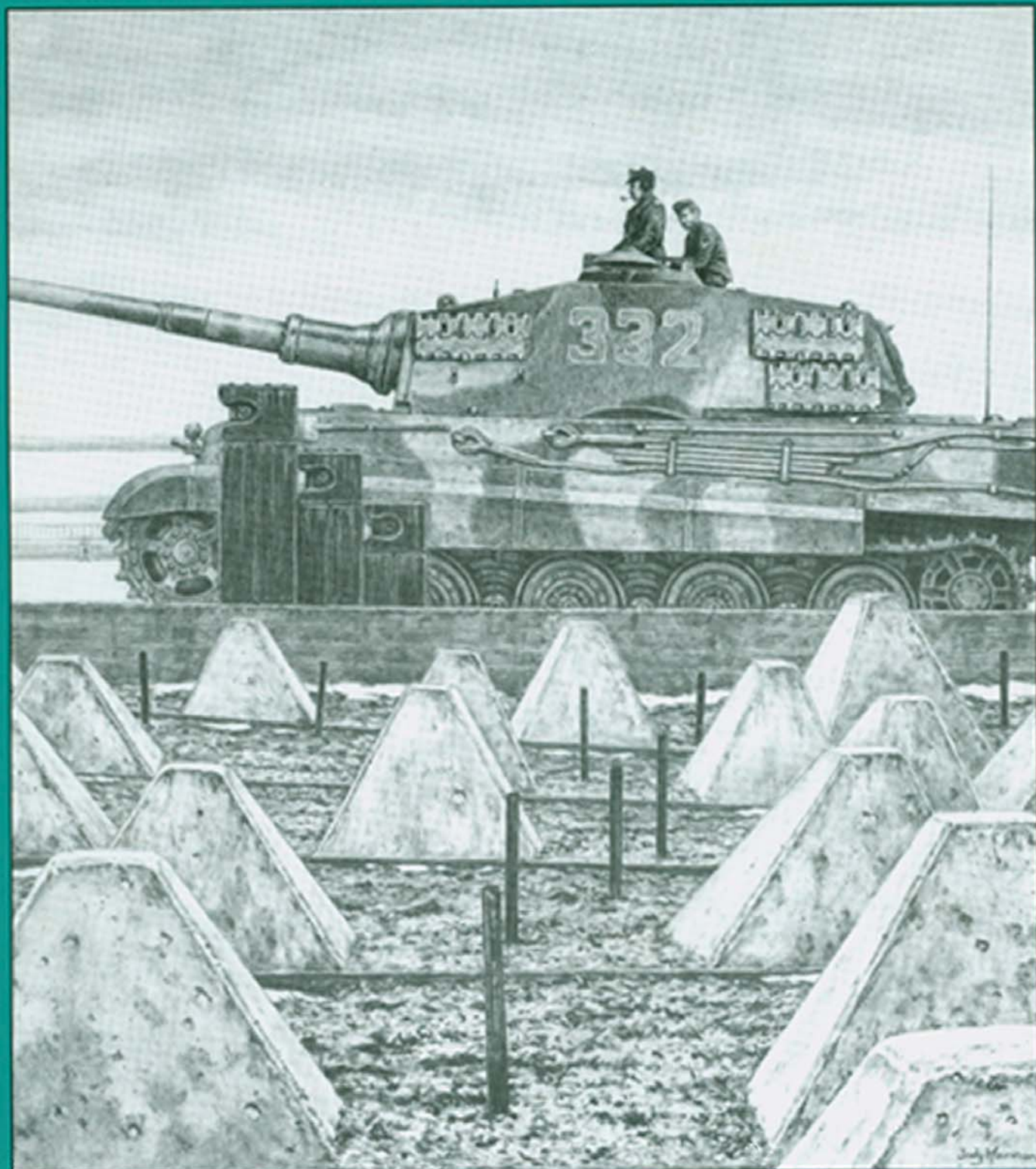


ARMOR



BEHIND THE DRAGON'S TEETH: The Ardennes Gamble

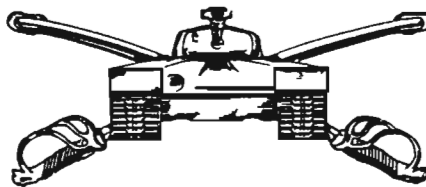


I pulled out my address book the other night — you know the one — the one you use to keep up with the rest of the world that doesn't move every three years — to get the phone number of a man I'd served with as a lieutenant in the 82d. As I flipped the alphabetical pages, I came to realize just how many of my comrades have ridden off into the civilian world.

There's nothing new about what's happening to our Army. After Appomattox, the Grand Army of the Republic, like that of DESERT STORM, had its chest-swelling victory parade, put away its weapons, and sent 1,034,000 volunteers and militia home to thankful wives and families. But then a certain atrophy set in as the nation came to view the role of its military differently. Fairfax Downey, in his book *Indian-Fighting Army* (1941), presents this hauntingly familiar picture of the 1869-era army:

"Failing to compensate for a hard present, the future generally offered by the Army was anything but brilliant and all-embracing. A soldier, who completed long years of ser-

vice honorably, might look forward to a pension. On the other hand, a few sprees or an attempted desertion might bring him a "bob-tail" or dishonorable discharge... The Congressional appropriation bill of 1869 had cut down the number of infantry regiments from forty-five to twenty-five. This required the elimination of many officers more quickly than casualties were accomplishing that end. Along with a certain number of incompetents disposed of, the Service lost able officers with fine records — men who had, they believed, devoted their lives to a military career, with retirement on half-pay to be counted upon in their old age. For the survivors promotion was stagnated for years."



This period saw regiments removed from their outposts against aggression on the frontier, and sent to "quell riots in Chicago and New Orleans." Proud, seasoned units furled their colors and disappeared, while others operated undermanned and poorly equipped.

Then came the Indian Wars.

— J.D. Brewer

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ARMOR

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Features

- 4 Fort Carson Cav Squadron Is Last to Live-Fire M60A3 Tank
- 6 Rehearsal In War: Preparing to Breach
by Major Lawrence M. Steiner Jr.
- 12 Tank Company Security Operations
by Major Patrick A. Stallings
- 22 The Counterreconnaissance Battle: Managing the Monster
by Captain Kenneth L. Deal Jr.
- 26 From Behind the Dragon's Teeth: Hitler's Folly? Or Was It?
by Captain Kevin R. Austra
- 34 14th AD, in Seven Months of Combat,
Liberated Thousands in Nazi Empire
- 36 The Two-Man Tank — Its Fightability and Endurance
by Robin Fletcher
- 39 Armor's Own Private Idaho
by Major James Brewer
- 42 TOW and Dragon Employment in the Armor Team Defense
by Captain Sande J. Schlesinger
- 45 Women in Armor and Cavalry
by Captain Kelly John Ward
- 47 Who Was "Old Bill?"
- 48 Armor Center Tank Design Contest

Departments

- 2 Letters
- 2 Contacts
- 3 Commander's Hatch
- 5 Driver's Seat
- 50 The Armor Center Hotline
- 53 Books

LETTERS

Operative Word: FOCUS

Dear Sir:

I read with great interest the letter in the May-June issue by SSG Christopher F. Schneider, a fellow Guardsman from Indiana. I, for one, believe his comments are valid concerning the way we train. I was impressed with the candor displayed in his soldierly commentary on how training is conducted and what he would like to see changed in the training environment. If leaders are going to be successful, we

must be responsive to our soldiers who identify and surface issues and ideas that enhance the limited time available for performance oriented training to attain or sustain perishable technical skills. The "operative word" in SSG Schneider's well written letter is "focus." As a battalion commander going into a gunnery cycle, I was able to "focus" the battalion leaders on the "commander's intent" and what determined success for the battalion. The staff put together a normal 15-day Annual Training plan and a contingency plan that used an extended window for an incremental AT pe-

riod for gunnery completion (two cycles). This was not a new idea, as most battalions that had DETT M60A3 at Camp Shelby followed a similar schedule. We conducted our DETT during AT-89; by the way, that AT was a "success" according to our soldiers. The three-week AT is also outlined in FC 17-12 RC. The extended window allowed for a normal 15-day AT period with an overlap of seven days between cycles for issue and turn-in of equipment. The battalion task organized with HHC (-)

Continued on Page 51

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COMMANDER'S HATCH

MG Paul E. Funk
Commanding General
U.S. Army Armor Center



The NCO's Role is Crucial In Setting the Army's Standards

Another one of my heroes and friends retired from our Army the other day. CSM Joe T. Hill has returned to his roots in Georgia, but he left a legacy of selflessness, dedication, soldier skill, and leadership that I'll never forget. Joe T. is also possessed of one of the keenest minds that I've ever come across. In the Hamburger Study of Combat Leadership, the characteristic possessed by successful leaders in battle which transcended all others, and which was the hardest to find, was a form of intelligence most of us call common sense — it is a trait possessed by CSM Hill in greater measure than about anyone I know. He comes from a long tradition of NCO greatness, and he is simply the best!

* * *

First Sergeant Dolan rode with the main body, three troops of the 5th

Cavalry, as they approached Red Canyon on September 29, 1879. From the ridges on both flanks, Ute Indian warriors opened fire on the column, then attacked, some 400 strong, and were rapidly cutting off the advance guard and surrounding them. Although skirmishers deployed and returned fire, troopers were falling from their saddles amid the rain of enemy bullets, and First Sergeant Dolan saw the detachment commander tumble to the dirt from a sniper's round. Dolan's troop commander, Captain J.S. Payne, had been left behind as the advance guard fell back toward the main body. His horse was dead and his revolver empty. Spurring his mount, Dolan risked a withering fire from the fast-closing Utes to ride to his troop commander. Jumping from the saddle, he saluted and offered Payne his horse, which the com-

mander refused. Just before the Utes closed the circle on them, a young trooper that Dolan had signaled arrived with an extra horse and the three soldiers escaped to the security of the main body. Two hours later, First Sergeant Dolan would be dead, but his commander would forever recall the NCO's gallantry and steadiness under fire.

Noncommissioned officers have throughout the history of our Army been riding to the rescue of both the soldiers they lead and the commander they support. Whether it's the first-term private that they teach the fundamentals of soldiering, or the second lieutenant they gently show the art of leadership, our NCOs provide the ballast that keeps our force steady and the backbone that keeps us strong.

If there is a good idea that has found its way into our daily operation,

there's a good chance it either began or was nurtured by a noncommissioned officer. Because he's not too proud to listen to others, the NCO will normally find the smartest, safest way to teach soldier skills. Because he maintains his own personal job skills, the NCO of today can show his soldiers how something is done rather than just tell him.

In basic training, a young recruit gets his first and most lasting impression of what it means to be a soldier from his drill sergeant. That starched, spit-shined, competent leader will set the recruit's standard for the remainder of his career and, consciously or unconsciously, he will seek to emulate what he sees. Officers, be it through ROTC summer camp, OCS, or West Point, will also come to view soldier-

ing through the behavior they observe in NCOs. A lieutenant taking command of his first platoon quickly learns to watch his platoon sergeant, listen twice as much as he speaks, and emulate his NCO's selfless dedication to soldiers' welfare.

Although officers may outwardly appear to command the most attention, it is the day-to-day interaction between a trooper and his sergeant that will ultimately determine a soldier's performance. From the early morning accountability formations in dark motor pools to the demand that some finance clerk get his squad member's pay straight, to the late night walk-throughs of a sleeping barracks, non-commissioned officers train and maintain the force best by their example of selfless dedication.

And the chances are pretty good that a young soldier brought up in such a proficient, committed tradition will likely someday come rolling up to his stranded troop commander, in the throes of a great battle, and offer him his track.

I served with CSM Hill in the deserts of Mesopotamia, where we all worked as a team to whip the Republication Guard. Every single characteristic of leadership that we generate was amply lived by him on the battlefield as it was in our Army at peace. His great energy and resourcefulness, his wonderful sense of humor, and his keen intellect just flat made 3AD a much better unit. He is my friend, and every other soldier's friend, too (even when he's being tough on them), and I shall miss him.

Fort Carson Cav Squadron Is Last to Live-Fire M60A3 Tank

Soldiers of 2d Squadron, 7th Cavalry, were the last active Army unit to live-fire the M60A3 tank recently as the unit prepared to transition to M2 and M3 Bradley Fighting Vehicles. The changeover is the latest step in the modernization of the 4th Infantry Division, based at Fort Carson. The division recently traded in its Improved TOW Vehicles and M113 APCs for Bradleys.

The M60A3 was the most recent version of a main battle tank that had been the Army's frontline standard since the Vietnam era. The first tank in the M60 series developed from the 90-mm-gun M48 of the 1950s, with the substitution of the 105-mm gun, a license-built British design, in an improved hull. The M60A1 saw the passing of the M48's dome-like turret in favor of the more wedge-shaped M60 turret so familiar today.

The M60A2 was an unusual excursion, an attempt to replace a

high-pressure tank gun with a gun-missile system. Reliability problems plagued this design, and the tank was issued only to units in Germany. The short, 152-mm gun tube on the A2 was capable of firing

both fixed ammunition rounds and the Shillelagh missile.

With the introduction of the A3 version, the M60 reverted to a 105-mm tank gun, with laser rangefinder and tank thermal sight.



Selecting the Right NCO

by CSM Richard L. Ross, USAARMC Command Sergeant Major,
and MSG Kenneth Preston, Weapons Department, USAARMS



Noncommissioned officers and officers in a variety of leadership positions throughout the U.S. Army have differing thoughts and ideas on selecting a master gunner candidate. With the exception of a small percentage, NCOs selected to attend the Master Gunner Course are the "cream of the crop" of the NCO corps in a unit. However, have we, as their leadership, ensured we've given them every opportunity for success? Look at the following questions and see how they apply to your organization:

- How often has the master gunner candidate in a battalion or squadron had to decline attending school for a variety of reasons?

- How often has this occurred within a couple of weeks prior to attending school?

- How often have we had to select NCOs to attend school to keep from having a shortfall?

- How often have we had to accept a lower-quality NCO to attend school due to a short notice?

- How often, due to short notice, have we not sent our best qualified NCOs and sent a substitute in his place?

- What is the success rate of NCOs in my unit completing the master gunner course?

If the answers to any of these questions caused a light to come on, we may have identified a problem. I've seen units that have an outstanding master gunner selection process. This selection process does not mean you have to detail a master gunner to train the candidate for several weeks or months to pass the course. If this were the case, then we have a course that's missed the boat. We currently have a management tool in place in our units to help eliminate the problems associated with the questions listed above.

In our units, we've established order of merit lists (OMLs) for soldiers attending NCOES schools. The purpose of the OML is to identify the priority of soldiers selected to attend school within the unit. The OML also gives the soldiers involved a "heads-up" to the time frame of when they will go to school. This "heads-up" allows them to complete any preparatory requirements (i.e. math testing, TABE test, TCGST, etc.), take care of finances, and ensure family matters are in good order prior to attending school. Normally, the OML is managed at company/troop level by the first sergeant. An OML for master gunner candidates should include the unit's best tank trainers. Selection of those master gunner candidates must include the following considerations.

- Rank of SGT to SFC

Continued on Page 50

Rehearsal in War: Preparing to Breach

by Major Lawrence M. Stelner, Jr.

The Result

On 24 February 1991, the opening day of the ground offensive of Operation DESERT STORM, Task Force 2-34 Armor (DREADNOUGHT) conducted a deliberate attack on prepared positions defended by a battalion of the Iraqi 26th Infantry Division. The assault included a breach of engineer obstacles across a narrow front and an expansion of the "breach-head" by disrupting the defense, reducing trenches and destroying enemy positions in depth.

At the end of that day, it was evident that the attack was extremely successful. In less than four hours, the task force had met its initial objectives at the cost of only one soldier wounded by enemy artillery. Enemy losses were estimated at 250 prisoners (some taken before the actual assault) and 40 killed in action.

TF 2-34 Armor rapidly established four of the 16 cleared lanes through the obstacles made by the 1st Infantry Division (Mechanized). The remainder were made by the other breaching organization in the 1st Brigade, Task Force 5-16 Infantry, and by task forces in the 2d Brigade. This overwhelming success allowed the rest of the division and, significantly, the 1st British Armored Division, to continue the attack into Iraq a day ahead of schedule.

A Key to Success

Rehearsals are a part of doctrine, stressed heavily at the National Training Center, and TF 2-34 Armor found them to be invaluable in preparing for

the breach operation. In their various forms and at all levels, rehearsals contributed immeasurably to the success achieved on the 24th of February.

Throughout the time spent in getting ready for the attack, rehearsals were an integral part of the task force's life. These included leader participation in map exercises and "sand table" walkthroughs that ensured familiarity with the plan and explored various contingencies that might be required based on enemy actions. At every level from company to brigade, rehearsals led to total understanding and continual refinement of the plan, both important to its eventual successful execution.

Perhaps more important, however, were the actual rehearsals of the plan that were conducted from platoon to task force level. Practicing in the desert sand with the personnel and equipment to be used in the attack impressed upon each and every soldier, from private to task force commander, his role and relationship to other people, vehicles and units in the task force.

The focus below, however, will be on changes made to the way the task force was to actually operate based on the lessons learned through these training exercises. While some of these relate to leader actions and planning, most are "physical" in nature and were only identified through "hands-on" rehearsal. While the lessons outlined below may not be completely applicable to any future conflict, they do confirm the importance of rehearsals, even in war, and may provide techniques useful to others. They also reflect the kinds of prob-

lems that might be identified and overcome through effective planning when rehearsal time/opportunity is not available.

