armies. Since opportunity for pursuit operations will occur when friendly units are fatigued, low on supplies, and possibly weakened by casualties, a look at how to organize the attack helicopter unit for pursuit operations will aid maneuver commanders and staffs in best utilizing these organizations.

Pursuit differs from exploitation in that pursuit keys less on terrain and support objectives, but has the destruction of the enemy as its focus.

When the enemy has trouble maintaining his continuity, conditions are ripe for exploitation and pursuit. Indications of the enemy weakening are a decrease in enemy resistance, an increase in the number of enemy POWs, and the overrunning of enemy rear areas, such as artillery positions, supply dumps, and support units.

The mobility advantage enjoyed by attack helicopter units will be critical at this point. Because pursuit allows greater risks than other types of offensive operations, decentralized command and control is required. Using a Division 86 type Cavalry Brigade Air Attack (CBAA) organization, the encircling force could be organized around an attack helicopter battalion, air cavalry troop, and airmobile infantry company (if available).

The attack helicopter battalion (AHB) provides the nucleus. The AHB commander serves as task force commander for the encircling force. He and his staff are updated on the current situation by the CBAA staff and, in this case, by the armor brigade preparing to conduct the pursuit. The armor brigade commander will be organizing his direct pressure force from units already in contact with the enemy.

The direct pressure force will keep the enemy on the run

and deny him the chance to regroup. It is likely that air cav assets will be already in action with the armor brigade, protecting its flanks and helping it maintain contact with the enemy.

An air cav troop will be attached to the AHB as part of the encircling force. The troop will have the mission of finding the enemy force's flanks, identifying attack positions for the AHB and performing reconnaissance prior to the AHB moving to outflank the enemy. The AHB commander must give clear orders to the air cav troop so its aeroscouts don't duplicate the work of the attack helicopter companies' aeroscouts.

An airmobile infantry company, if available, would be lifted by the CBAA's air assault assets and would be augmented by a Stinger ADA team for protection of the encircling force. The airmobile infantry company would seize key terrain blocking the enemy's escape route and establish anti-armor ambushes, avoiding decisive engagement. The AHB commander, as task force commander, will have to ensure lift assets are ready to extract the infantry company as the situation changes.

Organized as described, the encircling force can adhere to doctrine regarding pursuits requiring encircling forces to be at least as mobile as the enemy. With the AHB as the main destruction force, the pursuit operation will be able to outdistance and outflank the enemy at several places. Opportunities for classic double envelopments will be many, provided the encircling force fights as a combined arms team.

The AHB will stay informed on the progress of the direct pressure force at all times. Using field artillery to seal off enemy escape routes and engaging targets of opportunity, the encircling force can prevent the enemy from successful breakout.

The circumstances that contribute to successful attack helicopter employment will be present during pursuit operations. The enemy force will probably have most of its heavy ADA assets knocked out or crippled. This will allow for greater mobility from all aviation units. The enemy will also be on the run and in contact with friendly armor forces. These conditions are ideal for attack helicopter units to speed into flanking positions and bring their full complement of lethal weapons to bear on the enemy.

In our scenario, the armor brigade has hastily organized its task forces as a direct pressure force. The brigade's supporting field artillery unit has been attached for the pursuit. Engineers are well forward to help clear any obstacles the enemy leaves behind. Logistics are important in pursuit operations so the brigade commander directs resupply of ammo and fuel prior to continuing his attack.

The AHB organized as a task force under the operational control of the brigade sends its air cav troop forward to locate the flanks of the withdrawing enemy units and to recon an axis of advance for the attack helicopter companies now waiting in holding areas well forward. The airmobile infantry company with its assault aircraft is standing by for immediate action upon the TF commander's finding a suitable blocking position.

Elements of the air cav troop locate the enemy's flanks and use field artillery to engage him before he can organize an adequate defense ahead of the direct pressure force. A section from the troop selects attack positions for the first attack helicopter company now leaving its holding area. The attack unit's aeroscouts accept hand-off from the air cav aeroscouts who return to a screen along the AHB's axis of advance.

Based on the air cav's earlier reports, the AHB commander decides to assign the airmobile infantry company the mission of establishing an anti-armor ambush at a key road junction. Armed with Dragons and ADA protection from the Stinger section the company positions itself to maximize the effect of terrain on the approaching enemy already being hit by repeated firing of TOWs from the attack helicopter company. The attack unit's aeroscouts provide local security for the infantry company and its attack helicopters.

As the enemy force disintegrates under fire from artillery, attack helicopters, and the infantry's anti-armor weapons, the AHB commander extracts the infantry and phases in another attack helicopter unit to engage the retreating enemy from a different direction. The direct pressure force now joins the battle and hits the enemy with its available fires.

The challenge for maneuver commanders is to train with attack helicopter units for combined arms operations. The synchronization required for successful pursuit operations comes from practice as a combined arms team. Attack helicopter units can give the pursuit commander the decisive advantage.

CPT RONALD BUFFKIN
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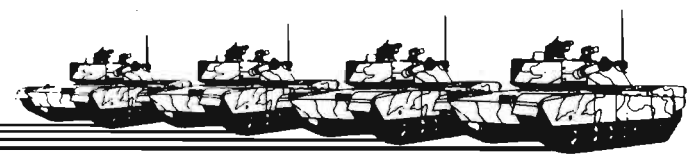


The Automatic Loader Gap

Seven years ago, in the middle of our record live-fire run, I dropped a HEAT round and almost caused our crew not to qualify. I was a new second lieutenant taking the basic course and it was one of those hot, muggy days for which Fort Knox is famous. During the debriefing, I suffered through the NCO's expected comments about the shortcomings of a second lieutenant loader and then asked, "Why doesn't the tank have an automatic loader?"

It seemed a logical question as I had just graduated from engineering school and knew that such a system could be devised. The NCO was quick to point out, however, that if the Army couldn't develop a reliable automatic loading 7.62-mm coax machine gun, how did I think a system could be developed to load the much bigger and more complicated 105-mm main gun?

Since then, a reliable coax machine gun, the *M240*, has been developed and now the question of an automatic loader for the 105-mm main gun must be seriously considered.

The requirement for the development of an automatic loader is clear to anyone with first-hand experience with human loader errors. After a number of battle run debriefings, I have come to realize that the human loader is not totally reliable. The round that slipped from my sweating palm was not an uncommon occurrence. Neither were the times that the human loader loaded the wrong type of

ammunition or failed to ram the round hard enough to close the breech. The Navy came to the same conclusion over 15 years ago and eliminated all humans from the turrets of their 5-inch guns.