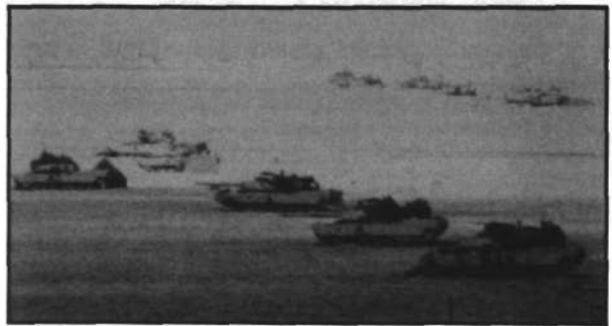
Background — The Plan

As with any training, there must be an objective in mind. In this case, the goal became mission accomplishment. The mission, stated in TF 2-34 Armor OPOD Desert Storm # 4-91 dated 26 January 1991 was as follows:

2. *MISSION: TF 2-34 Armor moves on Lane Delta to attack in zone along Axis Gauntlet to penetrate IRAQI defenses vic OBJ 3K NT695386; establishes four breach lanes; attacks laterally to the West to clear IRAQI forces from OBJ 4K; continues the attack along Axis Ace or Axis Saturn to seize OBJ 9K. olo Pass 1-34 Armor through the BREACH LANES. olo Move along Axis ZEUS to BP 105 as BDE reserve. olo Move along Axis MARS to BP 150 as BDE reserve. olo Move on AXIS VICTORY during BDE Movement to Contact to destroy RGFC.*

Although the mission seems long and somewhat complex, it was basically sequential. While the implied task of clearing and "proofing" the lanes was to be done at the same time as reduction of the defenses, the task organization available allowed for this to be accomplished effectively. TF Dreadnought's force and its structure are shown at Figure 1.

The amount of time available for planning allowed for a detailed and comprehensive picture of the enemy positions. Intelligence estimates



yielded the graphics of their defense as shown in Figure 2. Although the picture was clear, there was no definitive analysis concerning the content and extent of the obstacles, nor of defensive preparations.

Given the uncertainty, planning and training assumed the worst — mines, wire, full strength defenders dug in, coordinated trench systems. Excerpts from the "Commander's Intent" give the key points behind the plan of attack:

...We will have achieved success if we breach and clear four secure lanes and are able to secure the zone...The heart of the plan is that we must focus company-sized units on platoons. Additionally, except for the attack on OBJ 3K [the initial assault], we will seek to clear the enemy in zone by attacking his positions from the flanks and rear...Movement is the key to survivability.

The plan for the attack was simple in concept, yet complex in the details of clearing the trenches while keeping to the commander's intent. Therein lay the importance of rehearsals in ensuring adherence to the plan. Again, quoting from the order:

Following a 2.5 hour [artillery] preparation we will attack OBJ 3K with Aces [Tm C] and Bulldog [Tm B] abreast. Wolfpack [Tm D] will

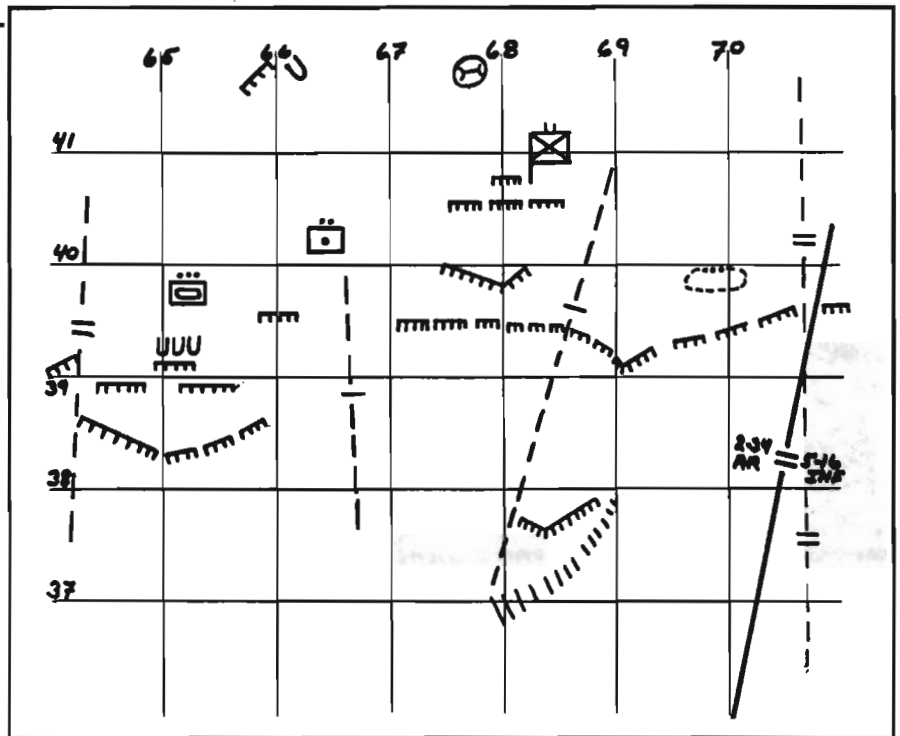


Figure 2. Intelligence Estimates of Enemy Dispositions

support by firing following clearance of intermediate OBJ AXE. Orange [Tm A] will follow Bulldog prepared to assume the mission of either lead team. Bulldog and Aces will assault through the enemy positions using plows, infantry and ACEs (Armored Combat Engineer Vehicles) to destroy the enemy in the trench.

As the graphics at Figure 3 show, the initial assault and passage of the

task force through the breach was designed to get the scout platoon and Team B protecting to the northeast and northwest. The other three maneuver teams would be on line prepared to continue the attack to clear the remaining objectives. Getting into this configuration rapidly and without confusion was the focus of the maneuver rehearsals.

The Concept of Maneuver Rehearsals

The 2d Battalion, 34th Armor closed in 11D's tactical assembly area, TAA Roosevelt, on 17 January 1991. It was expected that there would be some time to train for the attack and there was plenty to do to get ready. Prior to the actual training, two actions were required: (1) Task organize with elements of 5-16 Infantry and other organizations in the division (specifically engineers) and (2) Receive and mount mine plows and rollers that had been shipped earlier from the port of Dammam.

Training progressed from crew and platoon to battalion, with complexity of the events increasing with each

TF 2-34 Armor Task Organization

Team A	Team B	Team C	Team D
A/5/16 Inf (-) 2/B/2/34 Ar	B/2/34 Ar (-) 3/A/5/16 Inf 2/A/1 Eng 1 CEV 1 ACE 1 AVLM	C/2/34 Ar (-) 3/D/5/16 Inf 3/A/1 Eng 1 CEV 2 ACE 1 AVLM	D/5/16 Inf (-) 1/C/2/34 Ar 2 ACE 1 AVLM
A/1 Eng (-)	Task Force Control		
2 D7 Dozers 1 AVLB	HQ Tanks Scout Platoon 1/1/A/1 Eng Mortar Platoon Alpha FIST	Decon Squad GSR Section 1/A/2/3 ADA Smoke Platoon	

Figure 1

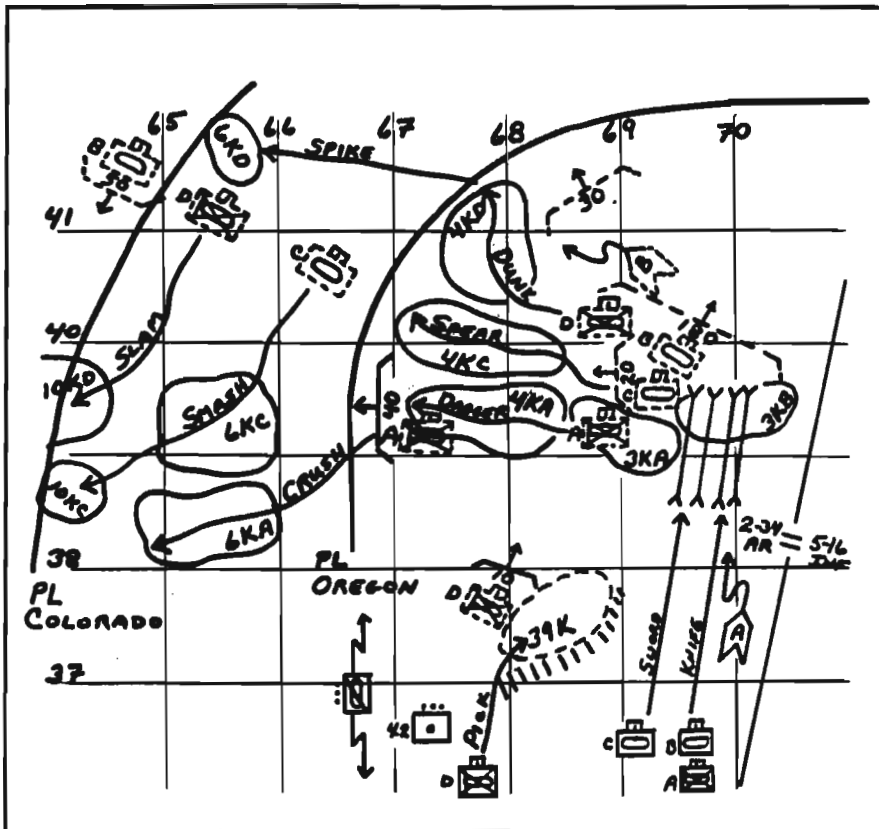


Figure 3. TF 2-34 Armor Maneuver Graphics

The details of the obstacles and trenches conformed as close as possible to what the intelligence community determined was actually on the ground. This “training aid” became the focus of maneuver rehearsals, particularly at the task force level.

Modifications to the “objective” were made after several rehearsals in order to train leaders to react effectively to the unexpected. During the night preceding one rehearsal, for example, the engineers built a berm in front of the simulated minefield. Variety of this sort, as well as increased complexity of each rehearsal, ensured that leaders and soldiers did not become overconfident “robots,” moving along prescribed routes without thinking about what was going on around them.

Other training events became rehearsals in the sense that actions related to the actual attack were practiced and refined before they were used. One key training event was a brigade movement to contact where Task Force Dreadnought practiced the formation to be followed in its movement to the attack.

In addition, a hasty refuel on the move was attempted during the movement to contact training. Problems encountered led to changes in the employment of combat service support (CSS) assets. Later, these changes allowed for a successful refuel operation during combat within 2,000 meters of Iraqi positions.

Practicing night CSS linkup and resupply operations was also beneficial and contributed to effective resupply at night after the initial attack was complete.

Lessons learned through the rehearsals came from various

subsequent iteration. For example, companies began with basic movement formations and progressed to detailed rehearsals of the breach operation. At the task force level, rehearsals started with maneuver units only and evolved into full dress rehearsals including combat service support assets

with medical casualties/evacuation/triage and simulated vehicle recovery.

To make the training as realistic as possible, Company A, 9th Engineers, the first engineer company attached to the task force, built a replication of OBJ 3K in the vicinity of the Tactical Operations Center (TOC) in the TAA.

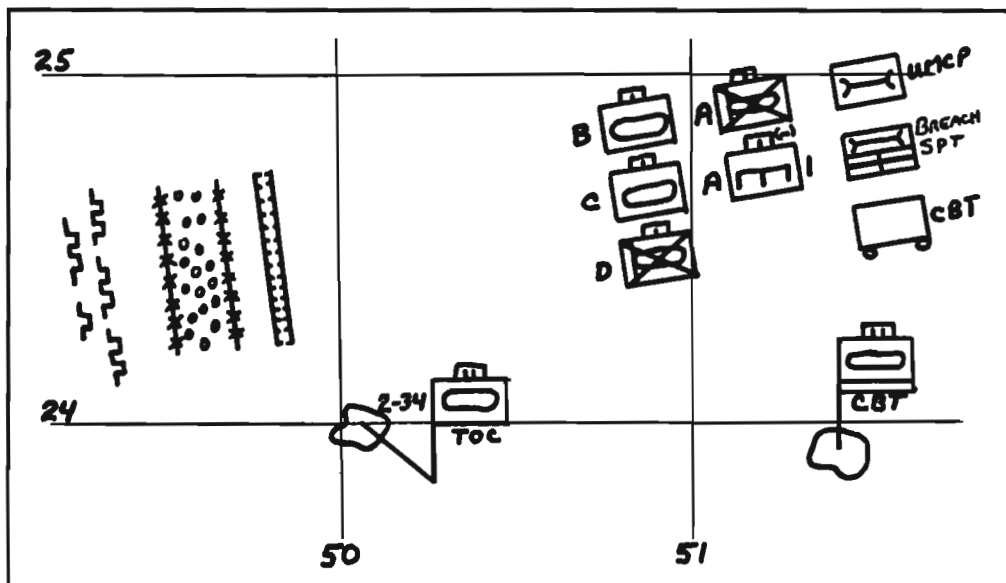


Figure 4

Schematic of the Rehearsal Area

sources (private to commander) and at all levels of training. The after-action review (AAR) from crew to task force, as well as observation from nonparticipants (both from within and external to the task force), were beneficial. In the end, the improvements outlined below were important to successful execution of the plan.

The Lessons

Having never before worked with mine rollers and plows, just practicing with them at the crew level was necessary to effective use. There were, in addition, some peculiarities that required adjustments.

- The mine plows are raised and lowered mechanically, using nylon straps that “roll” up and out. In plowing through triple strand concertina obstacles these straps were cut by the wire, not allowing the plow to be raised. This problem was overcome by welding “wire cutters” to the plows in front of the straps. Simply angle iron with notches, they worked in a similar manner to those mounted on jeeps in Vietnam.

- Repeated use would also shear off one of the bolts that held the plows in place. Lack of spare parts for the attachments led to improvisation and the use of center guide bolts.

- A “dogbone,” mounted between the two sections of the plow in the center of the tank, was designed to detonate tiltrods missed by the plow. One of the modifications we received was a “roller dogbone” that created a magnetic field to detonate magnetic mines. This roller, as delivered, hung too low and bounced on the ground even when the plow was not in use. The crews rearranged its mounting chains to save the rubber roller from undue wear.

- One problem that was not solved was the disparity between the optimum speeds for the antimagnetic roller and the plow. To operate effectively, the roller needed 12 miles per hour. Plowing, on the other hand, was best done at 8 miles per hour. METT-

T suggested that we move fast in making the breach, and the lanes were cleared effectively.

- While mine plows are not a hindrance during normal operations (except for excessive sprocket wear “cupping”), mine rollers had to be removed when not in use. Practice ensured rapid dismounting after the breach and placement on their lowboy trailers, prepared for any future need.

- It was initially envisioned that the minerollers would be the final “proof” of the lanes made by the plows. Each lead team, however, had only one roller and three plows to make two lanes. Putting two plows on one lane and the last plow and roller on the other allowed for a backup breach tank on each lane. In order to proof the other lane with the roller, this tank would have had to turn around and go back through in the opposite direction. This was not necessarily a problem, but a tank with rollers is slow and this would take a combat vehicle out of the fight for some time. Fortunately A/1 Eng came to the task force with a “mine rake,” mounted on a Combat Engineer Vehicle (CEV). The rake was faster than the roller and was used to proof the lanes, allowing the roller tank to stay in the fight.

Marking the lanes for subsequent units to follow was also important and required some practice and refinement. This task belonged to the engineer platoons attached to the lead teams. Quality control was enhanced by making the breach teams’ executive officers responsible for correct marking. After several rehearsals, they became proficient, emplacing the system efficiently.

- The original plan called for marking the entrance to each lane with an orange aircraft recognition panel (VS-17) mounted on a tripod made from concertina pickets. This arrangement, unstable and usually unrecognizable, gave way to plywood panels marked with a very large letter corresponding to the lane. After the lanes were proofed, the attached engineer company commander was responsible for

emplacing additional plywood markers along the route to the lane and extending for two kilometers back toward friendly lines.

- Within the breach, orange “highway cones” were placed along the left side of each lane by the engineers. This was effective, but it took several rehearsals and AAR reinforcements to ingrain this system into drivers and vehicle commanders, especially medical and maintenance personnel who used the lanes the most after the combat vehicles made their way through.

Another somewhat unique problem was clearing the trenches after the breaches were made. Using dismounted infantry was a possibility, but it would have been slow and potentially costly. Two solutions, met the commander’s intent for speed and avoided using scarce infantry in this dangerous role.

- Using the Mine Clearing Line Charge (MICLIC) mounted on an M60-series Armored Vehicle Launched Bridge (AVLB) chassis was considered early as a means to make the breach lanes. Demonstration showed, however, that setup was slow and that the charge was not long enough to cover what was expected to be the depth of the minefield. The MICLIC was relegated to a backup role. However, the charge did a great job on trenches and was used for that purpose.

- Rehearsals confirmed that the best method for clearing trenches was to use an ACE to simply cave them in and bury any enemy that persisted in defending them. ACE operators became adept at doing so, and they worked as well in execution as in practice, swift and thorough.

- ACEs, designed to save manpower, have only one crewman and no armament. They were vulnerable in their trench-clearing mode and required protection. This led to assignment of two “wingman” M2 Bradley Infantry Fighting Vehicles to each ACE. The Bradleys and ACEs worked together to find an optimum formation, one that allowed the M2s to fire their 25-

mm cannons ahead of the ACE to keep the enemy down, and to fire behind it in case some enemy escaped the trench.

Vehicle recognition was important to the operation, not only to prevent fratricide, but to keep proper team alignment and for medical evacuation. While certain systems were in place as a matter of SOP before the war began, certain modifications had to be made in order for them to be effective in practice.