Within the turret of the Navy's MK 45 gun mount, a semi-fixed 70-pound round is automatically loaded into the gun's breech under the control of a human operator located below decks. A few lessons may be learned from the Navy's solution to the automatic loading problem. Perhaps the application of similar principles to the Army's 105-mm main gun might be feasible.

The Navy has been automatically loading rounds larger than 120-mm for years. It has been doing so under all types of weather conditions and temperature extremes. While it is true that sand, dust and dirt which assault a ground system are not found in the naval environment, it must be noted that the corrosive effects of salt water can be equally destructive.

The key issues of reliability and maintainability have been encountered and resolved by the Navy's MK 45 gun mount. Remember too, that a Navy ship does not have the luxury of a direct support maintenance facility a few kilometers to the rear. The system must be ready for operation from the time it leaves home port until it returns. The automatic loader on the MK 45 gun mount is just one element of a complicated system which has proven its reliability for over 15 years. The issues of reliability and maintainability should no longer be factors in the Army's development of an autoloader, especially in light of the tremendous gains in combat effectiveness which can be achieved.

The advantages of an automatic loader versus the human loader begin with the physical and mental vulnerabilities of men in combat. Sustained 24-hour operations under extremes of temperature and climate have less of an effect on a machine than a human. This becomes even more significant when one considers the movement to large caliber weapons and probability of multiple engagements. The human loader is now in a situation where he has to move a heavier shell in a more confined space in less time than before. It is doubtful that under NBC conditions and in MOPP gear, that these tasks can be performed for any sustained period at all. Substitution of powered mechanisms for human strength and speed will maintain, if not increase, the rate-of-fire for the system, with the rate-of-fire factor often equating to an improvement in lethality. It becomes clear that the automatic loader is imperative for future battlefield conditions where friendly systems may well be outnumbered 4-to-1.

A further advantage of the automatic loading system is its ability to increase the combat effectiveness of the tank crew. An automatic system allows the incorporation of microprocessor technology for use in on-board ammunition inventory management and in individual round selection. Automatic inventory management allows the crew to continuously monitor the number and type of all rounds in the magazine. With this information, the crew is able to select the optimal choice for engaging the current target.

Substitution of an automatic loader for a human loader not only simplifies the crew's function, but also the task of the vehicle designer. The elimination of the human loader would allow the designer to develop more compact loading mechanisms and procedures, since the relatively large human space and motion requirements of the older system are no longer needed. Consequently, benefits can be achieved through a reduction in turret size, optimization of the space protected by armor, and a reduction in the overall silhouette of the vehicles.

Most advantageous of all these gains is that the autoloader can be compartmentalized in the turret, thereby increasing crew survivability. In the *M1* turret, the area on the left side (currently occupied by the human loader, gun breech, and ready ammunition) can be sealed off from the rest or the crew compartment, thus enhancing crew survivability in several ways.

First, separation of the crew from the ammunition would eliminate the risk of a penetration leading to explosions of ready ammunition in the crew compartment. Currently, not even blow-off panels can assure complete safety for the loader or the crew members who are exposed to the ammunition as it is loaded into the breech.

Secondly, the vulnerability of the crew in the turret could also be reduced by the increased stand-off distance created by an automatic loader on the left side of the turret.

Compartmentalization of the autoloader could increase the survivability of the crew by placing another layer of armor between them and the left side of the turret. This is not an attempt to argue that a penetration would not destroy the autoloader; but better the destruction of a machine than the certain death of a human loader in the same situation.

Another positive result of the compartmentalization of the automatic loader would be to simplify the difficulties met in providing an effective NBC over-pressure system The internal area to be over-pressured would be reduced by more than half that of the current design. Furthermore, if the automatic loader could be built so that the vehicle could be rearmed through the same port which ejects the spent shell casings, it would then become possible to rearm the vehicle in an NBC-contaminated area by support personnel in MOPP suits located outside the vehicle. This would mean that the crew would not have to risk contamination of their compartment, either directly by opening the hatch in order to load the ammunition, or indirectly by the introduction of contaminated ammunition into their personal area. Rearming the vehicle through the ejection port would also eliminate having to manhandle rounds down through the hatch and into awkward storage positions, thereby reducing crew fatigue and possibly reducing total time to upload the vehicle.

The integration of an automatic loader fosters an increase in crew efficiency while reducing the size of the crew. Elimination of the human loader makes that individual available as a replacement elsewhere. A certain number of these men will be needed to support the increased maintenance and logistical demands created by such a new system, but this number will not detract from the benefits of an autoloader.

In addition, the merits of a reasonably-priced autoloader from a dollar-manpower savings standpoint alone (over a 20-year life cycle) should justify its cost. At a time when the Army is mandated by Congress to reduce its total number of soldiers, the introduction of the autoloader provides a potential source of manpower for the total Army force structure.

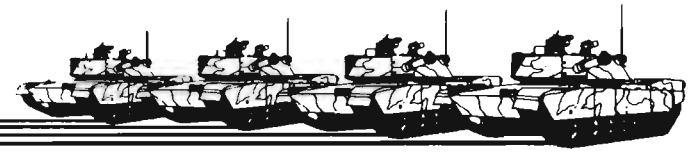
In the design of armored vehicle systems, nothing is gained without a trade-off, and the autoloader is no exception. The most obvious disadvantage is that the one-man reduction in crew size places a greater burden on the remaining crew. Three men must now maintain and operate the vehicle. However, my experience in armored units in Europe and CONUS has led me to believe that three-man crews can operate effectively over sustained operations. In fact, a vehicle with an autoloader, in view of its promotion of reduced crew fatigue and stress, should be easier for a three-man crew to operate than an three-man crew in a four-man vehicle.

The other major disadvantage of an autoloader was unreliability, mentioned earlier. The supposed unreliability of an autoloading system cannot be upheld in light of present-day technology. The Navy has built a reliable autoloader which can operate under the harsh conditions found on the high

seas. The Army can use that same technology to build a system which can operate under conditions of mounted combat. Not to make use of that technology, with excuses that it is too complicated, brings back memories of the shortsightedness of those who said that the early tank was too sophisticated and unreliable to ever operate effectively on the battlefield.

In conclusion, a reliable automatic loading system is technologically feasible. The inclusion of such a system into an armored vehicle would provide design flexibility which would increase the survivability of the crew and decrease the vulnerability of the vehicle. A reduction in crew size and a gain in crew efficiency, especially under NBC conditions, should result in sustained increases in combat effectiveness. The corresponding gain in combat effectiveness more than offsets the defects created by such a new system. The Navy has been using automatic loaders for years, and the Soviets have one on the *T-72*; it is time for the Army to catch up.