•IID instituted a system of numbers and chevrons painted on the sides of vehicles that allowed recognition down to platoon level. These markings were extremely important in keeping teams aligned as the task force maneuvered in the objective area. Unfortunately, previously developed load plans that hung duffle bags on the sides of vehicles obscured the markings. Not only did units have to modify load plans, but the infantry platoons had to store both "A" and "B" bags on trucks in the rear areas.

•Given Allied air superiority, it was decided that all friendly vehicles would display the orange VS-17 panel, or facsimile, on top. Not having enough panels, the task force bought orange paint on the local economy and painted rectangles on vehicles without panels. To test the effectiveness of the overall system, the task force Air Liaison Officer (ALO) arranged for an A-10 Thunderbolt to overfly a rehearsal. He could readily identify all the markings.

•Solving the problem of recognizing friendly vehicles from the air created a new problem. Task force SOP was that the VS-17 panels would be used to identify a vehicle that required a medical evacuation. Further rehearsals found that range flags would work in lieu of the VS-17 panels, although they had to be placed higher on vehicle antennas in order to be seen effectively by medical personnel.

Navigation proved to be as difficult in the desert as it was predicted to be. Cautioned otherwise, task force units still came to rely too heavily on the



Magellan Global Positioning System (GPS). Other means of navigation had to be found, even when considering a limited objective area.

•The scout platoon, in conducting a rehearsal of a potential dismounted night reconnaissance of the objective reaffirmed the need to back up the GPS. Halfway to the objective the satellites "disappeared," and the scouts were totally lost. No one had bothered to take a compass reading or maintain the pace. The lesson was learned and not forgotten.

•Identifying the actual site for the breach would not be an easy task, even if the GPS was working, but would be much worse if it was not. It was important to hit the right spot because the plan was dependent upon knowing the location of the trenches and starting into them at the right place. Moreover, there were four breach sites in relatively close proximity to be cleared by four different battalions. Confusion could have been disastrous. An "on order" white phosphorus round from the direct support field artillery battalion solved this problem and worked well in the execution.

•Finally, as Team D moved up to support-by-fire positions, rehearsals pointed out the difficulty of identifying Team C and keeping fires to their left. In a manner similar to the method for identifying the breach area, it was decided to use the mortars to suppress the enemy platoon to the left of the breach area and keep Team D's fires in the same area and farther to the left.

Combat Service Support (CSS) Integration

Perhaps the greatest benefit gained from the task force level rehearsals,

besides maneuver execution, was the practice and refinement of CSS operations and their synchronization with the maneuver plan. While this took away from routine logistics preparations for combat, the gains far outweighed the costs.

Rehearsals included, in part, the combat trains (S4, main aid station, fuel and ammunition trucks) and the unit maintenance collection point (battalion maintenance assets). These elements practiced their movement to the objective area as part of the movement to contact, and the subsequent move through the breach lanes to set up resupply, maintenance, and medical operations on the far side.

There was, however, another CSS piece that gained the most from the rehearsals. In planning for the attack, it was evident that the critical point in the battle would be getting through the breach and the actions immediately thereafter. It was important, therefore, to mass key CSS assets at this critical phase of the battle.

Task force planners created a "breach support team" to ensure this priority of effort was met. This team consisted of five M88A1 recovery vehicles (the remaining two being attached to the lead maneuver teams) and the jump aid station. It was positioned within one kilometer of the lead teams for quick response to problems encountered during the attack.

The purpose of the recovery assets was initially to ensure that the breach lanes were cleared of any disabled combat vehicles so that the attack could continue and following forces would have unobstructed lanes. Their second task was to proceed through the breach immediately behind the trail combat elements and perform battle damage assessment and repair (BDAR) on vehicle casualties. The jump aid station was to move through the breach with the recovery vehicles and perform its medical treatment mission close to the combat elements.

Rehearsals determined that the concept was sound. Not used to tactical maneuver in this type of mission, the

lessons learned by maintenance and medical crews and leaders were more pronounced, yet similar to, those learned by their combat comrades. For example, lane recognition, going into and evacuating from/through the breach, and the requirement to stay in the cleared lanes were new skills that did not come readily but stuck hard once the consequences were made clear.

After several rehearsals, the CSS team, down to the individual crewmen, became familiar with its place in the scheme of maneuver. The team operated efficiently and effectively with a full understanding of its relationship to the maneuver units and the expected nature/location of its mission on the battlefield. In execution during battle, it worked as smoothly as the final practice, a testimony to the benefit gained through rehearsal with the maneuver units.

While the general lessons learned by the CSS elements mirrored those learned by the combat teams, there were others related specifically to the CSS functional areas:

- Until rehearsed with the expected number and type of casualties, simulated by "tagged" combat vehicle crewmen, the battalion aid station did not fully grasp the magnitude of the problem it faced. The medical platoon participated in early rehearsals before the rest of the CSS team. They began with the complete aid station, consisting of both M577 command vehicles, and progressed to the more complex split of the "main" and "jump" as directed in the plan. This progressive method allowed better supervision in the initial stages of training, effectively identified problems, and led to the development of solutions. Specific areas requiring improvement included setup, triage, and the knowledge of evacuation routes and destinations. By the last rehearsal, when the aid station was split, it was evident in talking to the simulated casualties that they were impressed with the performance of their medical support and confident

that they would be well taken care of should the need arise.

- Given the forward location of the jump aid station (JAS) on the far side of the breach, rehearsals showed that it was not staffed sufficiently to perform several functions related to its mission. The JAS did not have enough personnel to secure itself once the M88s left it in position, nor did it have qualified soldiers to effect casualty reporting and to conduct the chemical decontamination of casualties if required. These deficiencies could only be solved by augmenting the JAS with personnel to perform these specific tasks. The problem was to identify the augmentees and to determine how they would be transported through the breach. Solutions were as follows: (1) S1 personnel were available to do the reporting; (2) Cooks were not needed during the attack since we were to eat MREs, and enough volunteers came forth to be trained in chemical decontamination of casualties and to double as security; (3) There was enough room in the M88s to transport the additional soldiers through the breach and drop them off at the site of the JAS.

- Command and control for movement of the breach support team, as well as control of the recovery/BDAR mission, was vested in the battalion maintenance technician who rode in the lead M88. It became apparent in rehearsals that the team needed a radio communications net separate from the normal admin/log net so as not to interfere with the command and control of the standard CSS elements. Fortunately, the plan called for the battalion S3, in conjunction with the engineer company commander, to control movement through the breach, and he had a spare radio with him in the battalion TAC. An unused frequency from the engineer company was given for this purpose and ensured positive control of the breach support team, both in ordering it through the breach and in accomplishing its missions.

The Bottom Line

Rehearsals work. Task Force Dreadnought's performance was vastly improved through the sequential progression of training events conducted in preparation for its attack on the Iraqi defenses. Ultimately, the successful, efficient conduct of the attack under fire proved the value of an extensive, comprehensive program of rehearsals. While there may not always be 30 days available to train and rehearse for an operation (particularly at the NTC), the concepts used by Task Force 2-34 Armor still apply. Applications also exist regarding the types of, and perhaps the specific, lessons learned through the rehearsals. Given a limited amount of time, it will be the task of the unit's leadership to set priorities concerning the focus, type, level and extent of its rehearsals. Choosing well can mean the difference between victory and defeat.

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Tank Company Security Operations

by Major Patrick A. Stallings

Introduction

Stationary tank units are vulnerable to infantry using infiltration tactics, particularly in close terrain. Infantry units are well-armed with very effective antiarmor weapons, and can cause great damage if allowed to get close to the tanks. The tank company must be able to detect and destroy infantry attacks in order to conserve combat power.

The current tank company organization lacks the equipment and personnel for handling an infiltrating dismounted threat. Equipment needs include sensor systems, thermal night vision devices, and other security-related equipment. Personnel shortages are best addressed by ensuring that task organization provides the tank company adequate dismounted security forces to conduct patrols and establish observation posts.

Additionally, current company defensive doctrine does not give enough detail and guidance on security operations in the battle position or the assembly area. Doctrine needs to include more definitive direction to the company commander on how to organize and implement his security operations.

Personal experience at the National Training Center (NTC), Fort Polk, and Fort Hood has demonstrated the effectiveness of well-trained, dismounted soldiers armed with modern antitank weapons against armor in static positions. A dismounted night attack by infiltrating infantry can be devastating to an armor company's defense, resulting in unacceptably high losses.

Historical experience and an analysis of current light infantry antiarmor doctrine demonstrate that the potential for such a threat is not just a training phenomenon. Historically, infantry has often attacked armor with hand-

held weapons alone. With appropriate equipment and doctrine, these attacks have been very successful.

Currently, some Third World nations with technological and numerical deficiencies in weapons systems compensate by using masses of people armed with inexpensive weapons to provide combat power.¹ Even in more developed countries, such as the United States, China, and North Korea, doctrine prescribes infiltration tactics by infantry units to attack and disrupt defending armor units. We can expect armed forces at all levels of the operational continuum to conduct infiltration attacks.

Historical Perspective

*My first moment of action was when I was marker tank in the Tobruk breakout and a very brave German jumped on my back flaps armed with a Molotov cocktail and a crowbar... I must admit that ever since then I've suffered a certain amount of 'infantry terror.'*²

Brigadier Richard Simpkin survived his encounter with an infantry antiarmor attack with the help of an alert wingman. There are numerous examples of other armored troopers who did not. Some of these examples are valuable lessons in the value of denying infantry the ability to find, close with, and attack armor.

The first infantry attacks against tanks occurred shortly after tanks were introduced onto the battlefield in WWI. Recovering from the initial shock of being attacked by armor, infantry soldiers improvised ways to attack tanks, including closing with the tanks and using phosphorus grenades, bundles of fragmentation grenades, and shots through the vision slits to stop the tank or kill the crew.³ Due to

the slow speed and thin armor of those early tanks, these tactics were fairly successful.

In the spring of 1917, the Germans introduced the "K" bullet, a solid core round capable of penetrating armor, providing the infantry with their first organic antiarmor capability.

In the Spanish Civil War 20 years later, the technologically backward separatists in northern Spain used sacks of explosives with time fuses against armor in close terrain. These first satchel charges required the attacker to close with the tank, start the fuse, and throw the charge on the tank. This highly dangerous maneuver was often fatal to both participants, but demonstrated again the vulnerability of armor to a determined though lightly-equipped enemy.⁴

World War II inspired the creation of numerous infantry weapons specifically designed to destroy tanks. The German blitzkrieg and the apparent invincibility of the tank lent special urgency to developing a way for light forces to conduct antiarmor operations. The combatants introduced three key antiarmor weapons during this period.

In the late 1930s, the British fielded the first hollow-charge antitank weapon, a rifle grenade for the Lee-Enfield rifle. This weapon, a forerunner of the modern HEAT round, was based on the shaped charge still used in many antiarmor systems today.⁵

Later, the Germans developed the Panzerfaust, a small hand-held recoilless launcher for a hollow-charge projectile. Within 50 yards, it was very effective against tanks. The Panzerfaust was also the first antiarmor system designed to be thrown away once it was fired.⁶

About the same time the Germans were fielding the Panzerfaust, the Americans created their own hand-

held, recoilless antitank weapon, the bazooka. Also firing a shaped-charge warhead, it was, for most of World War II, very effective against German armor. A heavier version of the bazooka was developed too late for use in World War II, but saw widespread use in the Korean War.⁷

The main similarity between these hand-held antitank weapons was the short range required for maximum effectiveness. The requirement to get close to the target tank produced remarkably similar tactics among infantry forces in World War II. A German example of these tactics is described by Guy Sajer in his book *The Forgotten Soldier*.

Sajer was in the Gross Deutschland Division on the Russian Front in 1943. His antitank training prescribed digging in and allowing tanks to overrun his position, and included instructions on how to operate the Panzerfaust, and how to mount a moving tank to attach a magnetic mine between the turret and hull. A soldier was trained to wait until a tank was five to ten meters from his fighting position before leaping out and running to the tank's side or rear to engage.⁸ These dangerous tactics were used across the Russian Front to great effect.⁹

Another World War II example of men attacking tanks occurred during the 1st British Airborne Division's fight to retain the bridges at Arnhem. The First Division's brave and lightly equipped soldiers found themselves facing 56-ton Tiger tanks. Using hand-held antiarmor weapons, anti-tank guns no larger than 75mm, and improvised antiarmor weapons, the airborne soldiers attacked and destroyed 60 tanks in the close confines of the city.¹⁰ They accomplished this by using stealth and cover to engage the tanks from the top, rear, and sides.

A common thread in World War II is the tactic of closing with tanks to take advantage of blind spots and maximize the effects of light weapons, and the use of stealth and sur-

prise to engage tanks from the flanks and rear.¹¹

The tanker's reaction to the dismounted antiarmor threat was to look for infantry protection against infantry and antiarmor systems. One solution used by American commanders in Normandy was to have a rifle squad accompany their platoons of tanks. These infantry squads moved forward of the tanks and suppressed the crews of enemy antitank guns. This allowed tanks to maneuver through obstacles and close terrain to engage the enemy with the tank's superior firepower.¹² This combined arms approach to armor security was a tried and true tactic in World War II.

In the Korean War, during the linkup between U.N. Forces driving north from Pusan and east from Inchon, Task Force Lynch, an American infantry unit driving toward Osan, encountered an armored North Korean unit attempting to block its advance. Task Force Lynch attacked with infantry and destroyed two T-34s with recoilless rifle and 3.5-inch bazooka fire. As the day ended, when more enemy armor was observed, the infantry conducted a night attack and destroyed at least four tanks with bazooka fire. The attack continued the next morning, when three more T-34s were destroyed with bazookas.¹³

The Chinese and North Koreans also used infantry forces to attack tanks. They mounted an attack on Task Force Crombez as it attempted to relieve the 23rd Regimental Combat Team in Chipyeong-ni. Their technique was to approach the armor column in close terrain and use satchel charges, bazookas, and bangalore torpedoes to destroy or disable tanks.

During the Vietnam War, the Viet Cong and the North Vietnamese, faced with the necessity of attacking armored forces with lightly armed infantry, infiltrated as close as possible to firebases and defensive positions and then massed antitank and rocket-propelled grenade fires on armored targets.¹⁴ Often, the Vietnamese were able to locate American positions by

the noise of maintenance operations.¹⁵ The noise of maintenance and sustainment activities in armored units still make avoiding detection a problem.

The American reaction was geared toward eliminating the advantage that close terrain gave the infiltrating enemy. Tree-clearing equipment, defoliants, and burn-offs created fire zones that made infiltration more difficult. Armor and infantry provided mutual support within firebases; no tanker liked being stuck outside the perimeter without some security against infiltrators.¹⁶

Early in its history, the Israeli Army was an infantry-based force with virtually no armor or heavy weapons. During the Israeli War for Independence, the army compensated for this disadvantage by using infiltration techniques in limited visibility to close with the enemy. The infantry would then destroy any defending armor with antiarmor weapons.¹⁷ These antiarmor weapons were a mix of weapons stolen from the British, bought from foreign sources, and taken from captured enemy stocks.¹⁸

Our recent experience in Panama was a positive example of how to avoid tank losses from infantry attacks. Initially, tanks were tasked to reinforce the infantry. During this period, tanks were often used in engagements with Panamanian forces at ranges under five hundred meters. After a long period of urban and jungle fighting, the tanks were used to patrol as a "show of force" operation.¹⁹

The close relationship between infantry and armor helped protect the armor throughout the operation. One illustrative observation of the armor commanders on the scene was that, "dismounted security is extremely important." We relearned that 360-degree dismounted security is necessary for armored units in close terrain.²⁰

Historically, many infantry forces have tried to take advantage of limited visibility, stealth, and surprise to close with armor and maximize the effect of light antitank weapons. Typically,

armor has reacted by using dismounted security and by avoiding close terrain as much as possible.

Brigadier Simpkin put it best when he said combatants will, "...concentrate all available effort, whatever its nature, in time and space against the opposing element which is critical at that point in time and space."²¹ We have seen the truth of this in the past when armor was the critical element.

Current and Future Antiarmor Equipment and Tactics

Regional threats will require the Army to be ready to deploy worldwide.²² Regardless of where the Army goes, it must be prepared to face infantry attacks against armor units.

A representative sample of weapons currently available for antiarmor operations is described in Figure 1.

All of the weapons systems in Figure 1 are available to a light force for killing tanks. They are light enough and have enough range and lethality to make a light infantry soldier a tank-killing system. Properly employed against the flanks, rear, and underbelly of a tank, all can destroy or disable.

An observation from the Center for Army Lessons Learned (CALL) indicates that "seventy-five percent of units that maintain security, win. Ninety-three percent of those that don't, lose.[sic]"²³ The advantages in intelligence and disruption of the defensive scheme that accrue to units that successfully penetrate security measures are very important in setting the conditions for a successful attack. Given this observation, the role of dismounted infantry in denying security to defending forces becomes very significant.