THOMAS P. O'CONNELL
CPT, USAR
Golden Valley, MN



The Simple Business of Training

Training is a simple business. Trainers should be leaders and leaders must be managers.

The first stage, and our weakest link in training, is planning. Planning requires looking at the *whole* picture. Before we begin we must know what we are supposed to do. We must develop a list of *everything* we are to do, regardless of our ability to perform or resource these things. If we don't develop our list in this manner, we will never be able to incorporate the tasks not identified into our planning.

The list must be easy to use and the Unit Assessment forms in the battalion Training Management System (BTMS) workbook are good examples. Using these forms serves two purposes: (1) it provides the entire list on a few pages and, (2) it maintains a record of the ability to perform those tasks which should be updated weekly for Active Component (AC) units (battalion and below) and monthly for Reserve Component (RC).

Mission/Tasks lists should be developed from platoon through corps levels. In assessing our ability to perform these tasks, we should be concerned with two priorities: (1) a tactical priority and (2) a training priority. The tactical priority is determined by the unit's General Defense Plan for AC units and CAPSTONE for RC units. The tactical priority must be prioritized by mission and by the importance of the collective tasks required to accomplish the mission. There can only be one Number 1 priority.

This leaves training guidance to be developed, and this should be guided by exercises held by the issuing echelon, or higher, and scheduled according to the availability of training areas, ranges, etc. Training guidance should not dictate training priorities. Training priorities should be determined primarily by the unit's ability to perform the task. Thus, training priorities will vary from squad to squad, platoon to platoon, etc., with the emphasis to ensure each echelon focuses at the appropriate level and does not infringe upon the responsibilities and authority of lower echelons.

The best way to train leaders is to give them a mission, give them guidance, and let them do it. We can expect mistakes and we must change our attitude about mistakes. One must not be chastised or relieved for making a mistake. Leaders must learn to look at the positive side and openly discuss and learn from errors made in planning and execution. We must also be able to distinguish between an honest mistake and negligence or incompetence.

The second most important consideration in establishing training priorities is goal setting. Goals are part of the team building effort within a unit. Goals must be attainable. They must be established early and updated as needed, and new goals set. The higher the echelon, the broader the goals.

Higher echelon goals must be translated by subordinate leaders to more specific issues at their level. The thinking should be: "What do I have to do to ensure my squad will be able to do to enable the platoon to accomplish its goal?"

Now it is time to place the tasks to be trained in a logical sequence. This sequence is the plan to accomplish our goals. When time is added, this plan becomes a training calendar. There are some examples of these in FM 25-2, *How To Manage Training Units.* The best method is to list the tasks of the next lower echelon. The first three month's tasks should be expanded into training objectives. The training calendar must be accessible to all subordinate leaders to give them the conditions and the standards that they will be expected to perform. FM 25-2 requires the writing of training objectives but does not provide a way to inject them into the program. Most AC units put out quarterly training guidance to include objectives. These objectives are usually discussed in the commander's weekly training meetings. Posting training objectives on the training calendar will also support the later development of training and evaluation (T&E) plans. Like all plans, the training calendar must be flexible and must be constantly updated as resource availability and performance skills change.

There is another advantage to documenting training objectives. It allows the improvement of skills in the mission analysis that must be performed in tactical planning. Leaders learn to limit tactical objectives to unit capabilities which, in turn, reinforces the principles of training and of employing units within their capabilites.

Next is the preparation of training schedules. As the training calendar reflects the basic tasks of platoon training, the development of detailed individual tasks should not begin until three weeks for AC units and three months for RC units before execution.

A good method for preparation of training schedules is to issue each platoon/section leader a working copy. This would have times blocked out for company activities and it would then be up to the platoon leader and sergeant to coordinate with squad leaders/vehicle commanders to determine the exact tasks to be trained by each squad/crew based on their respective capabilities. This ensures the necessary feedback for the system to function and upgrades the training of young and/or potential NCOs. It places authority at the

appropriate level.

Platoon leaders and sergeants can devote their time to coordination and the training of junior leaders in techniques of training and evaluation. No longer can senior leaders afford to dismiss inexperienced subordinates with the statement: "You're a sergeant. You're supposed to know how to do that." Senior leaders must provide *good* guidance, then allow the junior leader to develop his own course of action. If superiors spot-check their subordinates, most mistakes will be corrected before they happen.

Following this precept of allowing the junior leader to follow his own bent, after effective guidance, means that some tasks will not be executed as well as if more experienced leaders had directed it, but the trade-off in confidence gained and proficiency of subordinates will more than counterbalance the loss. Senior leaders may well be surprised at how much they will learn, and re-learn, in aiding subordinates and in viewing new and imaginative ways of doing things.

Another reason for using this method is that current training is based on previous accomplishments. There is no way that a squad leader can plan individual training seven to eight weeks in advance.

Company training schedules could be finalized by consolidating the platoon schedules into one, or by stapling the separate pages together. Individual tasks to be trained could be attached as an annex, leaving the company schedules to reflect platoon, squad and crew tasks. This helps soldiers to visualize the fitting of their individual tasks into the unit collective effort.

ARTEP task numbers are not sufficient references. The use of the ARTEP as a reference leads us away from developing our own training objectives. Units should develop their own Training and Evaluation Outlines (TE&O) which are *tailored* to unit capabilities, resources and goals. The ARTEP is a guide to aid commanders in developing TE&Os for their unit. References should be Field Manuals, (FM), Training Circulars (TC), Army Regulations (AR), and Technical Manuals (TM). These documents provide the doctrine for applying the items in the ARTEP checklist.

The importance of good planning cannot be over-emphasized, and good planning cannot be kept secret. The plan should be available to as many personnel as possible as quickly as possible. The more people who know about it and how it applies to them, the better the coordination and a better chance for the plan's success.

Next comes execution. Execution consists of individual and collective training.

Individual training is usually considered in terms of the lower enlisted grades, but there are a great many tasks that leaders *at all levels* must learn and maintain proficiency. These individual tasks should be identified by skill level on individual task lists (ITL). An ITL should be developed to support each platoon-level task and any special squad or crew-level tasks. By preparing ITLs at platoon level, all tasks from skill levels 1-4, to include the platoon leader, will be identified. Most unit ARTEPs now provide a good start for the development of these lists, but they are not complete. Personnel who develop the ITLs must cross-reference ARTEPs, FMs, TMs, ARs and Soldiers Manuals (SM). The service schools could aid in the development of ITLs as there will be list redundancy from task to task. Since the squad leader has one of the most difficult tasks, the ITLs must be available and formated for easy reference. The format shown on the BTMS workshop booklets is a good example.

A wise company or battalion commander should develop ITLs on the leader tasks that his subordinate leaders must be able to perform.

The squad leader looks at the collective tasks on the training calendar, compares the individual tasks on the ITL for that collective tasks against job books, SQT results, etc., to determine the individual tasks that he must train. He can then discuss these with his platoon leader and sergeant for coordination and inclusion on the training schedule annex. The squad leader then decides which tasks he will train and which he will delegate to subordinates to train. Using subordinates to train simpler tasks helps identify and develop potential new leaders.

The trainer must now train the tasks. Providing time to accomplish this is a very sensitive subject. Most units require that the junior NCO be with his people 10-15 hours a day. If this is so, it is a little presumptious to ask him to spend another 2-6 hours preparing for training; e.g., reading FMs, TMS, etc., and discussing them with others to ensure his understanding. Time for preparation must be built into the system if NCOs are to be expected to perform their duties consistently and well.

RC unit trainers must make time between drill weekends to prepare for training. Two hours a week should be enough for squad leaders to study for tasks to be trained. Coordination can be made during lunch hours, during clean up and at ATAs. NCOs can be trained in the system during NCODP classes. Use of the NCODP to improve unit training program is also a good idea for AC units.

Time is the most critical resource and it is especially critical for RC units. Unless RC leaders learn to delegate authority, their units will never be able to fulfill their mission requirements and attain the necessary level of preparedness.

The plan to train an individual task is the Training Outline. Completion of the information on this form aids in the guarantee of better training. A new Training Outline should be prepared each time the task is taught. This ensures that the trainer has gone through the necessary steps to verify his knowledge and perform any necessary coordination.

There is a shortcoming in the Training Outline. It is the exclusion of time. If a complex task is being trained, and, if after a reasonable time, the trainer finds that he is not even close to meeting the standard, then the task should be put aside and another subject taken up. The trainer can then later return to build on the complicated task. Again, this translates to the tactical side in that junior leaders will be more aware of the time required to prepare and execute assigned missions.

When the trainer is going to train a series of individual tasks in support of a collective mission or task(s), a Training and Evaluation Plan (T&E) should be developed. In order for a subordinate to properly prepare a T&E plan, he must have access to the training calendar to know when and where field training will take place. Leaders should fully understand the major objectives of field training, and platoon leaders and sergeants must get with their squad leaders to ensure that they identify the individual tasks needed to train prior to going to the field. Thus, units will get the most from the field training.

The trainer must identify the tasks he is going to train and those that will be evaluated. Time must be allocated for tasks that will be trained and Training Outlines prepared for these individual tasks. Differences in field training and taking part in the Field Training Exercise (FTX) should be noted here. Most FTXs are held at battalion level, or higher, and time is not allocated for training. Instead, a unit moves to the field and executes a series of tasks or missions in which unit performance is evaluated. If a leader is going to be provided time to train during an FTX, he must know in advance.

After Action Reviews (AARs) are extremely valuable to the trainer at all levels. Conducting AARs allows everyone to understand how their echelon performance impacts on higher echelon performance. As the AARs progress, those

who led the previous AARs will more than likely become the prime participants, but the lower ranks will be able to relate to the discussion as they have established a base of knowledge from their AARs. Soldiers learn from AARs through participation in the tasks being reviewed and the review itself.

Job Books do not suffice for a T&E plan for individual training. The Job Book is no more than a laundry list of individual tasks. It is an excellent tool for maintaining status of individual skills, but is not sequenced to support training of individual tasks in support of a collective task. Job Books should be left in platoon offices in RC units. The Job Book is a tool to assist the squad leader. It should not become a burden.

Using T&E plans will reduce the amount of non-productive time in field training. Much time can be put to use in scheduling progressive AARs.

Training's third stage is evaluation. This is extremely important. It is no more than the act of measuring how well we have done or have not done something. Too many people are afraid of evaluations. So widespread is this fear that there has been talk of taking the word 'evaluation' out of ARTEP.

The evaluation standards for individual training are fairly clear cut in the SMs. To fairly evaluate collective training, units must write their own TE&Os using the appropriate ARTEP as a guide. TE&Os should be written on specific missions and tasks that are to be performed. Prime consideration should be given to personnel and equipment available. Another important aspect is the terrain to be used and any of its limitations. The ARTEP TE&Os are very general in order to cover optimum force levels and training situations. Just as in establishing goals, it is not fair to expect units to accomplish tasks that are unrealistic or physically impossible. The development of unit TE&Os will greatly improve leader skills in performing troop-leading procedures. TE&Os must be distributed to the level they were written as soon as possible. RC units should provide evaluators with a copy at the beginning of the unit's AT. The TE&Os would also reflect the emphasis in the Mission Essential Tasks List (METL) that RC units must provide to evaluators.

The implementation of constant evaluation should greatly improve a unit's training program. Battalion and higher training meetings would be more productive if a truer picture of capabilities and assets to be acquired to aid in overcoming weaknesses is provided.

Service schools play a big part in this system. In recent years, there has been a sharp decline in the accurate interpretation of terms and missions. When a leader says, "Perform a reconnaissance mission" or, "Perform an advanced guard," few soldiers think of the basic mission as outlined in the appropriate FM. Instead, they see the mission as they perceive it should be. This is a big problem for enlisted personnel who must often re-learn how to perform their jobs with each change of command; i.e., the scout platoon that is used as a light assault platoon.

Schools used to teach doctrine in a pure form. This created a basic understanding for all. Leaders would then have to specify deviation from the norm in their operations order (OPORD). Subordinates then understood exactly what was expected of them and did not have to re-learn with each change in commander.

The Army is pushing for standardization, but is not advocating that everyone perform the same mission the same way every time. What the Army is advocating is that eveybody start at the same place and learn to designate deviations in OPORDs each time the mission is executed.

Service schools should follow the success of the Harvard Business School by using detailed case studies to learn and fine-tune the leadership skills that are so important to unit operations.

Senior NCOs must be taught the skills to run a unit in the absence of officers.

If, in reading the above, you do not recognize the application of certain leadership traits and principles, then it is recommended that you return to FM 22-100, *Military Leadership,* and review them.

It seems that leadership traits and principles are used for low-level boards, and then only memorized as a laundry list. Perhaps if more emphasis were placed on how they apply to our jobs, we might do a better job of remembering them and incorporating them into our day-to-day lives.