According to these observations, dismounted infantry should use "stealth, darkness, and restrictive terrain" to infiltrate enemy lines, recon obstacle locations and enemy positions, and conduct supporting attacks.²⁴ These infiltration tactics are meant to bypass and

Light Antiarmor Weapons

MINES:

<u>Model/Name</u>	<u>Type</u>	<u>Carry Weight</u>	<u>Effect</u>
M15 Mine	Pressure	30 lbs	Breaks track
M19 Mine	Pressure	28 lbs	Breaks track
M21 Mine	Tilt Rod/Pressure	18 lbs	Kills or Breaks track
M24 Mine	Switch/Cmd	24 lbs	Kills

INDIRECT FIRE WEAPONS:

<u>Model/Name</u>	<u>Type of Round</u>	<u>Penetration</u>
M203 Grenade Launcher	High Explosive	50-mm armor

DIRECT FIRE WEAPONS:

<u>Model/Name</u>	<u>Type of Round</u>	<u>Carry Weight</u>	<u>Penetration</u>	<u>Range</u>
AT-4	Shaped Charge-HEAT	15 lbs	350-mm armor	300 M
M72A4 LAW	Shaped Charge-HEAT	7 lbs	350-mm armor	220 M
RPG-7V	Shaped Charge-HEAT	22 lbs	330-mm armor	500 M
RPG-22	Shaped Charge-HEAT	11 lbs	390-mm armor	250 M
Panzerfaust 3	Shaped Charge-HEAT	26 lbs	700-mm armor	500 M

HEAT (High Explosive Antitank)

Figure 1

eliminate the defending armored force's security system.

One recommended infantry attack technique is to force the armor out of position and into the killing zone of supporting antiarmor systems. The targeted vehicle must choose between flank and rear shots from attacking infantry or direct engagement with supporting armored systems.

The observations further recommend electronic warfare support to jam fire control nets and protect the light force from indirect fires.²⁵ Additionally, indirect fire support, particularly smoke and illumination, is important for creating successful conditions for the infiltrators.

Many nations and forces adhere to the light infantry doctrine.

The *Antiarmor Handbook* for the 82d Airborne Division describes tactics, techniques, and procedures for operations against armored forces. The handbook was developed because

of the need for airborne forces to deal with armored adversaries.²⁶

The basic tenet of the 82d Airborne's approach is to use stealth and periods of limited visibility to close with defending tanks. The infantry maneuvers to gain the advantages of flank and rear shots.²⁷ Their stated intent is to minimize casualties while maximizing weapons effects.²⁸ Using these tactics, the airborne infantryman can attack important rear area sites, ambush supporting units, and attack to disrupt the defensive system.²⁹

The United States Marines also recognize the need to train infantry units to fight an armored threat.³⁰ The Marine Infantry Officer's Basic Course teaches its officers to draw tanks into ambush, use smoke and suppressive fires to force the armor to button up, disable them by flank and rear shots, and destroy them using satchel charges, Molotov cocktails, thermite grenades, and antitank weapons.³¹

An article in the *Marine Corps Gazette* describes infiltration as the offensive form of maneuver for light infantry. According to this article, one of the objectives is to create a breakthrough by disrupting or destroying key defensive positions. The author also points out that current technology allows relatively small bands of infantrymen to call in highly accurate and lethal indirect fire on identified enemy locations.³²

Other Marine articles recommend training techniques for preparing infantry to attack tanks in close combat. Familiarization with tank vision restrictions, the noise of tank gunnery and operation, and an appreciation of how to use restrictive terrain to close with tanks are listed as training techniques.³³ All of these techniques prepare Marine infantrymen to take on armored forces and win.

Other nations have developed organizations and tactics geared toward defeating armored forces. Chinese principles of combat include secrecy, infiltration, and night operations to maximize the effectiveness of their largely infantry force.³⁴ Soviet platoon leaders and company commanders personally take their units through rigorous training on tank vulnerabilities, emphasizing how to take advantage of such weak spots.³⁵

One regional threat particularly well suited to infiltration tactics is the North Korean People's Army (NkPA). Specific organizations and tactical doctrine have been developed by the NkPA to support dismounted assaults on South Korean and American defenses.³⁶

Aside from their combat infantry line units, the NkPA has over 100,000 unconventional warfare and special commando troops whose primary mission is to create breakthroughs of defensive lines.³⁷ These infiltrating forces have major objectives of securing the approach routes, raiding and fixing enemy strongholds, securing and controlling key terrain, and other disruptive missions.³⁸ They will use

stealth and limited visibility to penetrate defenses and close with defending forces.

NkPA combat infantry units have five basic forms of maneuver: penetration, Pocho (an infiltration maneuver by small units through gaps in the enemy lines), Cheon Ib (another form of infiltration maneuver), envelopment, and bypass. Infiltration, deception and surprise are integral parts of each technique.³⁹ Additionally, the night attack is a preferred method of conducting offensive operations, while one of the types of nighttime formations is the dispersed formation. This formation is used to allow infantry units to find gaps in enemy defenses and close with enemy positions.⁴⁰

All of the forces discussed are highly formidable, with tactics well suited to disrupting and defeating armored defensive positions. In general, their infantry will use stealth, cover, concealment, and limited visibility to close with tanks and engage them from the flanks and rear. American armor units must be prepared to deal with this threat.

Future Equipment and Tactics

In the future, armies will continue to develop lighter, cheaper, recoilless, smokeless antitank weapons to exploit tank weak spots.⁴¹ Therefore, the next generation of antitank weapons is likely to attack the top of armored vehicles⁴² or at least have improved ability to penetrate reactive or composite armor. Although effective ranges may increase, weapon weight will be kept low enough to allow a dismounted soldier to carry it.

Additionally, laser technology currently allows small groups or teams of light infantry to locate armor defenses and designate individual tanks for indirect fire targeting. This, in turn, allows these infiltrating teams to strike repeatedly without being detected unless active detection measures are taken. As laser technology becomes more widespread, this technique will

be adopted by many forces in order to maximize lethality while minimizing cost.

The basic tactic of using stealth, limited visibility, and close terrain to facilitate infiltration will remain the same. Although technological reaction and counter-reaction may protect against many weapons, doctrine and organization must adequately protect against the threat of infiltration attack. The key, now and in the future, is to deny the enemy access to your defensive positions.

Tank Company Security Capabilities

Does the tank company have the capability to secure itself against the threat?

The organic assets the tank company commander has available to conduct security operations are prescribed in the Table of Organization and Equipment (TO&E). By task organizing, the battalion commander can provide the company commander with more personnel and equipment to secure his unit. The need for task organization is determined for each mission by considering the situation in terms of mission, enemy, troops, terrain, and time (METT-T). Since task organized assets can be as different as each battalion commander's assessment of METT-T, I will only discuss personnel and equipment organic to the tank company.

Personnel

Figure 2 lists the personnel available to the tank company commander. These personnel are organized as three line platoons of four tanks each, and a headquarters platoon with one armored personnel carrier, two 1¼-ton trucks (HMMWV), one five-ton truck, and two tanks. Each line platoon is authorized one officer, one platoon sergeant, and fourteen soldiers, while the headquarters platoon has the remaining two officers, the

Personnel Inventory For Tank Company

Captain	1
Lieutenants	4
First Sergeant	1
Supply Personnel	2
NBC Personnel	1
Platoon Sergeants	4
Tank Commanders	6
Tank Crewmembers	43
.	62 ⁴³

Figure 2

first sergeant, and eleven soldiers. With this number of personnel, the company has no more than a complete crew for each vehicle. By comparison, the mechanized infantry company has 54 dismounted personnel not committed to crewing vehicles.⁴⁴

A partial list of authorized tank company equipment is at Figure 3. The list is limited to equipment with direct applicability to security operations.

Tank Company Defensive Security Doctrine

Company defensive tasks are outlined in mission training plans (MTP), field manuals (FM), and unit standard operating procedures (SOP). Within the defensive regimen, many tasks are either directly related to providing security for the force or direct assets away from that requirement. A short summary of defensive tasks is included below.

A simple list of tank company tasks for the establishment of the defense is contained in the company-level and platoon-level MTP:

- Occupy per platoon MTP
- Establish unit security
- Emplace observation posts (OPs) and air guards
 - Patrol areas that cannot be observed
 - Emplace Platoon Early Warning System (PEWS)
 - Position weapons systems and establish fields of fire

- Camouflage positions
- All infantry fighting positions and OPs with overhead cover in two hours
 - Conduct rehearsals
 - Improve defense
 - Recon and establish alternate and supplementary positions
 - Emplace minefields and obstacles
 - Stockpile and protect ammunition and supplies⁴⁶

The establishment of unit security is intended to protect the rest of the company during preparation of the defense. Many of these security tasks require more effort and assets than others.

Combat forces and observation posts (OPs) are established to provide early warning and gain time for the defenders in case of attack. The emplacement of OPs is critical to securing the defense against all manner of threats. Standards for the establishment of OPs are:

- Platoon leader or platoon sergeant site the OP
- Must have good observation and provide early warning
- Select multiple positions if needed to cover platoon's sector

• Have good cover and concealment, with overlapping fields of view when possible

• Covered and concealed routes back to the position

• Have individual weapons, rifles, telephone, MOPP suits/mask, binoculars, night vision goggles or sights, map/compass, load bearing equipment (LBE)

• At least two soldiers per OP⁴⁷

OPs may conduct air guard duties, but typically this duty is picked up by a vehicle with some defensive counter-air capability. In a tank company, this requires an individual to scan air avenues of approach from the tank commander's position of a tank.

Patrols of dead space in sector must be conducted at random, but with well coordinated and planned routes. Patrols are best employed during the day, while other passive measures are more effective at night. Patrols must have communication, rifles or submachine guns, and appropriate supervision by trained noncommissioned officers.

Emplacement of the Platoon Early Warning System (PEWS) requires two

Tank Company Equipment

<u>Equipment</u>	<u>Auth</u>	<u>Remarks</u>
M1A1 Tank	14	4 per platoon, 2 in HQs
M113A2 Armored Personnel Carrier	1	Headquarters platoon
M8A1 Chemical Alarms	4	1 per platoon
Binoculars	16	1 per tank
Commo wire rolls, .5 km each	16	8,000-meter capacity
Camouflage screen systems	51	
Remote control landmine system	2	
40-mm grenade launcher	2	Mounted on M16A2 rifles
Cal .50 MG, heavy fixed turret type	14	1 per tank
Cal .50 MG, heavy barrel, flexible	2	Mounted on truck & M113
Ring mount, Cal .50 MG	1	Truck mount
Ground mount, tripod, Cal .50 MG	1	Carried in M113A2
Night Vision Goggles, AN/PVS 7B	36	2 per tank
9-mm Pistols	58	Personal weapon
Radio Sets, vehicle mounted	17	
M16A2 Rifles	4	Personal weapon
Phone Sets, TA-1 & TA-312	12	3 per platoon
M-4 Carbine, 5.56-mm	28	2 per tank ⁴⁵

Figure 3

soldiers and three to five minutes per sensor for installation. With five sensors per system, total installation time is approximately thirty minutes. Monitoring the system can be done by OPs, but recovery is best accomplished by the same team that emplaced the sensors.⁴⁸

Obstacles are emplaced under the supervision of a platoon sergeant. Crews must emplace obstacles within six hours. Security must be provided initially for the obstacle teams, and then for the obstacles once established. That security can be dismounted or mounted, depending on the situation.⁴⁹

Conducting the Company Defense

From the incredibly busy activity of establishing the defense, the company must shift into maintaining and conducting the defense against all attackers. Although the list of tasks is smaller, the commitment of assets is still intense. Tasks associated with this phase are:

- Continue to improve the defense
- Conduct counterrecon
- Prepare for tactical operations
- Defend against dismounted attack
- Defend against mounted attack⁵⁰

Even after the defense is established, the company continues to improve its positions, camouflaging vehicles and equipment, clearing fields of fire, burying wire, improving firing positions, digging communication trenches between positions, and other improvements the leadership deems necessary.⁵¹

Preparation for tactical operations requires that many actions be sustained for the duration of the defense. The first priority is securing the position by maintaining OPs, patrols, air guards, and PEWS. Equipment and weapons' maintenance is also absolutely essential. Resupply operations, particularly food, fuel, and ammunition, must also be conducted daily. Training and rehearsals continue, and a sleep plan is executed to maintain continuous operations.⁵²

The standards for a successful defense against dismounted attack prohibit losing more than one vehicle per platoon.⁵³ The subtasks of this requirement recognize the importance of detection and warning to defeating the dismounted threat. Even with successful detection and reaction, the standards allow the platoon leader to withdraw if necessary to conserve the combat strength of his platoon.

Defense against a mounted attack requires the concentration of company firepower against the enemy. Key players in accomplishing this are the OPs established earlier. OPs provide early warning, calls for indirect fires, and assistance in identifying the location of the enemy attack.⁵⁴

Before any attack, counterreconnaissance is conducted to force the withdrawal or destruction of enemy reconnaissance units. The entire company is involved in making the counterreconnaissance fight a success, as depicted in Figures 4 and 5.⁵⁵

Figure 4 illustrates a security plan for fairly clear terrain, where mounted OPs are able to establish fields of surveillance that can truly interlock and reach out a long distance. The commander is expected to "spread his platoons and vehicles as far apart as necessary without losing the ability to concentrate firepower against the enemy."⁵⁶ Given that a platoon's de-

fensive sector is typically from 400 to 800 meters wide, the layout depicted would have to be used in very open terrain in order to deny dismounted routes into sector. In fact, the platoon in mounted OP positions would be covering the company's frontage of 1,000 to 1,600 meters. This dispersion leaves room for infantry infiltration routes if enough cover or concealment is available.

Figure 5 also envisages fairly open terrain for employment of the defense. This is a more realistic approach to securing a position, with a mix of mounted and dismounted security that, if properly employed and maintained, should be able to detect and react to both mounted and dismounted attack. In close terrain, the number of dismounted OPs would have to be increased.

In addition to the defensive tasks discussed earlier, other tasks, requirements, and duties will naturally pull at the company's already limited assets. Sickness, injury, special duties (details, etc.), and maintenance-related jobs will also require the commitment of company personnel.

Assembly Area Operations

Another type of operation requiring security operations against a dismounted attack is occupation of an as-

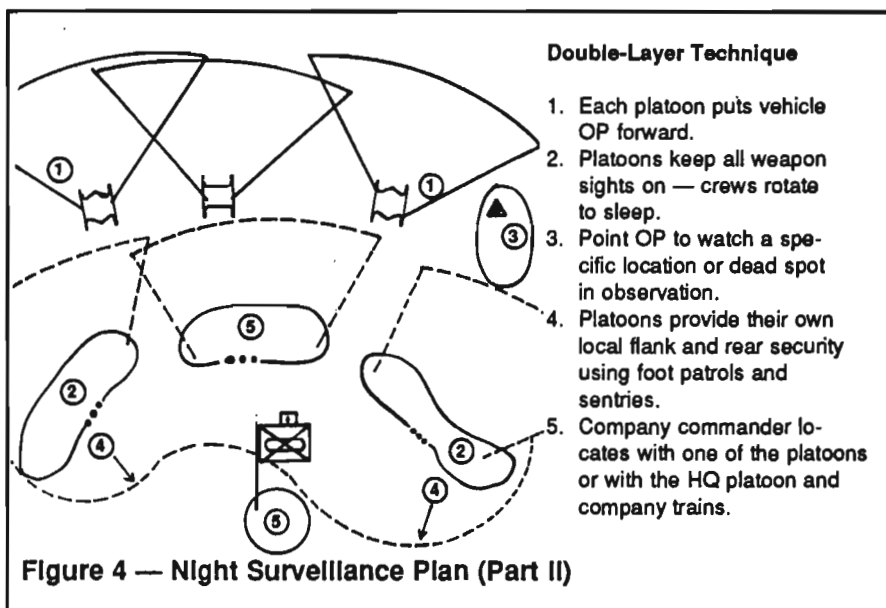


Figure 4 — Night Surveillance Plan (Part II)

sembly area. Assembly areas resemble defensive positions, but are more temporary and typically oriented 360-degrees for security purposes. In assembly areas, many of the same tasks are required as in the defense.

Security operations during the occupation of an assembly area are geared toward avoiding detection, since defensive arrangements are usually hasty. This includes an increase in dismounted patrols to cover dead space and heightened alert status for vehicle crews.⁵⁷

Personnel & Equipment Issues

Within the framework of assembly area and defensive tasks is the need to maintain security. FM 71-1, *The Tank/Mechanized Infantry Company Team*, describes security measures as those actions taken to "protect the team from being found or attacked by surprise."⁵⁸ Figure 6 is a matrix from the manual listing some active and passive security measures.

As described earlier, OPs are very important for the company's defensive security. To minimize effect on the total force and heighten the teamwork of the OP team, two members of the same tank crew are used as OPs. If required, the remaining two crew members can move their tank. The problem is they can only fire in slow, de-

Passive and Active Security Measures

<h3>Passive</h3> <ul style="list-style-type: none"> • Disperse vehicles and platoons. • Use camouflage, concealment, and cover. • Impose radio-listening silence. • Turn engines off and keep them cold. • Reduce noise. • Do not move around in positions. • Use no lights. • Keep antennas tied down. • Use hide or defilade positions. • Do not position in likely artillery target areas. 	<h3>Active</h3> <ul style="list-style-type: none"> • Establish OPs. • Perform mounted and dismounted patrols. • Emplace platoon early warning devices. • Deploy M8 chemical alarm nets. • Position GSR posts.
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Figure 6

graded mode. If each platoon is forced by terrain to establish an OP, the company commander's immediately available firepower is cut by one-fourth.

Since two of the 16 personnel assigned to a tank platoon are the platoon leader and platoon sergeant, there are actually 14 men at best to maintain a two-man OP on a 24-hour basis. If teams are rotated to maintain effectiveness, the platoon leader will cycle through his entire platoon in short order. At the same time, the platoon must have someone on air guard and monitoring the radios. Further, dismounted patrols will require at least three soldiers under a noncom-

missioned officer's control (typically a tank crew) to periodically check their sector.

All of the tasks listed above, along with maintenance jobs, sustainment requirements, and sleep planning add to the platoon leader's personnel load. He must accept considerable risk in some areas to accomplish all of these important tasks.