DALE L. SKILES
Sergeant First Class, Armor
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Recognition Quiz Answers

1. **BTR-60P APC (USSR).** Crew, 2 plus 12-16 infantrymen; 8 x 8 wheel drive; weight, 9,980 kg (22,006 lbs); maximum road speed, 80 km/h; maximum water speed, 10 km/h; maximum road range, 500 km; amphibious; 2 x 6-cylinder 90-hp gas engines; armament, 1 x 7.62-mm machinegun.

2. **SPAHPANZER LUCHS CFV (FRG).** Crew, 4; weight, 19,500 kg (42,997 lbs); maximum road speed 90 km/h; maximum water speed, 9 km/h; maximum road range, 800 km; 1 x 10-cylinder, multi-fuel 390-hp engine; armament, 1 x 20-mm autocannon, 1 x 7.26-mm AA machinegun.

3. **LEOPARD IA3 (FRG).** Crew, 4; weight, 42,400 kg (93,492 lbs); maximum road speed, 65 km/h; maximum road range, 600 km; maximum cross-country range, 450 km; 1 x 10-cylinder multi-fuel 830-hp engine; armament, 1 x 105-mm main gun, 1 x 7.62-mm AA machinegun.

4. **MOWAG PIRANHA APC (SWITZ).** Crew, 3 plus 11 infantrymen; 6 x 6 drive; weight, 10,500 kg (23,152 lbs); maximum road speed, 100 km/h; maximum water speed, 9.6 km/h; maximum road range, 600 km; 1 x 6V-53T diesel 300-hp engine; armament, 1 x 20-mm autocannon.

5. **AMX-10P MICV (FR).** Crew, 3 plus 8 infantrymen; weight 14,200 kg (31,311 lbs); maximum road speed, 65 km/h; maximum water speed, 7 km/hr; maximum road range, 600 km; 1 x HS-115 V-8 diesel 280-hp engine; armament, 1 x 20-mm autocannon; 1 x 7.62-mm coaxial machinegun, 1 x 7.62-mm AA machinegun, 1 x PH9A searchlight.

6. **K-61 CARGO/TROOP CARRIER (USSR).** Crew, 2 plus 60 troops, weights, 14,550 kg (32,083 lbs) water, 12,550 kg (27,673 lbs) land; maximum road speed, 34 km/h; maximum water speed, 10 km/h; maximum road range, 260 km; 1 x 4-cylinder, diesel 135-hp engine; length, 9.15 meters; width, 3.15 meters; height, 2.15 meters; armament, crew personal weapons.

REGIMENTAL NEWS

With 'body English' the TC of a Marine Corps *M60A1* directs his driver in the positioning of an assault bridge over an antitank ditch at Camp Lejeune, NC, during recent trails.

Marines Test Towed Assault Bridge

Working from a basic design formulated by Israeli Military Industries, the Combat Systems Test Activity (CSTA) at Aberdeen Proving Ground, MD, has developed a towed assault bridge (TAB) that is being tactically tested by the U.S. Marine Corps at Camp Lejeune, NC.

The bridge was modified from original IMI specifications with the Marine's global mission requirements in mind and has an added suspension system, can be split down the middle for easier air transport, and employs solid rather than girder-type 'horns' to lift it over a ditch berm, said Miss Nancy Troccoli, CSTA test director for the TAB program.

The bridge is now undergoing operational tests with the 2d Marine Division's 2d Combat Engineer Battalion at Camp Lejeune. The bridge was pushed across an antitank ditch by an *M60A1* MBT and then used by tanks in a simulated attack on enemy positions.

7th Cavalry 'Shows' In 13th Recon Olympics

An eight-man team from 3d Squadron, 7th Cavalry was in the top three in the 13th annual Boeselager Cup armored reconnaissance competition held at Theodor-Koner-Kaserne, Luneburg, FRG from 28 May to 1 June 1984.

Teams from Belgium, Canada, France, West Germany, Holland, Italy, Turkey, United Kingdom and the U.S. were judged on: armored reconnaissance patrolling, aerial route reconnaissance, small arms marksmanship, a vehicle and aircraft 3.5 km obstacle course, a dismounted, cross-canal swim with equipment, OPFOR identification, AFV skill driving and dismounted night land navigation.

The two U.S. units participating were from 3d Squadron, 7th Cavalry and 3d Squadron, 12th Cavalry, representing the U.S. VII and V Corps, respectively.

First place was taken by the Turkish Armor School, second place went to the 103d Verkenning-skadson (Netherlands) and third place went to the 3d Squadron, 7th Cavalry. Panzerauflorung Battalion 10 placed first in the Bundeswehr competition.

Armor Conference TV Tapes Available

Nine TV tapes, covering most aspects of the 1984 Armor Conference held recently at Fort Knox, KY, are available to interested parties who were unable to attend the conference.

TRADOC tape numbers and titles of available tapes are as follows:

020-171-4543, The Regimental System-Update. 921-171-4544, The New Armor Soldier. 921-171-4545, Welcome Keynote Address. 921-171-4546, Report to the Force. 921-171-4547, Training Armor. 921-171-4548, Manning Armor. 921-171-4549, The New Manning System. 921-171-4550, Developing Armor. 921-171-4551, Supporting Armor/Directions for Excellence.

To secure copies, submit requests through your local TASC. Reimbursement tapes will be required. Contact Ms. Barbara Greer, Videotape Librarian, Television Branch, TASC, DPT, USAARMC, Fort Knox, KY 40121; AUTOVON 464-3725/6745 or commercial (502) 624-3725/6745.

M60A3 MBT Update

The oldest operational tank series *(M60)* in the U.S. Army has a potential for 20 more years of service, according to the Combat System Test Activity (CSTA) of the Test and Evaluation Command (TECOM) at Aberdeen Proving Ground, Maryland. The *M60* series has been in service for 25 years and will "probably remain with the Army's armored forces for another 20 years,"

said Edward H. Roberts, chief, automotive division, CSTA.

Among the new systems currently being tested and considered for adoption to extend the tank's service life are: a hydropneumatic suspension system, enhancement of the armor package, changes in the main gun system, a digital computer to replace the present analog computer, a new transmission and a carbon dioxide laser rangefinder to replace the ruby laser system.

"It's a great tank," said Ars Cummings, test director for the *M60* series at CSTA. "We've seen to that. And we're seeing to it that it is becoming better every year," he added. "Who knows, someday someone might write a story about the tank's golden anniversary."

Smoke Symposium Set For April

The ninth annual Smoke/Obscurants Symposium will be held 23-25 April, 1985 at the Harry Diamond Laboratory, Adelphi, MD, to bring together materiel developers, combat developers and end users of smoke and electromagnetic systems to discuss new concepts, developments, and interactive assessments of system performance in realistic battlefield environments.

Persons wishing to submit papers up to and including "Confidential" or to acquire additional information, should write to:

Science & Technology Corporation
Attn: SOS IX
101 Research Drive
Hampton, VA 23666.

Symposium chairman will be Walter G. Klimek, OPM Smoke/Obscurants, Aberdeen Proving Ground, MD. Symposium moderator will be Dr. Adarsh Deepak, Science and Technology Corporation.

New Bradleys Tested At Aberdeen

Updated versions of the *M2/M3 Bradley* IFV and CFV are now being tested at the Aberdeen Proving Ground, MD. Both models include an improved *TOW* launch system and a new gas particulate filter unit (GPFU).

The cast assembly *TOW* launcher will allow the firing of all three *TOW* missiles; basic, improved and *TOW2*. The tubes are not canted inward.

The new GPFU differs between the IFV and the CFV. On the *M3E1* (cavalry), all five crewmen are connected to the GPFU through hoses on their CB or MOPP gear. In the *M2E1* (infantry) only the driver and two men in the turret will use the new system. The infantrymen will use the filter units built into their MOPP gear.

Other changes in the M3E1 model include removal of the side firing ports, four periscopes on the rear hatch and adjustable seats for the two scouts in the rear. A number of interior changes have been made including replacing the single 10-gallon water unit with two 5-gallon units.

A *Dragon* missile night tracker (M47/ANTAS5) is included in the *M2E1* and the mine and flare stowage has been changed.

Redesigned missile stowage and rearranged 25-mm ammunition stowage are featured on the *M3E1* and stowage of the M256 detector kit in place of the M15A2A kit.

USAF School For Army Tac Air Training

AirLand Battle is the doctrine for future war and each branch of the armed forces trains in its own concept of how it will fight. Training integration between air and land forces is vital and the USAF Air Ground Operations School (USAFAGOS) at Hurlburt Field, Florida, is the focal point for joint army/air training in tactical air-ground operations.

It is the only school authorized to train army officers and enlisted members for award of the additional skill identifiers that pertain directly to AirLand Operations (5U--Air Operations Officer; Q8--Tactical Air Operations Specialist).

The USAFAGOS trains personnel in doctrine, control systems, tactics, techniques and procedures by which component air and surface combat forces plan, integrate, and conduct joint operations. The school runs two courses: the Battle Staff Course and the Joint Firepower Control Course. It also provides instruction on a non-resident basis to active and reserve component units and to designated service schools.

The Battle Staff Course is a 3-week field grade officer's course that provides a fundamental understanding of tactical battle management within the USAF tactical air control system and the Army Air Ground System (TACS/AAGS) and the principles of maximizing Air Force and Army capabilities in the AirLand Battle. Emphasis is on planning and management of theater air and land resources, the systems and procedures used to control joint forces, and the coordination required to support decision making. Focus is at the Army division and Air Force air support operations center levels and higher.

The Joint Firepower Control Course is a 2-week (for Army) course designed for Army officers and senior NCOs who hold positions in the Army Air Ground System at the brigade level or below. It teaches jointly approved concepts, procedures, and techniques of combat operations, and the coordination and control systems involved in the air-ground operations systems.

Army officers are awarded ASI 5U--Air Operations Officer and NCO graduates are awarded ASI Q8--Tactical Air Operations Specialist.

The courses are listed in the Army formal schools catalogue (DA Pamphlet 351-4) as 2G-F36 (BSC) and 2G-F37/250-F11 (JFCC). Army quotas are controlled by the DCS, Training, USATRADOC, Ft. Monroe, Va, (ATTG-MPS, Autovon 680-2161; commercial (804) 727-2161). Quotas are sub-allocated by TRADOC as follows: Active Army, MILPERCEN (AUTOVON 221-8100); Army National Guard, National Guard Bureau (AUTOVON 584-4789); U.S. Army Reserve, FORSCOM (AUTOVON 558-2715). Requests for attendance should be processed through unit training personnel. Additional information or assistance can be obtained by calling the USAFAGOS Army Element at AUTOVON 872-6889/6655 or commercial (904) 884-6889/6655.

Baron Jacques de Villenfagne, Belgian army captain in 1944, briefs members of the 2d Armored Division during their recent visit to Dinant, Belgium, about his pre-Christmas Day reconnaissance of German army units during the Battle of the Bulge in 1944. The baron later presented copies of the map he used to each member of the 11-man detachment that helped celebrate Dinant's liberation 40 years after the event.

Air Bag Lifts Air Cushion Vehicle

How do you lift a 30-ton *Lighter Air Cushion Vehicle (LACV-30)* when you want to pull maintenance?

You use air bags, that's how.

Engineers at the Ft. Belvoir, VA Research and Development Center came up with the idea of using deflated air bags to raise the vehicle in place of the 140-ton crane formerly used.

Each air bag weighs 135 pounds and can support 15 tons. Positioned under the *LACV-30* the bags are inflated and the vehicle set on jacking blocks.

Cavalry Association Guides On 55 Stars

General James H. Polk, chairman of the U.S. Horse Cavalry Association, has announced the formation of a Military Advisory Committee to be composed of 13 senior retired officers who, between them, count 55 stars of general officer rank.

The committee is composed of: Generals — Michael S. Davison, Ralph E. Haines, Jr., Paul D. Harkins, Hamilton H. Howze, George R. Mather, Bruce Palmer, Jr., Robert W. Porter, Jr., John E. Waters, and I.D. White. Lieutenant Generals — James D. Alger, Andrew J. Boyle, Samuel L. Myers and William H.S. Wright.

Other senior retired officers serving as USHCA trustees are: General Polk, Major General Lawrence E. Schlanser and Brigadier General J.A. Seitz.

2AD Troopers Visit Historic Dinant, Belgium

Forty years after their predecessors had liberated the village of Dinant on the Meuse River in the Ardennes, 11 members of the 2d Armored Division commemorated that event with a return visit to the scene where their unit helped to stop Hitler's great counteroffensive known as the Battle of the Bulge.

The soldiers took part in a wreath-laying ceremony at the village's war memorial, were hosted at a luncheon, presented the Mayor with a 2AD plaque and later toured the hilltop castle of Baron Jacques de Villenfagne, a local hero of the battle.

On 23 December 1944, the baron, in the company of another Belgian officer, left the castle and reconnoitered the German positions outside Dinant. He returned to his castle on Christmas Eve and briefed British artillery officers, who laid down a barrage that was followed by the 2AD ("Hell on Wheels") in an attack that stopped the *panzers*.

The baron briefed the visiting troopers on his reconnaissance, using copies of the original map which he later presented to each trooper.