As casualties, illness, or accidents occur, the platoon leader's ability to conduct security operations is further degraded. There is no redundancy in the organic tank platoon or company organization that compensates for personnel shortages.

One obvious equipment shortfall is the lack of PEWS. Despite the recognition in doctrine that this sensor system is needed at the platoon level to effectively implement security operations, the PEWS is absent from the tank company's authorized equipment. This is particularly serious since the system would help compensate for personnel shortages in the organization by covering dead space that might require an OP.

The heaviest weapon available to the dismounted platoon member is the 5.56-mm carbine. OPs need a more effective weapon to engage and suppress infiltrating infantry. The tank company has 7.62-mm machine guns mounted at the loader's position on each of its tanks. These could be used

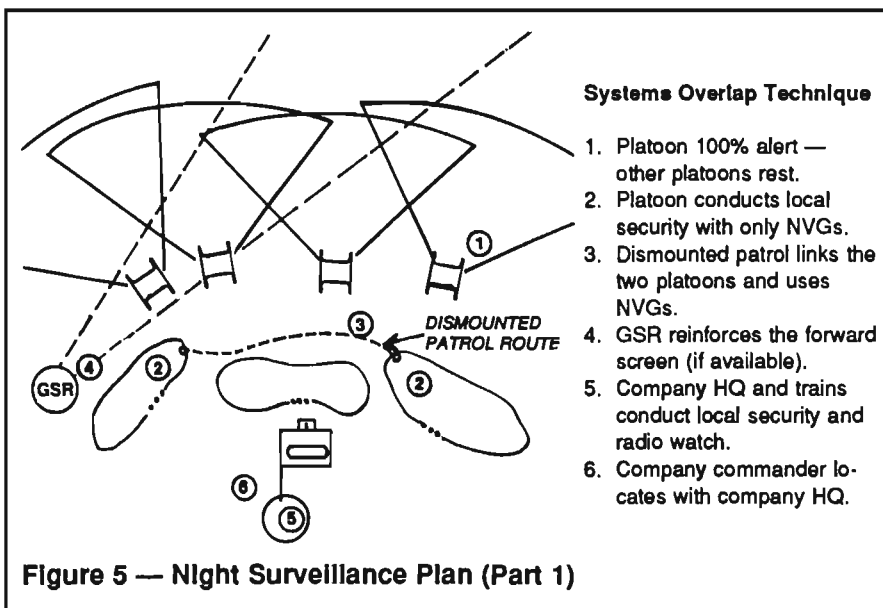


Figure 5 — Night Surveillance Plan (Part 1)

by the OPs if a ground-mount was provided.⁵⁹ An observation from Operation JUST CAUSE was that a ground mount system of some sort was needed for the coaxial machine gun on the Sheridans. One crewman went so far as to actually use asbestos mittens to hold and fire the dismounted coaxial machine gun to suppress attacking infantry.⁶⁰

Another equipment problem is the shortage of binoculars. There are just enough for a set on each of the tanks and two sets with the commander and executive officer respectively. When a set of binoculars goes forward with the OP, one of the tanks does without. This reduces one tank commander's ability to observe his sector during daylight hours. The lack of a man-portable radio is also a problem. Doctrine recommends the use of patrols to cover dead space, but the TOE does not provide the tank company any communication for those patrols to report contacts. The additional radios would also provide a back-up for wire communications to OPs.

OPs are expected to establish their positions as standard fighting positions with at least 18 inches of overhead cover. There are no provisions in the TOE or on the M1 tank load plan for materials to accomplish this requirement, with the exception of a shovel, axe, and pick. I found that airfield paneling provided an excellent overhead base. With the addition of sandbags to the load plan, the unit would have adequate resources to protect their OPs in any terrain.

One advantage for the company is its tank Thermal Imaging Systems (TIS). These ballistic sights allow night and day target acquisition and engagement capability for the main gun and coaxial machine gun. Thermal sights allow identification of vehicles at 2,000 meters⁶¹ and detection of dismounted personnel at 4,000 meters, regardless of light conditions.⁶²

There are some limitations to the thermal system. Thermal sights are

powered by the tank's batteries, and cannot be dismounted from the vehicle. The power drain from running the sights requires the periodic recharging of the batteries by running the tank's engine. Aside from the intermittent noise of running engines, the sights themselves emit a loud clicking noise easily discernible up to 100 meters from the tank.⁶³ These unavoidable noise producers are a real handicap to noise reduction as a passive security measure. Also, thermal sight capabilities are degraded by rain, snow, dust, infrared smoke, and heavy foliage.⁶⁴ Unfortunately, these conditions occur with great regularity in many parts of the world. Additionally, since the TIS is a line-of-sight system, terrain masking also blocks thermal sight detection.

Future tank designs are going to worsen some of these problems by reducing the number of available personnel. The tanks of the future will, most likely, have reduced crew size due to adoption of an automatic loader.⁶⁵ These two- or three-man crews will still have to handle the tasks listed above. The current tank company can barely accomplish these tasks as organized. The reduction in personnel will force some sort of augmentation by personnel and equipment to successfully secure the future tank company.

Comparison of Capability to Threat

The tank company commander must not only array his forces to detect infiltration attacks, but must also be arrayed to defend against what is probably his primary threat, the mounted attack. The difficulty in resolving this dilemma is the most serious consequence of gaps between capability and doctrine.

In open terrain, the tank company commander's night vision sights and weaponry allow him the flexibility to set up effective mounted OPs which can be supplemented by minimal dis-

mounted OPs to compensate for dead space. This is the ideal situation that doctrinal security operations are best suited to address. Unfortunately, flat, clear terrain is not prevalent in many parts of the world where tanks might be expected to fight.

Close terrain, such as heavily forested areas or hilly, rugged ground is not as simply defended. Mounted OPs in close terrain are themselves vulnerable to infiltration attack due to their noise and physical signature. Many of the advantages of mounted sights and weaponry will be negated by intervening terrain and vegetation. All that an attacking infantry unit requires is one unwatched lane to successfully overcome a defender's counterrecon effort.

Heavy use of dismounted OPs to compensate for limited fields of observation will quickly degrade the company's ability to fight its tanks. OP equipment is inadequate; moonless or cloudy nights limit the capability of the authorized passive night vision goggles significantly. Tank company OPs do not have sufficient weaponry to defeat or suppress attacking infantry units.

Clearly, these deficiencies indicate the TOE does not provide adequate personnel for executing security operations as required by current doctrine. On paper, there are enough soldiers in the company to handle security requirements. However, due to lack of depth in the organization, any circumstances that detract from the number of available soldiers will impact directly on the company's capability to sustain defensive operations.

Equipment shortages and inadequacies are also debilitating. The lack of ground movement sensors like the PEWS handicaps the company's detection effort. Infiltrating forces will take advantage of dense foliage areas and dead space to move into sector. Easily emplaced and recovered sensors would allow the company to cover infiltration avenues of approach

while minimizing OP requirements. Unfortunately, even the PEWS has only a thirty percent chance of detecting a crawling man.⁶⁶ A sensor system with better detection capability is needed to cover densely vegetated avenues of approach. The passive night goggles currently authorized are easily degraded by lack of natural illumination or washout from artificial illumination. Since infantry units are going to attack on clouded, moonless nights or use indirect fire illumination to blind passive night surveillance systems, passive goggles have some definite disadvantages. Additionally, doctrine fails to adequately address the threat. The company commander is instructed to cover enemy avenues of approach into his position, but diagrams and emphasis all imply that security is only used forward of the defensive position. Lack of all-around security is dangerous, considering infantry's doctrine of infiltrating to attack the flank and rear of tank positions.

Doctrinal manuals discuss the process of bringing enemy mounted units under fire, but do little to instruct the company commander on what process he should follow to defend against attacking infiltrators. Company counter-reconnaissance and security doctrine does not provide the commander with an adequate framework for planning and preparing.

Conclusion and Recommendations

Tank companies have a marginal capability to secure themselves against infiltration and attack by dismounted infantry. Important gaps in equipment authorizations and doctrinal expectations exist. Additionally, lack of depth in personnel strength assures that casualties and injuries will degrade that capability from marginal to inadequate. This problem is not insurmountable, if some changes in TO&E and doctrine are implemented.

First, the tank company commander needs a more complete doctrinal answer to the question of how to secure his force from an infiltration attack. One recommendation is that doctrine on company security operations adopt a DECIDE - DETECT - DESTROY technique for planning and conducting this critical element of the defense.

The commander must decide which dismounted avenues of approach to monitor, as well as the technique he is going to use to conduct the monitoring. The monitoring effort must be as far from his main positions as his assets will allow, and oriented in all directions. The key is to achieve "first-detection advantage" by detecting the attacking infantry prior to their discovering the main defensive positions.⁶⁷

He must array his detection effort in at least two belts to initially detect and then finally determine the direction and intent of the enemy attack. The commander can achieve this by mixing sensors, mounted and dismounted OPs, and roving patrols in a coordinated and rehearsed security plan in depth.

Lastly, he must have a plan to destroy the infiltrators. His OPs must have both direct and indirect fire engagement criteria for attacking small forces, while a reaction force is ready in the main defense to move out, intercept, and destroy larger attacks.

Regardless of improvements in doctrine, the company needs more personnel to defend and secure itself. While adding personnel, such as an infantry platoon or extra tankers, on a permanent basis might appear to be an easy answer, manning constraints will probably not allow this. The next best answer is to ensure that each tank company has an infantry platoon attached for security operations.

In 1986, a study at Fort Hood, Texas, examined the effect of creating combined infantry and armor units at the battalion level. There was little appreciable difference between the com-

bined arms battalions with permanently assigned tank and infantry teams and a normal task organized unit with habitual task organization relationships.⁶⁸ The key change is that the decision to task organize is no longer situationally dependent. The decision to not task organize now creates a significant risk.

Some equipment should be added to the company organization. One example is the PEWS. It is needed in the current organization as an interim fix to the lack of sensors. In the long run, the company needs a more advanced sensor system that can reliably detect a wider range of threats, such as crawling men, and can relay that data over a greater distance than PEWS. Hand-held thermal viewers, such as the AN/PAS-7, are also needed by company security forces. These devices can detect infantry out to 400 meters, as well as identify vehicles at approximately 1,000 meters. Infantry companies are currently authorized six of these devices for their security effort.⁶⁹ Tank companies have the same security requirements, but no hand-held thermals are authorized. As noted earlier, the tank company also needs portable radios, ground mounts for the loader's machine guns, and additional binoculars to more effectively protect itself from infiltrators.

Endnotes

¹Chris Bellamy, *The Future of Land Warfare*, St. Martin's Press, Inc., New York, 1987, p. 159.

²Brigadier R.E. Simpkin, "Men Against Tanks" in *The Mechanized Battlefield, A Tactical Analysis*, ed. LTC J. A. English, MAJ J. Addicott, and MAJ P. J. Kramers, Pergamon-Brassey's International Defense Publishers, Washington, 1985, p. 139.

³John Weeks, *Men Against Tanks*, Mason/Charter Publishers, Inc., New York, 1975, p. 26.

⁴*Ibid.*, p. 31.

⁵*Ibid.*, pp. 39-40.

⁶*Ibid.*, pp. 68-69.

⁷*Ibid.*, p. 100.

⁸Guy Sajer, *The Forgotten Soldier*, Sphere Books Ltd., London, 1977, p. 206.

⁹Weeks, p. 185.

¹⁰Ministry of Information, *By Air to Battle - the Official Account of the British First and Sixth Airborne Divisions*, His Majesty's Stationery Office, London, 1945, p. 134.

¹¹J.O. Rodriguez, "David and Goliath - Can Airborne Infantry Defend Against Armor in Central Europe," MMAS Thesis, U.S. Army Command and General Staff College, 1986, pp. 22-24.

¹²Captain Richard S. Faulkner, "Learning the Hard Way," *ARMOR*, Vol. 99, July-August 1990, p. 25.

¹³Jim Mesko, *Armor in Korea*, Squadron/Signal Publications, Inc., Carrollton, Texas, 1984, p. 21.

¹⁴James R. Arnold, *Illustrated History of the Vietnam War, Armor*, Bantam Books, Inc., New York, 1987, pp. 60-61.

¹⁵*Ibid.*, pp. 69-71.

¹⁶*Ibid.*

¹⁷Karl Farris, "Growth and Change in the Israeli Defense Forces Through Six Wars," Thesis, U.S. Army War College, Carlisle Barracks, Pa., 1987, p. 22.

¹⁸David Eshel, *Chariots of the Desert*, Brassey's Defence Publishers, London, 1989, pp. 1-10.

¹⁹Captain Kevin J. Hammond and Captain Frank Sherman, "Sheridans in Panama," *ARMOR*, Vol. 99, March-April 1990, pp. 8-13.

²⁰*Ibid.*, p. 14.

²¹Brigadier Richard E. Simpkin, *Antitank*, Brassey's Publishers Limited, Oxford, 1982, pp. 228-229.

²²White House, *National Security Strategy of the United States*, Government Printing Office, Washington, D.C., 1991, p. 30.

²³Center for Army Lessons Learned, "Year of Training Compendium, Volume 1: Heavy Forces," Combined Arms Training Activity, Fort Leavenworth, Kan., 1988, p. 6.

²⁴*Ibid.*, p. 10.

²⁵*Ibid.*

²⁶82d Airborne Division, *Antiarmor Handbook*, Fort Bragg, N.C., Headquarters, 82d Airborne Division, 1984.

²⁷*Ibid.*, pp. 22-12 through 22-13.

²⁸*Ibid.*, p. 22-9.

²⁹*Ibid.*, p. 22-11.

³⁰Sergeant John R. Murphy, "Antiarmor Training," *Marine Corps Gazette* 74, October 1990, p. 46.

³¹Captain Timothy J. Jackson, "Light Infantry Techniques," *Marine Corps Gazette* 74, June 1990, pp. 54-55.

³²William S. Lind, "Light Infantry Tactics," *Marine Corps Gazette* 74, June 1990, p. 46.

³³Captain David W. Szelowski, "Training Grunts to Tackle Tanks," *Marine Corps Gazette* 74, October 1990, p. 49.

³⁴Bellamy, p. 162.

³⁵Robert Kuth, "Soviet Airborne Antiarmor Tactics in the Defense," U.S. Army Russian Institute, Garmisch, Germany, 1981, p. 15.

³⁶U.S. Army Combined Arms Combat Developments Activity, FC 100-2-99, *North Korean*

People's Army Operations, Headquarters, U.S. Army Combined Arms Center, Fort Leavenworth, Kan., 1987, p. 3-4.

³⁷*Ibid.*, p. 3-5.

³⁸*Ibid.*, p. 4-8.

³⁹*Ibid.*, p. 4-2.

⁴⁰*Ibid.*, p. 4-20.

⁴¹Weeks, p. 186.

⁴²Randall Steeb, Keith Brendley, Dan Norton, John Bondanella, Richard Salter, and Terrell Covington, *An Exploration of Integrated Ground Weapons Concepts for Armor/Antiarmor Missions*, RAND, Santa Monica, Calif., 1991, p. 24.

⁴³U.S. Army, "Table of Organization and Equipment, #17377L000, Tank Company, Tank Battalion," Printout received from Force Development Office, Fort Leavenworth, Kan., 31 October 1991, p. 6-7.

⁴⁴U.S. Army Tactical Commanders Development Course, *Battle Book, U.S. Brigade/Battalion Task Force*, U.S. Army Command and General Staff College, Fort Leavenworth, Kan., 1991, pp. M-1 - M-5.

⁴⁵U.S. Army, "TOE #17377L000," p. 8-9.

⁴⁶U.S. Army, ARTEP 71-1-MTP, *Mission Training Plan for the Tank and Mechanized Infantry Company and Company Team*, HQ, Department of the Army, Washington, D.C., 1988, pp. 101-103.

⁴⁷U.S. Army, ARTEP 17-237-10-MTP, *Mission Training Plan for the Tank Platoon*, HQ, Department of the Army, Washington, D.C., 1988, pp. 119-120.

⁴⁸P. Antson, A. Burkard, I. Jacobs, D. McLaughlin, K. McPherson, and B. Rapaport, *Tactical Sensors for Dispersed Tactical Nuclear Force Units, Phase II*, Defense Nuclear Agency, McLean, Va., 1984, pp. 108-109.

⁴⁹U.S. Army, ARTEP 71-1-MTP, p. 5-142.

⁵⁰U.S. Army, ARTEP 17-237-10-MTP, pp. 5-10, 5-99. Also U.S. Army, ARTEP 71-1-MTP, p. 5-103.

⁵¹U.S. Army, ARTEP 17-237-10-MTP, p. 5-99. Also U.S. Army, ARTEP 71-1-MTP, pp. 5-102 - 5-103.

⁵²U.S. Army, ARTEP 17-237-10-MTP, p. 5-10.

⁵³*Ibid.*, p. 5-99.

⁵⁴U.S. Army, FM 71-1, *Tank and Mechanized Infantry Company/Team*, Government Printing Office, Washington, D.C., 1988, pp. 4-9 - 4-11. See also FM 71-123, *Tactics and Techniques for Combined Arms Heavy Forces: Armored Brigade, Battalion/Task Force, and Company/Team*, Final Draft, Unedited, U.S. Army Armor School, Fort Knox, Ky., 1991, p. 4-179.

⁵⁵U.S. Army, ARTEP 71-1-MTP, p. 5-103.

⁵⁶FM 71-1, p. 4-9.

⁵⁷ARTEP 17-237-10-MTP, pp. 5-31 - 5-32.

⁵⁸U.S. Army, FM 71-1, p. 4-10.

⁵⁹This idea first surfaced in a conversation I had with Captain Curt Hoover, Maneuver Division, Center for Army Lessons Learned.

⁶⁰Hammond, p. 15.

⁶¹U.S. Army Tactical Commander's Development Course, *Battle Book, U.S. Brigade/Battalion Task Force*, p. I-7.

⁶²Howard Tate, engineer for General Dynamics Tank Division, telephonic interview by author, Leavenworth, Kan., 18 November 1991.

⁶³Personal experience with finding tank assembly area at Fort Hood, Texas, taught me that the distinctive clicking of thermal sights was a true indicator of the M1's presence.

⁶⁴TCDC, *Battle Book*, p. I-8.

⁶⁵R. Steeb, et al, *Integrated Ground Weapons Concepts*, pp. v-vi.

⁶⁶P. Antsen, et al, TNF Security Study, p. 120.

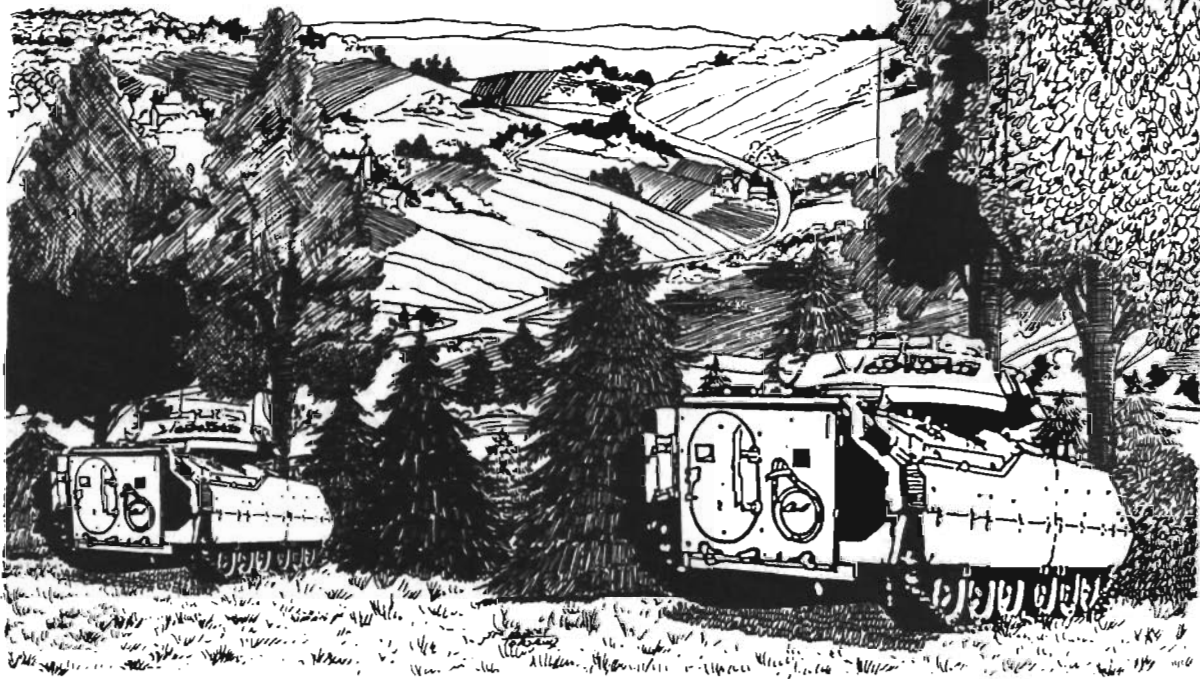
⁶⁷*Ibid.*, p. 66.

⁶⁸U.S. Army Training and Doctrine Command, *Independent Evaluation Report for the Combined Arms Maneuver Battalion*, U.S. Army TRADOC, Fort Leavenworth, Kan., 1988, p. 1.

⁶⁹TCDC, *Battle Book*, p. I-7.

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Managing the Monster



by Captain Kenneth L. Deal Jr.

The rising sun is a welcome sight to the scout platoon leader. He fought a long, hard battle during the night, and three of his vehicles were destroyed. He can account for only three BRDMs destroyed, and he heard BMPs penetrate his screen but has no idea where they are now. The battalion commander gave him two tank platoons, each from a different company. He has not had contact with one of them all night and suspects they did not link up, as ordered. Enemy electronic warfare was effective, and made it impossible to use the radio effectively. Of the other platoon, two of the four tanks went maintenance down, and he has no idea when they will be recovered, and the remaining two working tanks went back to the parent unit hours before daybreak to prepare defensive positions. Even if he knew where the enemy was, he couldn't fight them now. Of his three destroyed vehicles, five scouts died of wounds because the closest company medics

were 10 kilometers away and couldn't find the scout locations on time. To top it off, the battalion commander wants to see him to learn why the fight was such a failure. If he could only get a few hours sleep maybe, he could start to prepare for the next battle; not a chance, the battalion defensive order is to be issued mid-morning, and the scout platoon leader is expected to be there.

Unfortunately, this picture is all too frequent. A scout platoon leader eager to be successful is unable to, because he is given neither the assets nor the structure to accomplish the mission. It is ironic that what may be the most important task in the battalion defense is given the least attention. And it raises more questions about who should be responsible for the counterreconnaissance fight, or more accurately, the "security zone" battle.

Given that the counterreconnaissance battle is the responsibility of the defending task force, one of the most successful techniques is for the TF commander to allocate a company-

size element to fight the battle. The question then becomes, how does the company commander array his limited forces to ensure success throughout his sector? What should he know? What should he look for? What is considered successful for such a mission? And how does he organize for the fight?

The battalion commander should assign the counterreconnaissance battle, or the battalion "security zone," to his most competent commander or his most effective company. If at all possible, it should be a habitual assignment so the unit has time to train (as a result of the unit METL), because the nature of this security mission requires a well trained unit with platoons and crews that can operate with little or no guidance. The battalion commander must give the security zone commander very specific guidance, which at a minimum must give the commander's intent for that specific mission, what the battalion commander wants accomplished, and where he wants it done. The security

zone commander must determine how. Once the assignment is given, the company commander is fully responsible for everything that happens in the sector. This may include any passage lanes or any forward obstacles. To ensure unity of effort, the company commander must control all assets in the security zone, including the scouts, mortars, and any MI assets forward. The S2 is always a critical part of the information cycle and will give the counterreconnaissance commander PIRs. He will continue to monitor the company net to better template enemy forces and follow the recon battle. In the same vein, the counterrecon commander should supply the task force with IRs (information requirements) that can help win his fight. The S2 should not have operational control of any forward elements in the main battle area.

When the commander conducts his leader's recon, he must do a complete intelligence preparation of the battlefield, paying special attention to key terrain, avenues of approach (mounted and dismounted), engagement areas, and withdrawal routes. Much of this will come from the battalion S2, but he needs to look at the terrain and assess what will be critical for him, especially since the battle is usually fought at night or under limited visibility. If at all possible, the leader's recon should be done with the battalion commander, the S2, the FSO, the security zone commander and the scout platoon leader. This will begin the synchronization process and the battalion commander will know exactly what to expect from his company forward. Additionally, the S2 can then brief the counterrecon plan as part of the R and S plan in the battalion operations order, and the subordinate commanders in the defense can prepare and adjust their own patrol plans accordingly. This will accomplish several things: decrease the risk of fratricide, alleviate the possibility of inaccurate spot reports, provide se-

Organization of the Counterreconnaissance Force

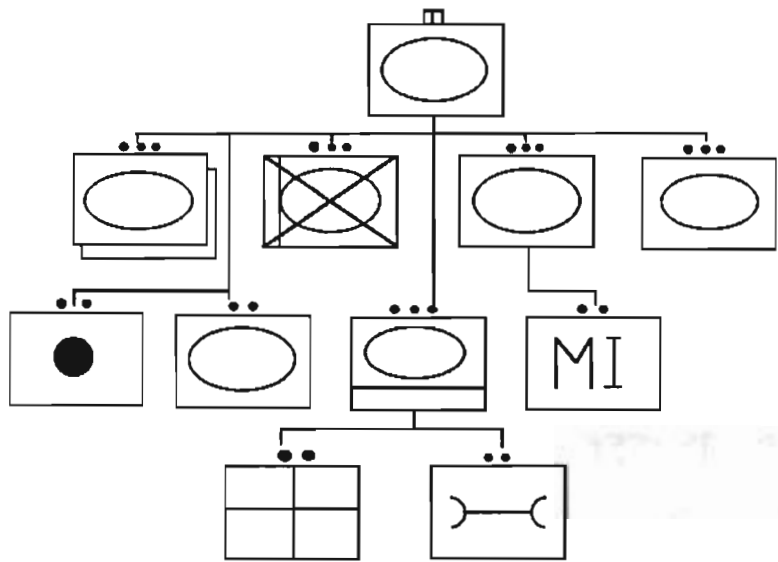


Figure 1

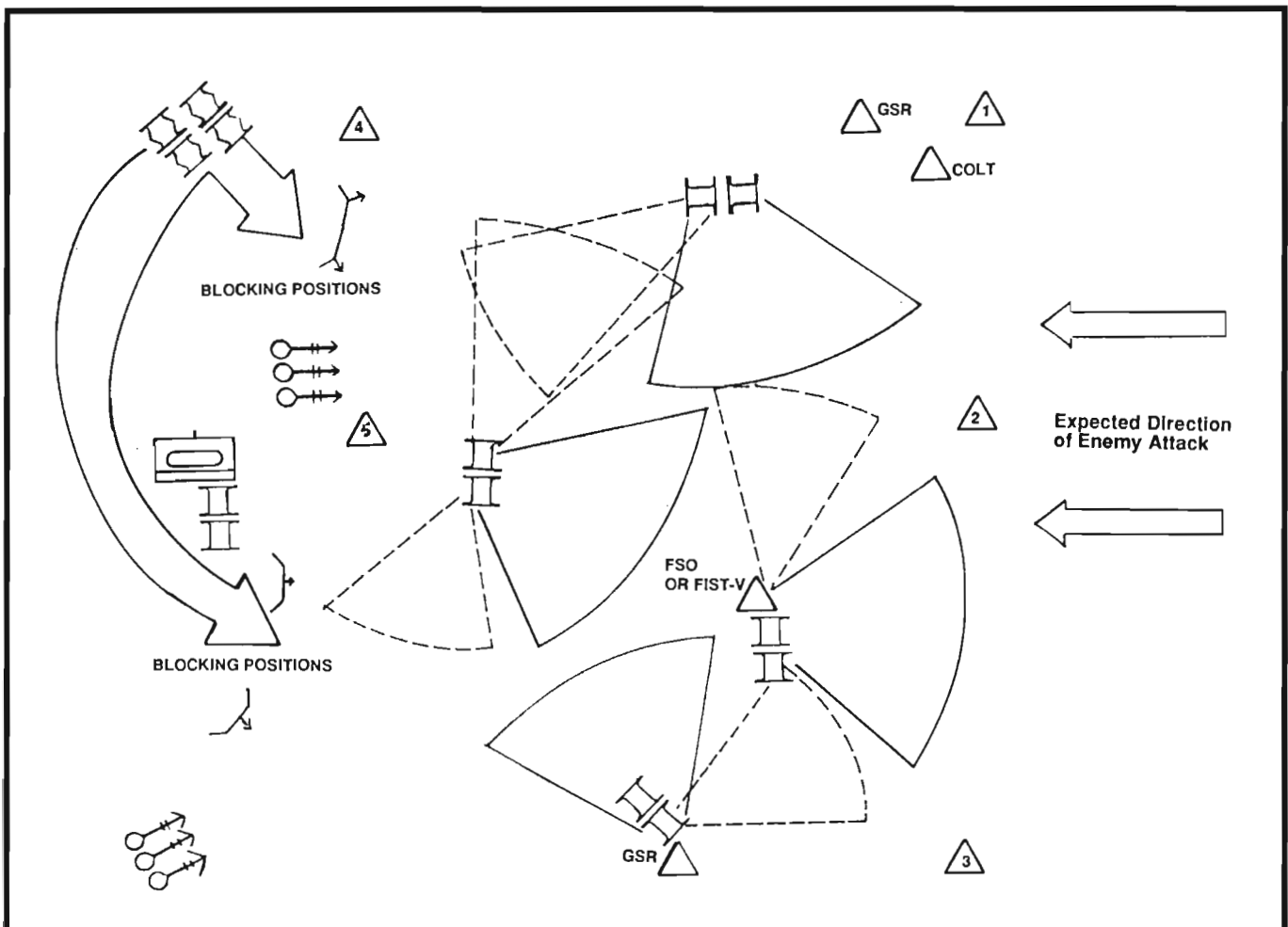
curity in depth, and facilitate reinforcing or reconstituting the security zone. The task force TOC must be an integral part of the fight, and the staff must understand that while the team is forward in the security zone, the counterrecon battle is the main effort.

Of all the doctrinal defense techniques, the defense in sector will best accommodate the counterreconnaissance force. It not only allows the most flexibility, but it is the most effective defense when fighting over a wide area, with multiple avenues of approach.




The counterrecon force should consist of a company team with the commander being the security zone commander. Counterreconnaissance should be the primary focus of the company. Since night is most critical in security operations, leaders should minimize daytime distractors to the counterreconnaissance team. Detailed defensive preparation and lengthy task force-level rehearsals will draw away combat power. Distractors place additional strain on the team command structure, and can eventually lead to degraded command and control in the

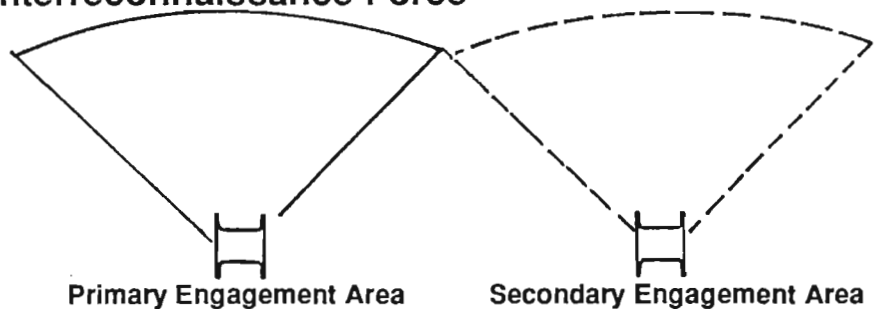
security zone. If the task force knows this, and makes allowances for the unique counterreconnaissance team, many of the synchronization issues can be solved in an informal manner. Having the staff come forward to the security zone is an option. Additionally, the team commander must have a thorough understanding of the MBA, since the team will join the main defense once the security fight is won.

Under most circumstances, the counterrecon force should be a company team, complete with its organic support to be located forward of the main battle area (see Figure 1). The battalion should consider allocating additional assets to assist in the mission. Once the mission is assigned, the commander will assume responsibility for all support to the forward elements, regardless of their parent unit. Only in this manner will the task force achieve depth throughout the security zone. Additionally, this will reduce the amount of traffic forward. Also, it will enable the commander to keep tight control of all activities in his sector. This becomes critical once the direct fire fight is joined and



The Company/Team Counterreconnaissance Force

-  TANKS
-  BRADLEYS
-  SCOUT SECT OPS



enemy recon elements can take advantage of the potential confusion during limited visibility.

Scouts are a pivotal element in this defense, acting as early warning and tracking the enemy forces throughout the zone. It is critical that the scouts do not fight, for once they join the direct fire fight, they lose their value as a surveillance element. There will be plenty of killing systems available for enemy destruction. The scouts must

be arrayed in depth, and should not be considered static observation posts. With his section, the senior scout can conduct roving patrols in the sector, (mounted and dismounted) not only to aid security, but also to ensure that enemy recon does not have the advantage of going to ground and selecting the time and method it will move. The scouts need to be able to follow the enemy forces until they are destroyed. Obviously, this is a high risk mission,

and the risk of fratricide is uncomfortably high; however, the security zone cannot afford to let elements slip by or just assume that the battle handover is completed. In the morning, the security zone commander must be able to account for all enemy vehicles by counting their burning hulks (proper identification of vehicle type will indicate what recon element has been engaged). If the scouts are positioned correctly, there should be no friendly

movement. If the scouts are required to move, routes will be fully briefed and understood, with well rehearsed recognition signals to avoid fratricide. In the case of the security zone, the benefit of a roving patrol far outweighs the danger of fratricide.

The tank platoons are the killers. The platoon should organize into killer sections so they can spread throughout the sector and provide coverage on all avenues. To ease the difficulty in battle handover, the killer sections can habitually align with the same scout. Plan for the tanks to fight all night. They have the greatest armor protection, and will be the most flexible during limited visibility.

The Bradley platoon should be in reserve all night and plan to engage the single recon vehicles that slip through the tank platoon sectors. The four Bradleys will be augmented with the HQ section, creating a powerful reserve. Keeping the mech platoon at REDCON 3 (ready to move within 30 min.), while maintaining only 25 percent security, will provide the counterrecon force with a well rested force to assume the screen, if needed, and to provide countersurveillance patrols at first light. At the same time, the tank platoons will "go to ground" and rest until night, thus allowing the team to conduct continuous operations without degrading the effectiveness of the counterrecon force over long periods.