Said Captain Christian de Graff, assistant S3, 1st brigade, 2AD, "To meet the baron who played such a key part in the battle and have him explain the details. . . it's living history right here!"

BOOKS

INSIDE SOVIET MILITARY INTELLIGENCE by Victor Suvorov. Macmillan Publishing Co., New York 1984. 193 pages. $15.95.

While much has been written in the West about the KGB — the Soviet secret police — little is known about its equally feared and powerful "brother," the GRU.

Officially known as the Chief Directorate of the Soviet General Staff, the GRU (*Glavnoye Razvedyvatelnoye Upravleniye)* is responsible for assessing the military potential of the USSR's enemies as well as "obtaining" Western secrets.

Victor Suvorov, a 15-year veteran of the GRU, points out that in war the GRU exercises control over the Soviet *SPETSNAZ,* or special forces.

Numbering 100,000 men who are incorporated into the Soviet Army and Navy (as well as Warsaw Pact units), they are "the true elite of the Soviet Armed Forces." This is accomplished through eliminating command points and personnel, communications networks, nuclear weapons and their delivery systems, etc. Additionally, they strive to disorganize the internal life of the state and country by creating mistrust and panic. They are trained to sacrifice themselves in order to accomplish their mission.

This is Suvorov's third book and the first ever written about the GRU in the post-Stalin era. It presents the GRU's history (and stormy relations with the KGB), its structure, training methods and operational techniques. Suvorov writes of its triumphs and humiliations. But let there be no mistake on the part of the reader. Suvorov's book is intended as a warning to the West never to underestimate the GRU's will and reach. Only in uncovering its agents and promptly expelling them, can the West hope to not only ensure its safety but gain the respect of the Soviet Union as well. According to Suvorov, "the Soviet Union respects. . . only those nations which respect their own sovereignty and defend it."

GILBERTO VILLAHERMOSA
Captain, Armor
Ft. Bragg, NC

THE MIND OF THE SOVIET FIGHTING MAN by Richard A. Gabriel. Greenwood Press, Westport, Ct. 1984. 156 pages. $35.00.

Two hundred and seven Soviet emigres replied to an 85-question paper by Dr. Gabriel to supply the basic information for this book. Areas covered in the questionnaire included: General Views of Military Service; Combat Ability; Quality of Officers and NCOs and Morale and Discipline.

An interesting comparison can be made between the answers given by ex-members of the Soviet army, air force and navy to the same question.

The book is highly recommended for the professional reader.

JOHN A. HURLEY
Lieutenant Colonel, USAFR
HQ, USAF

MILITARY LEADERSHIP: IN PURSUIT OF EXCELLENCE, edited by Rober L. Taylor and William E. Rosenbach. Westview Press, Boulder, CO. 253 pages. $25.00 (cloth) $15.00 (paperback).

Few topics have attracted as much professional interest and attention in the military, civil service and private sectors as the issue of defining and improving leadership. This is particularly true in the military sphere because of the changes in the armed forces caused by numerous external and internal factors in a very intense, time-critical, "do more with less" environment.

The editors have culled over 2,000 selections and have set down 23 top-flight readings arranged under four major headings: "The Concept of Leadership," "The Dilemma of Leadership and Management," "Leadership in Transition," and "Military Leadership: Challenge and Opportunity."

This is an excellent book and is strongly recommended both for its professional reading content and as a handy reference and textbook.

JOHN A. HURLEY
Lieutenant Colonel, USAFR
HQ USAF

BATTLE OF THE BULGE: THEN AND NOW, by Jean Paul Pallud. Bill Dean Books, Ltd., Whitestone, N.Y., 11357. 532 pages, $49.95.

This is without a doubt the finest book we have ever seen on this well-documented battle. It is lavishly illustrated (1,260 photos), many of which appear for the first time. There are 31 maps as well. Veterans of the Bulge will be intrigued by the "then and now" photos of hundreds of battle sites, including St. Vith, Bastogne and Malmedy.

Mr. Pallud spent five years in researching this extensive documentary and the whole story of that famous battle is covered — from the initial German planning to the final shots on withdrawal.

The final chapter is devoted to what remains to be seen in the Bulge today: the museums and the memorials, and the relics, German and American, of that fateful battlefield.

In the final analysis, it is the photographs that make this book the unique addition to military history that it is. Mr. Pallud viewed and/or considered every known photo taken during the battle, and each foot of movie film has been examined, frame by frame.

The classic photo of all time of man in battle, that of the German paratrooper looking into the camera lens, his shoulders draped with a belt of ammunition, his face drawn and haggard with battle, is used for the jacket cover. It also appears, in context with other movie frames, on page 220 of this extensively researched volume.

If you were there — or even if you weren't, BATTLE OF THE BULGE is highly recommended for both the professional military reader and the military buff and historian.

A totally excellent publication.

ARMOR Staff

TRIUMPHANT FOX: ERWIN ROMMEL AND THE RISE OF THE AFRIKA KORPS. Samuel W. Mitcham, Jr. Stein & Day Publishers, Briarcliff Manor, NY 10510. $18.95. 224 pages.

This is the third volume by the same author on Field Marshal Erwin Rommel. It covers his life through his early military career up through the North Africa campaign until 31 December 1941.

The Rommel story has been told many times. But Mitcham's account has many attractions. Battles are recounted in a clear, simple-to-follow style without excessive omission of detail. Many personal anecdotes and vignettes focus on both Rommel the general and Rommel the man and illustrate his vices as well as his virtues. Obstinacy and raw arrogance are as frankly admitted as tactical brilliance and unfailing courage are admired. Interesting light is also cast on Rommel's style of forward leadership, which was in keeping with the German practice of the time and contrasted with the British leaders who commanded from relatively rearward CPs.

This is a worthwhile book for those interested in either Rommel specifically, or the history of armored warfare in general.

ARMOR Staff

STEEL ON TARGET

Things had been going well for the British and their allies. They had outmaneuvered the enemy and had him on the run, though he wasn't beaten yet. But, the campaign had slowed in the winter cold and the sector was quiet. Keeping warm that holiday season was as important to the Americans as it was to the Germans.

Then, suddenly, enemy infantry with fixed bayonets appeared out of nowhere and swept through the friendly garrison in what was to become the turning point of the war. When it was over, the Germans had suffered defeat.

The Ardennes, December, 1944? No! Trenton, N.J., Christmas Eve, 1776!

The Continental Army, after losing one battle after another, crossed the Delaware River after dark and took the Hessian garrison by surprise. The German Wehrmacht, following a similar losing streak in 1944, attacked the allies in the Ardennes just before Christmas.