The S4 should anticipate problems and emplace the assets to correct them. All maintenance-down vehicles must be recovered from the security zone and fixed as far forward as possible. Supplying the team with an additional M88 in addition to maintenance personnel, will augment the normal section and assist the team. Another consideration might be to attach additional ambulances to the company and perhaps to locate the forward aid station closer to the FLOT than normal. In the defense, the team will use more ammo than fuel, but will still only consume a fraction

of each vehicle basic load; however, the S4 should consider keeping a FAQ (fuel, ammo, quick) uploaded and available to the team first sergeant. The FAQ must have, at a minimum, one fueler and two HEMTTs loaded with resupply of each type of ammo in the team. Since the security zone is the task force main effort, it must also receive priority for support in all aspects with the exception of engineer effort.

Engineer support is always a welcome asset, but the commander must be fully prepared to fight without the aid of obstacles or prepared positions. If FASCAM is available to the task force, it can easily be integrated into the security zone.

The security zone commander must be given priority of fires throughout the security zone battle. The company FIST plays an important part in the defensive prep, ensuring all targets are observed and registered during daylight hours, and illumination targets should cover all possible avenues of approach. Fires should be planned all the way through the sector and the FSO should be prepared to fire them, based on the events on the battlefield. Give special consideration to no-fire areas (NFA) to support the scout positions, to include random "safe areas" that the roving patrols can go to for safety.

The mortar platoon will be fully integrated into the force and under the control of the company commander. The battalion FSO should allocate a specific number of rounds that will be used in the counterrecon fight so the commander can keep track of exactly how much he has fired and how much he has left, without worrying about his own internal fire support being taken away. Additionally, the TM XO can pre-stock ammo to continue the fight.

The counterrecon fight is often the most important phase of the defense, since the defeat of enemy recon elements may well determine the out-

come of the battle. If the task force treats the counterrecon fight as the initial main effort, and devotes a well trained, technically competent, and disciplined team to the battle, then the task force chance for success increases dramatically.

As the sun blinks over the horizon the company commander calls in his situation report to the task force TOC. It was a long night but he knows he won the battle. Of the ten destroyed vehicles, only one was his, and the crew was evacuated quickly and will survive. The scout platoon leader has organized a patrol to identify the remains of the enemy vehicles, and the infantry platoon that was not committed during the night will begin to patrol the high ground to look for enemy observation posts. The first sergeant is bringing up the LOGPAC for the company team, as well as the scouts and mortars. The executive officer has returned from a route recon, back to the unit's subsequent positions, and will brief the platoon leaders and crews while the commander, FSO, scout and mortar platoon leaders attend battalion operations order at 0730 hours. It will be a very good day.

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From Behind the Dragon's Teeth: **Hitler's Folly?** **Or Was It?**

*Hitler's lunge into the Ardennes,
so often criticized as a strategic mistake,
might have been his best chance at stalemate and survival*

by Captain Kevin R. Austrera

In December 1944, 28 German divisions, nine of them armored, slammed into the U.S. First and Ninth Armies. For ten days, the German panzers zig-zagged through the hills, valleys, forests, and fields of the Ardennes until stopped short of the Meuse River in Belgium. The German salient, 80 miles wide and 60 miles deep, was then pounded by U.S. and British forces. The Air Force all but eliminated German logistics. By February 1945, the U.S. Army drove back to its former December positions and the German Wehrmacht had no forces left to keep the Allies from the Rhine. Hitler's Ardennes offensive proved supreme folly...or was it?

Since that last bitter winter of the Second World War, much has been written about the Battle of the Bulge. It provides a certain fascination for military historians and served as inspiration for five major motion pictures. Most students of the battle have come to the same conclusion: Hitler forced his army to leave the security of the Westwall (often called the Siegfried Line) fortifications and exhaust themselves in the hopeless involuntary death throes of a dying man.¹

A majority of the judgments leveled at the last great German offensive in the West are based on 1944 Allied expectations of a repeated 1918 — specifically, the overthrow of a failed regime, surrender before the nation's borders were critically violated, and

preservation of the surviving economic base. The Battle of the Bulge dashed Allied hopes the war would be over by Christmas — just like 1918. General Dwight D. Eisenhower, among others, was furious. Estimates described the German Army on the brink of collapse. Didn't the Germans know the war was finished?

Unfortunately, the conditions were not similar to 1918. At the end of the Great War, an intact German Army bowed to the wishes of a revolutionary government in Berlin and demobilized itself under the worst possible armistice conditions. The unconditional surrender terms staring at Germany in 1944 compelled the Germans to fight on.² Note too that in mid-1944 the Germans still controlled most of Europe, though D-Day was not far away. As a result, Hitler's regime survived the halfhearted July 20th assassination attempt, armor and aircraft production peaked in summer and autumn 1944, and Germany's armed forces numbered 10 million men in 327 divisions and brigades.³

Despite terrific losses at the front and at home, the German Army was losing slowly and exhausting its opponents.

Leaving the Dragon's Teeth

While planning the Ardennes offensive, Hitler remarked that "the side that lasts longer will do so only if it



stands to lose everything."⁴ German industry was failing. Constant air raids, essential raw material shortages, and lack of fuel ensured industry could never keep pace with the war. More critical, Germany was sapped of almost all its adult manpower. Infantry training, once regimented and several months in length, was reduced to a scant six weeks. Luftwaffe pilots found themselves committed to combat on their first operational flights. The German armed forces were fast losing their ability to wage offensive warfare.

It is too simple to declare that Adolf Hitler in 1944 was insane, sick, or so drugged by his incompetent private physician, Dr. Morrell, that he was incapable of rational thought. True, the stress of the last two years of war left the German leader an exhausted man who yearned for and still believed in a repeat of the glories earlier experienced in 1940. Indeed, until late 1941, the German General Staff still controlled operations of the army, particularly on the Eastern Front. The resulting failure to subdue the Soviet Union in 1941 could well be attrib-



uted to the General Staff's delay in following up successes, as well as withholding urgently needed forces for an unwanted drive on Moscow. The mounting emotional pressure was compounded by the unsuccessful attempt on Hitler's life. Hitler's subsequent distrust of his own military commanders and purge of the army left him in absolute control of the war effort, and with it the insomnia and stress associated with supreme command. Though thoroughly exhausted and aware of Germany's plight, Hitler's decision to attack in the west was a logical decision made by a tyrant. Only the unlikely event that Hitler would have been overthrown could have prevented the attack in its final manifestation. In retrospect, the German people probably would have agreed with the final offensive gamble in keeping with a German saying, "Better an end in horror than a horror without end."⁵

In autumn 1944, Germany was not as close to defeat as some would believe. The German Army, whose back was broken in August in Normandy, was able to delay and withdraw to the

1939 German frontier. After a few tense weeks where much of the German border was defended solely by overgrown pillboxes and empty foxholes, the Germans were able to fill the gaps and halt the Allies.

The base of the German frontier defense was a series of fortifications known as the Westwall. These fortifications ran the length of the German border from Holland to the southwestern tip of Germany opposite Switzerland. Originally, a series of small forts along the Saar River opposite the French border, the defenses were extended.⁶ Today one can drive along the western German frontier and cross belts of concrete antitank dragon's teeth stretching below slits of grey crumbling bunkers. For their impotence in 1944-45, they remain formidable obstacles. The dragon's teeth and shattered pillboxes zigzag through forest and farmers' fields, forcing new roads to skirt and bridge them and housing to be built around them.

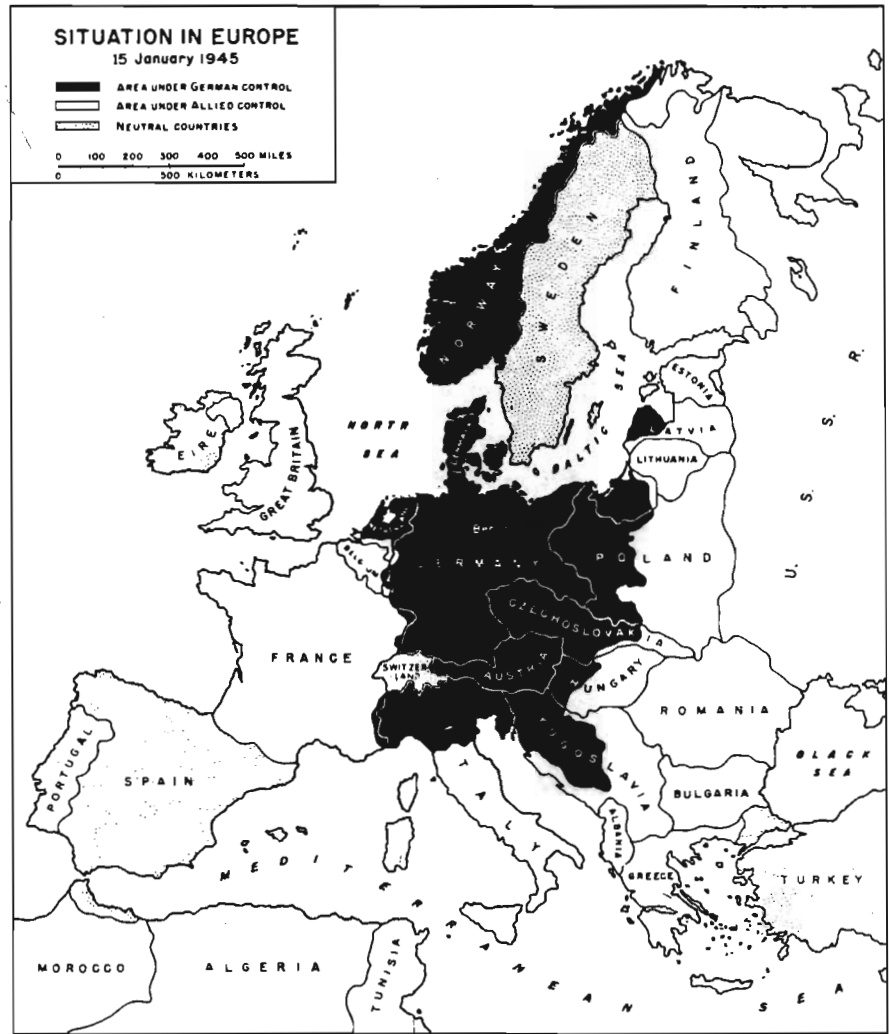
Constructed between 1936 and 1939, the Westwall was Germany's answer to the much-touted French Maginot Line. The once gleaming white

dragon's teeth shielded the remilitarized Rhineland while German forces massed in the east. The Westwall was a mixture of designs and was never more than 15 percent complete at the start of the war. Unlike its French counterpart, Westwall was not a single, nonstop fortification in depth. It relied on scattered prefabricated pillboxes emplaced to provide interlocking fire. In front of the pillboxes were concrete dragon's teeth antitank obstacles, barbed wire, and minefields. Pillboxes and dragon's teeth were arrayed in belts several miles thick. In areas of rugged terrain, such as the High Eifel opposite Belgium, fortifications were less extensive. In this terrain, the dragon's teeth were reduced to the size of small parking lot pylons. However, around Aachen, Saarbrücken, and high mobility areas such as the Losheim Gap, antitank obstacles took on monstrous proportions.

The Westwall was never designed to be a permanent barrier. The concept was for attacking armies to be delayed by the defenses, rugged terrain, and waterways until a German counterattack could drive them out. In 1939,

Europe In January, 1945

This map of Europe in January 1945, after the Ardennes battle, indicates how much of the continent was still under German control only four months before the end of the war. The crumbling Nazi empire extended over Norway, Denmark, and major portions of Italy, Yugoslavia, Czechoslovakia, Hungary, Italy, Poland, Latvia, and the Netherlands.



they proved their worth when the French Army moved into the Saar and occupied a few square kilometers of German territory during the abortive "Saar offensive."

Although a formidable obstacle against weapons and tactics of the 1930s, there was little the fortifications could do to halt the American Army in 1944. As early as 1940, the Germans themselves used paratroops to drop onto Belgian and Dutch strongpoints and directed panzers around the Maginot Line, demonstrating the futility of fixed fortifications.

After the June 6, 1944, Allied invasion of France, the Westwall was hurriedly reinforced and extended, particularly along the border with the Netherlands. There was no time to improve the already emplaced concrete pillboxes and antitank dragon's teeth since there was no concrete to spare while German industry built underground or reinforced factories. Nearly all of Westwall's armament and communication systems were dismantled and reinstalled along the English Channel in 1943.

Although the overgrown concrete bunkers and pillboxes were better naturally camouflaged than they were in 1939, their fields of fire were reduced by the same wild growth. In many cases, local caretakers did not have maps, plans, or keys to the fortifications in their districts.

During war, military technology advances by leaps and bounds. Not only does military necessity account for increased resourcing, battlefield experience provides a never-ending proving ground. Unfortunately for the Germans, pillboxes, designed for weapons of 1936, had no provisions for machine guns and antitank weapons of 1944. Weapons were not the only limitations. Initially, it was difficult to man the fortifications with the required number of soldiers. The best that could be accomplished in a few short months was newly dug fighting positions, fresh minefields, hundreds of miles of barbed wire, and ineffective iron gates across secondary roads.

On September 10, soldiers from the U.S. 4th Infantry Division crossed the Our River near Schoenberg.⁷ Four days later, American soldiers from the 5th Armored Division crossed the

Sauer River at Wallendorf. Without much effort, the Americans penetrated the first belt of concrete fortification and advanced to within a few miles of Bitburg. There was little to stop the Americans from occupying the whole Eifel region. The Germans raced troops from Trier to check the advance and destroyed the Sauer bridgehead a week later.⁸ The Our River incursion, opposite St. Vith in Belgium, could not be dislodged.

The once proud German Army was unable to stem the tide, confirming the military adage that obstacles alone are useless unless covered by fire and, more significantly, restored by counterattacks. Fortunately for the Germans, the United States Army slowed and halted in the rugged terrain and thick forests of the Eifel. The terrain, combined with stiffened German re-

sistance anchored around the Westwall, stopped the Allied advance.

For the Germans, an immediate counterattack to restore the border was out of the question. There were no forces yet available. In the beginning of September 1944, the Germans had only 100 serviceable tanks available on the Western Front.⁹ Allied operations in the Netherlands and incursions around Aachen and in front of the Rur (as spelled in Germany, becomes the Roer River in the Netherlands and is often spelled Roer in military accounts) Dams siphoned off divisions desperately needed elsewhere. However, Allied penetrations along the Siegfried Line in the southern region of the Schnee Eifel drew the attention of the Germans. It was only natural then that Westwall's original purpose could be exercised. An attack against the deepest penetration of the line would not only expel the Americans from the Eifel, but also threaten to envelop Aachen, as well as capture Antwerp, thereby severing the Allies' line of communications. The seeds of the Ardennes offensive were sown.

Miracle In the West

There would never have been a German offensive in the Ardennes if it had not been for Allied delays. After two months of slogging through hedgerow country in Normandy and clearing Brittany, the Allies broke out of their small corner of France while at the same time landing an army in the south. On August 25, Paris was liberated. In September, the Allies pushed into Belgium and penetrated the Siegfried Line into Germany and reached a position which, when planning the invasion, they had not expected to gain until May 1945.¹⁰ Then the advance ran out of steam.

By advancing along a broad front the Allies rapidly liberated most of France, Belgium, and Luxembourg at the cost of exhausting their supplies. Not that supplies were short — there

was just no way to get them to the ever more distant front line. Unlike the superhighways of today, there were no autobahns across France in the 1940s. The French railroad system was still wrecked from preinvasion bombing and resistance sabotage. Few of the ports were usable. They were either critically damaged or occupied by surrounded German divisions. German garrisons denied port facilities at Lorient, St. Nazaire, La Rochelle, Calais, and Dunkirk and would continue to do so until May, 1945. Additionally, the German 15th Army controlled the sea outlet to recently captured Antwerp.

For the moment, all supplies had to be trucked to the various points of the front. The trip was fraught with hazards. In the space between departure and arrival, the convoys faced confusing routes, traffic jams, hijacking by roving bands of black marketeering American deserters and former French resistance, and diversions by competing armies.

Complicating the supply distribution was British Field Marshal Bernard Law Montgomery's less than successful Netherlands offensive, a daring airborne and mechanized strike north onto Holland. The attack, code named MARKET GARDEN, was to seize seven Dutch bridges along a 70-mile route with three airborne divisions. Once British armor punched through the German line and crossed all seven bridges, the way would be clear to turn east, unimpeded by terrain, to slice through the German Ruhr industrial basin and then to Berlin.

Though the operation captured five of seven bridges, the last bridge at Arnhem on the Lower Rhine remained firmly in German hands (and would be until demolished in February, 1945). The soggy "island" between Arnhem and Nijmegen bridges was largely abandoned by the British who turned their eyes east toward what would eventually be the costly Reichswald operation. In total, the

MARKET GARDEN operation provided a basis for a best-selling book and movie, but not much else. It denied other armies, particularly General George S. Patton's Third, the fuel required to exploit penetrations in Germany.

Indeed, almost all Allied activity that autumn was directed around Aachen. For reasons still debated today, the U.S. Army turned into the thick Hurtgen Forest, gained a few kilometers of ground while the better part of three U.S. divisions were mauled in a fruitless three-month campaign. To the south, the Ardennes, deemed an unlikely site of future German operations, was used by the U.S. Army as a place to send battle-weary divisions and train fresh units.

During the delay, the Germans were not idle. Barely able to field an equipped force, the Germans mounted several modest counterattacks with scratch forces to restore large portions of the line in the hilly Eifel region. By November, units all along the front were standing to fight, and when threatened, they did so in good order. The Germans called the resurgence of their army "the Miracle of the West."¹¹ With the exception of Aachen, the first major German city captured by the Allies, the western 1937 borders of German remained more or less intact.