All over the world this year, tankers and cavalrymen are taking some time out to relax and enjoy the holiday season. For some, it means a long trek home to be with family and friends for a few precious days of leave. For others, it means unit parties and a chance to relax from their daily routines. For a few, it may only be a few quiet moments of reflection on the year gone by as they man their outposts.

Temptations abound during the holiday season. Too much turkey and too little exercise catch some off guard. But, the worst temptation is to drop your mental edge, to sacrifice combat-readiness and vigilance, for the sake of holiday cheer.

Tyranny and terrorism take no holidays. The United States has spent 16 of the last 43 holiday seasons in a shooting conflict. Adversaries view the holidays as an opportune time to attack us while our thoughts are on peace and goodwill toward men.

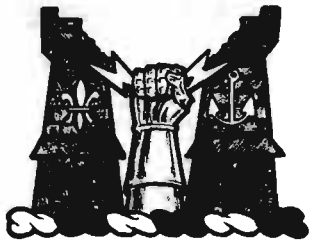
These days, the terrorist takes his place among those who menace peace during the holidays. No one is secure from his murderous aim who is not watchful; so take care this season, whether at home or abroad.

Duty demands your vigilance. Keep deterrence credible by keeping fit, keeping alert, and keeping your training and maintenance standards high in your short-handed units.

The tyrants and the terrorists have been on a losing streak this year and they are looking for a "cheap shot". By being combat-ready over the holidays, you are denying them that opportunity. Good shooting!

69th Armor

Vitesse et Puissance (Speed and Power)



Symbolism

The shield is in the green and white of the Armored Force. The panther is symbolic of the tremendous power and striking ability of the regiment. Being always alert, the black variety of panther is considered the most dangerous of all the feline family.

The two ruined towers, bearing a fleur-de-lis and an anchor, allude to two areas, Europe and the Pacific; for the latter area, part of the organization was awarded three Presidential Unit Citations (Navy) and the Navy Unit Commendation. The gauntlet and lightning flashes symbolize armor and striking power.

Distinctive Insignia

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

Lineage and Honors

Constituted 15 July 1940 in the Regular Army as 69th Armored Regiment and assigned to 1st Armored Division. Activated 31 July 1940 at Fort Knox, Kentucky. Inactivated 10 January 1942 at Fort Knox, Kentucky. Relieved 15 February 1942 from assignment to 1st Armored Division, assigned to 6th Armored Division, and activated at Fort Knox, Kentucky.

Regiment broken up 20 September 1943 and its elements reorganized and redesignated as follows: Regimental Headquarters and Headquarters Company, Regimental Medical Detachment, 1st Battalion Headquarters and Headquarters Company, and Companies A, B, C, and D as 69th Tank Battalion, an element of the 6th Armored Division; 3d Battalion as 708th Tank Battalion and relieved from assignment to 6th Armored Division; Reconnaissance Company as Troop E, 86th Cavalry Reconnaissance Squadron, Mechanized; 2d Battalion (less Company D), absorbed in 69th Tank Battalion. Maintenance and Service Companies disbanded.

69th Tank Battalion reorganized and redesignated 10 July 1945 as 69th Amphibian Tractor Battalion and relieved from assignment to 6th Armored Division. Inactivated 8 March 1946 at Camp Kilmer, New Jersey. Redesignated 21 August 1950 as 69th Medium Tank Battalion and assigned to 6th Armored Division. Activated 5 September 1950 at Fort Leonard Wood, Missouri. Inactivated 16 March 1956 at Fort Leonard Wood, Missouri. Relieved 1 February 1957 from assignment to 6th Armored Division.

708th Tank Battalion reorganized and redesignated 27 October 1943 as 708th Amphibian Tank Battalion. (Reorganized 1 January 1944 as a provisional tractor battalion.) Inactivated 25 January 1946 in the Phillipine Islands. Reorganized and redesignated 28 July 1950 as 89th Medium Tank Battalion. Activated 7 August 1950 in Korea. Redesignated 14 November 1951 as 89th Tank Battalion and assigned to 25th Infantry Division. Inactivated 1 Febraury 1957 in Hawaii and relieved from assignment to 25th Infantry Division.

Troop E, 86th Cavalry Reconnaissance Squadron, Mechanized, inactivated 19 September 1945 at Camp Myles Standish, Massachusetts. Disbanded 21 August 1950. Reconstituted 1 February 1957 in the Regular Army.

Headquarters and Headquarters Company, 2d Battalion, 69th Armored Regiment; Companies E and F, and Maintenance and Service Companies, 69th Armored Regiment, reconstituted 1 February 1957 in the Regular Army.

69th and 89th Tank Battalions; Troop E, 86th Cavalry Reconnaissance Squadron, Mechanized; and the reconstituted elements of the 69th Armored Regiment consolidated, reorganized and redesignated 1 February 1957 as 69th Armor, a parent regiment under the Combat Arms Regimental System (Headquarters, 69th Medium Tank Battalion, redesignated as Headquarters, 69th Armor).

Campaign Participation Credit

World War II
- Normandy
- Northern France
- Rhineland
- Ardennes-Alsace
- Central Europe
- Eastern Mandates
- Western Pacific (with arrowhead)
- Ryukyus (with arrowhead)

Korean War
- UN defensive
- UN offensive
- CCF intervention
- First UN counteroffensive
- CCF spring offensive
- UN summer-fall offensive
- Second Korean winter
- Korea, summer-fall 1952
- Third Korean winter
- Korea, summer 1953

Vietnam
- Counteroffensive
- Counteroffensive, Phase II
- Counteroffensive, Phase III
- Tet Counteroffensive
- Counteroffensive, Phase IV
- Counteroffensive, Phase V
- Counteroffensive, Phase VI
- Tet 1969/Counteroffensive
- Summer-Fall 1969
- Winter-Spring 1970
- Sanctuary Counteroffensive
- Counteroffensive, Phase VII

Decorations

Presidential Unit Citation (Navy), Streamer embroidered SAIPAN and TINIAN (109th Amphibious Tank Battalion cited; DA GO 73, 1948)

Presidential Unit Citation (Navy), Streamer embroidered OKINAWA (708th Amphibian Tank Battalion cited; WD GO 73, 1948)

Presidential Unit Citation (Navy), Streamer embroidered WONJUHWACHON (89th Medium Tank Battalion cited; WD GO 38, 1957)

Navy Unit Commendation, Streamer embroidered PANMUNJOM (89th Tank Battalion cited; DA GO 38, 1957)

Meritorious Unit Commendation, Vietnam 1968, 1st Bn cited, DAGO 42, 1969.