The apparent threat in the West, combined with the local German successes, acted as a magnet for Hitler's military attention. Against advice of his generals, Hitler drained his carefully hoarded resources in preparation for a major attack. Hitler knew that the Ardennes was the last card to be played. Whether the forces were successful or not, the machines and war materiel could never be replaced.

Why the West?

Desperate as the situation seemed, the German Reich still controlled a greater portion of Europe in late 1944



The Tiger II, or "King Tiger," was the best protected, best armed tank in WWII, and far superior to Allied rivals. This one, part of Kampfgruppe Peiper, threw a track and was abandoned in the early stages of the Ardennes offensive.

than it had after the conquest of Poland in 1939. Though the enemies of the Reich had multiplied in number and strength since 1941, the invading forces simply ran out of offensive steam. The Soviets drove into Poland and the eastern tip of East Prussia, but at great cost. The Red Army found itself at the end of a supply line stretched across eastern Europe. Continuous operations against stiff German opposition across a scorched countryside forced the Soviets to temporarily halt. Though the Soviets crossed the prewar Polish frontier in August, they paused east of Warsaw, where they remained almost five months. Stalin concerned himself with driving Germany's allies out of the war and occupying the Balkans and Baltic countries.

As the Red Army gathered its breath for the final drive on Germany, Hitler concluded the Russians were offensively exhausted. Horrendous Soviet losses and a slim logistics chain made it "clear" that the Russians had reached their high water mark. Hitler believed that administration of the conquered territories alone would stall the Russians indefinitely. For the time being, the Russians were not a threat.

In northern Italy, Luftwaffe Field Marshal Albert Kesselring skillfully managed an economy of force mission in rugged terrain and grudgingly

gave ground. In Hitler's opinion, the defensive battle in Italy was good for at least another year. To the north, Norway and Denmark were secure for the moment. In fact, the Germans maintained military supremacy in Scandinavia, where the navy secured the waters around Norway while the Luftwaffe ruled the Arctic.

In Germany, the Luftwaffe managed to rebuild from its staggering piecemeal losses that summer into a force capable of several hundred sorties per day against Allied targets.¹² German industry, firmly under control of Minister of Armaments Albert Speer, had peak production just before D-Day. The production surge, in part due to the Allied air forces momentary attention to French targets, provided much needed war material for a skeletal German Army. Decentralized production, round the clock manufacturing, and reinforced and underground factories made up for shortfalls due to bombing.

To quickly reequip units, the German Army called upon its, as yet barely touched, vast stock of captured weapons stored at various depots from Czechoslovakia to Grafenwohr, Germany. Foreign artillery pieces of almost every caliber, originally planned as roadside monuments to commemorate German victories, were assembled to fulfill a military role.

To make up for personnel losses, automatic weapons were increased throughout the army to give units more firepower, especially when fighting in wooded areas. The 7.92-mm MP-44 assault rifle, the forerunner of the U.S. Army's M-16 rifle of the 1960s, was issued in great quantities and was the most common German infantry weapon in the Ardennes.¹³

The Reichsbahn, Germany's efficient, though antiquated, state railroad, was able to keep supplies moving despite horrific losses and massive raids on facilities. Despite rumors to the contrary, rail was the Wehrmacht's primary mode of transportation. Over the first two weeks of December, some 1,500 trains bearing troops, tanks, and guns unloaded in marshaling yards east of the Ardennes.¹⁴

With five years of experience, the Germans were technologically superior to the Allies. Though they would never have the atomic bomb, and the "V" weapons were only a nuisance, the Germans made remarkable strides in military technology. The Luftwaffe, though driven from the skies of Europe, had the only operational jet fighter, bomber, and reconnaissance aircraft of the war. Indeed, the dual-jet engined Arado 234 routinely photographed Allied supply beaches and battlefields in France.¹⁵

Throughout the war in the West, German armor was consistently superior to that of the Allies. Though the French fielded superb tanks in 1940, they were not employed properly and were quickly rounded up by the invading Germans. With the German defeat in France, not only were many tanks lost in battle or due to air attack, damaged panzers could not be recovered from the battlefield before they were captured. The relative stabilization of the front allowed the German Army to rebuild its supply of armor. Hitler ordered that the entire production of the 68-ton Tiger II tank be sent

to the west and all medium armor to the Eastern Front.¹⁶ On the evening before the great battle, 717 tanks and assault guns sat camouflaged opposite the American positions.¹⁷

Leading the refitting effort was the often maligned Panzerkampfwagen VI Ausf B, better known as the King Tiger II. Like its predecessor, the Tiger I, the King Tiger was superior in armor and armament to any Allied tank. In battles in Normandy, the Tiger eliminated its opponents with ease. So feared were these 68-ton giants that Americans often called every German tank a "Tiger."¹⁸ Apart from production shortages and the tank's vulnerability to air attack, 136 King Tigers (remarkable considering only 476 were manufactured during the war) were ready for the Ardennes offensive.¹⁹

Regardless of Hitler's disdain for the armies of Soviet Russia, the west, from a cartographer's point of view, was the threat. Historians studying the Ardennes offensive usually do so with 1937 maps of Germany. To Hitler, as well as to the German people, Germany was larger. Kesselring's determined defense in Italy was due not so much to Italy's surrender as it was that the Germans shared a common



Soldiers of the U.S. 99th Infantry Division are marched into captivity by German paratroopers after the initial surprise of the Ardennes attack.

national border (the former Austrian frontier). An Allied offensive into Austria was an attack on Germany itself. For the time being, that possibility was months away.

In the east, Germany swallowed half of Czechoslovakia and was close to Germanizing the country. The border area, known as the Sudetenland, was already part of the Reich. The "Protectorate" of Czechoslovakia was in no danger of imminent invasion.

In Poland, Germany was in the process of repossessing areas owned by Germany before 1918. With the exception of a few towns in East Prus-

sia, these lands were safely in German hands.

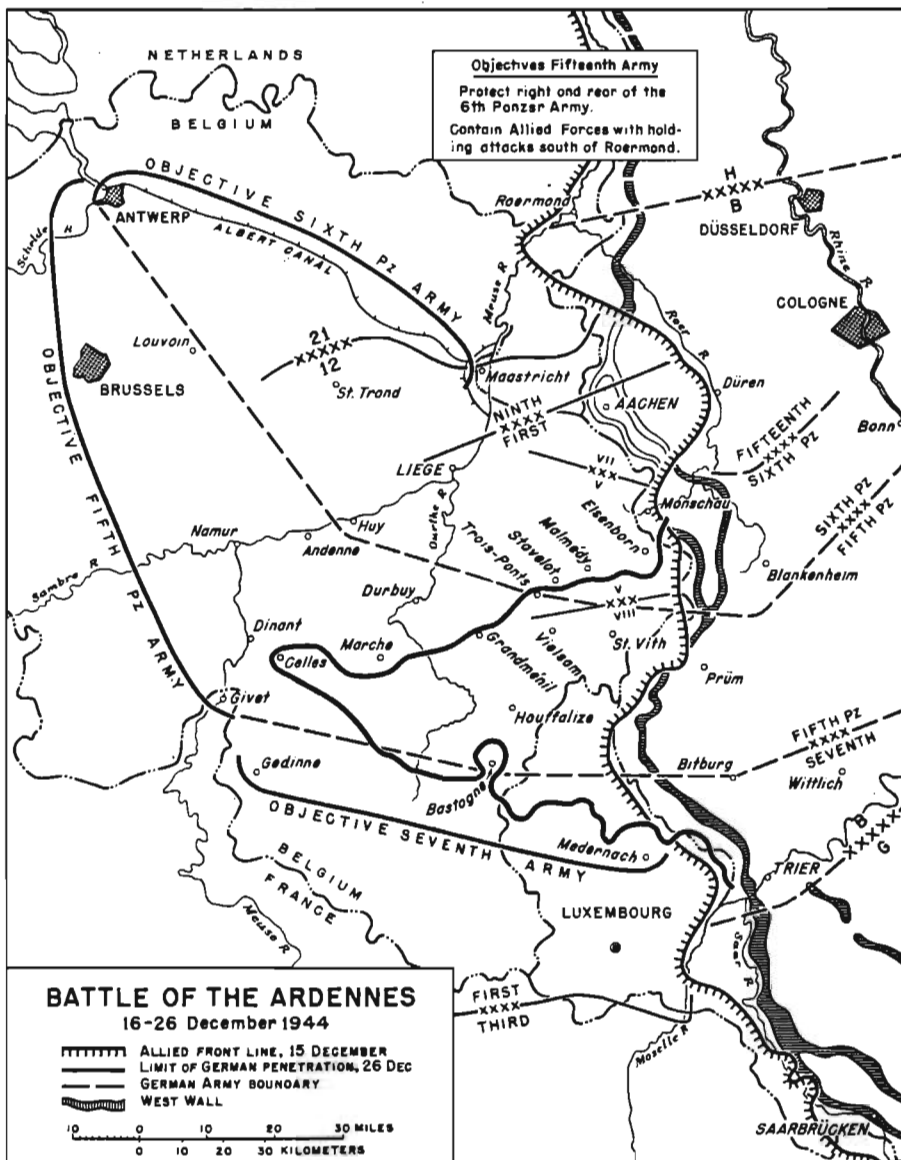
An attack against the Red Army would undoubtedly bring tactical success, but reach no strategic objective. In order to be victorious, the Red Army would have to be driven hundreds of miles, at least out of Belorussia and the Ukraine. Hitler's carefully hoarded panzer force would easily be swallowed in the Pripet Marshes and vast expanse of Russia.

An offensive in the Balkans was to be avoided entirely. The German forces there were having enough problems protecting their lines of



At a farmyard in Belgium on the second day of the offensive, German paratroopers look over antitank guns, trucks, and jeeps left behind by U.S. units. At upper right, the German Panther tank. At lower right, the Tiger II, one of 136 that were scrounged together for the thrust into the Ardennes.





The Ardennes Gamble

Ardennes battle map shows limits of German objectives and actual progress, army boundaries, and Allied front line on the day the battle began.

September, only a sliver of the country along the Our and Sauer Rivers remained German.

Why the Ardennes?

Historians in the 1950s and 1960s contend the Germans attacked through the Ardennes because of earlier victories through the wooded area in 1914 and 1940. However in 1914, the German border extended farther to the west than it did in 1937. True, German Panzer General Heinz Guderian's thrust through the Ardennes in 1940 was a masterstroke, but it also was directed southwest against weakened French, Belgian, and British positions. The 1944 drive would be northwest toward Antwerp, against the grain of the country and in an area of very few roads.²²

From the Ardennes, it was only 110 miles to Antwerp — a reasonably attainable, though not necessarily retainable, strategic objective. Not only would the attack relieve the pressure on the German border, but would cut off the bulk of the British Army in the north and deny the Allies their northernmost port.

As fate would have it, geography favored a German buildup. The Eifel region opposite the Ardennes offered cover and concealment, particularly for an army without air cover. As they had in 1914 and 1940, spurs of the Reichsbahn railroad ran right into the Eifel from Trier and Koblenz. The German population of the region was unquestionably loyal, thus the chance of betrayal was slight. Additionally,

communications against partisans, and flanks against the Soviets and turncoat allies. Italy offered opportunities, but not for a heavy panzer force. The very mountainous terrain which formed Kesselring's successful defense would be turned against the Germans. Additionally, there were no raw materials to be gained, no thankful population to liberate, and no relief on fronts closer to Germany. If there was an attack, it would have to be on the Western Front.

The situation in the West was by far the most dangerous. The Allies had already liberated the Belgian easternmost province of Eupen et Mal-

medy,²⁰ which was annexed by the Reich in 1940 (they were lost by Germany after the First World War in 1919).

The American capture of Aachen and incursion toward the Rur Dams posed a threat to the industrial Ruhr. This congested area, encompassing several major cities along the Rhine, had already taken a beating from continuous Allied air attacks. Its capture would virtually eliminate German war production.

Luxembourg, described as German by tradition, French by politics,²¹ was close to annexation by the time of the June 6 Allied invasion of France. In

most of the families immediately across the front lines had at least one father or son still in the German Army and the locals could be considered sympathetic. For the limited resources available, compared to the forces allotted in 1940, the Ardennes was deemed ideal.

Though German generals like Field Marshal Walther Model advocated an attack to regain the historic Holy Roman capital, Aachen, Hitler would not hear anything of it. In his estimate, Aachen could be retaken, but the cost would be too great. Throughout the war, Hitler rarely supported plans that involved direct assaults on major cities. City fighting easily swallowed divisions and tied them down for weeks at a time. Hitler remembered Stalingrad all too clearly, where a panzer army was committed to a city that could have been outflanked. Seizing Aachen would have no strategic significance. Moreover, Aachen was too close to the British and Canadian forces in the Netherlands. Aachen's capture would no doubt evoke a swift counterattack.

Despite feeble attempts to dissuade him, Hitler was set on attacking through the Ardennes, cutting off British and Canadian armies, and inflicting a defeat on the Americans similar to that of their 1943 disaster at Kasserine Pass in Tunisia at the hands of Panzer Armee Afrika. Paralysis of the enemy, not necessarily his physical destruction, was the aim.²³ Hitler was convinced that the Allied link with the Russians was fragile and a defeat in the West would serve to rupture the alliance.²⁴ Though he knew he could not win the war, he might be able to sue for a separate peace without surrender and then deal militarily with the Russians.

In hindsight, the goal seems unrealistic. To the German military, and particularly to Hitler, it was the only logical course of action. Germany could not survive by fighting a defensive war, unconditional surrender would bring terms worse than those of 1918, and the dictatorship would have

been doomed. The only route left was through the Ardennes.

Notes

¹Cooper, Matthew, *The German Army 1933-1945*, Scarborough House, Chelsea, Michigan, 1978, p. 518.

²Crookenden, Napier, *Battle of the Bulge 1944*, Charles Scribner's Sons, New York, 1980, p. 6.

³Ibid., p. 7.

⁴Irving, David, *Hitler's War*, Avon Books, New York, 1990, p. 722.

⁵Elstob, Peter, *Bastogne, the Road Block*, Ballantine Books, New York, 1972, p. 8.

⁶Flaherty, Thomas H., Editor, *The Reach for Empire*, Time-Life Books, Alexandria, Virginia, 1989, p. 36.

⁷Nosbuesch, Johannes, *Bis Zum Bitterern Ende*, Paulinus-Druckerei, GmbH, Trier, Bundesrepublik Deutschland, 1978, p. 113.

⁸Ibid., p. 93.

⁹Cooper, p. 515.

¹⁰Ibid., p. 516.

¹¹Goolrick, William K. and Ogden Tanner, *The Battle of the Bulge*, Time-Life Books, Alexandria, Virginia, 1979, p. 32.

¹²Griess, Thomas E., Editor, *The Second World War*, the West Point Military History Series, Avery Publishing Group, Wayne, New Jersey, 1984, p. 370.

¹³Parker, Danny S., *Battle of the Bulge*, Combined Books, Conshohocken, Pennsylvania, 1991, p. 54.

¹⁴Ibid., p. 25.

¹⁵Irving, David, *Goering*, Avon Books, New York, 1989, p. 441.

¹⁶Cooper, p. 517.

¹⁷Parker, p. 26.

¹⁸Ibid., p. 234.

¹⁹Ibid.

²⁰MacDonald, Charles B., *A Time for Trumpets*, William Morrow and Company, New York, 1985, p. 28.

²¹Flaherty, Thomas H., Editor, *The Heel of the Conqueror*, Time Life Books, Alexandria, Virginia, 1991, p. 11.

²²Perret, Bryan, *Knights of the Black Cross*, St. Martin's Press, New York, 1986, p. 237.

²³Cooper, p. 520.

²⁴Lucas, James, *Reich*, Grafton Books, London, 1989.

Sources

Blumenson, Martin, *The Patton Papers 1940-1945*, Houghton Mifflin Company, Boston, 1974.

Chamberlain, Peter and Hilary L. Doyle, *Encyclopedia of German Tanks of World War Two*, Arco Publishing Company, New York, 1978.

Cooper, Matthew, *The German Army 1933-1945*, Scarborough House, Chelsea, Michigan, 1978.

Crookenden, Napier, *Battle of the Bulge 1944*, Charles Scribner's Sons, New York, 1980.

Elstob, Peter, *Bastogne, the Road Block*, Ballantine Books, New York, 1972.

Flaherty, Thomas H., Editor, *The Heel of the Conqueror*, Time Life Books, Alexandria, Virginia, 1991.

Flaherty, Thomas H., Editor, *The Reach for Empire*, Time-Life Books, Alexandria, Virginia, 1989.

Goolrick, William K. and Ogden Tanner, *The Battle of the Bulge*, Time-Life Books, Alexandria, Virginia, 1979.

Griess, Thomas E., Editor, *The Second World War*, the West Point Military History Series, Avery Publishing Group, Wayne, New Jersey, 1984.

Irving, David, *Goering*, Avon Books, New York, 1989.

Irving, David, *Hitler's War*, Avon Books, New York, 1990.

Kleine, Egon and Volkmar Kuehn, *Tiger, Die Geschichte einer Legendaeren Waffe 1942-45*, Motorbuch Verlag, Stuttgart, Bundesrepublik Deutschland, 1991.

Lucas, James, *Reich*, Grafton Books, London, 1989.

MacDonald, Charles B., *A Time for Trumpets*, William Morrow and Company, New York, 1985.

Newton, John, Editor, *Descent into Nightmare*, Time-Life Books, Alexandria, Virginia, 1992.

Nosbuesch, Johannes, *Bis Zum Bitterern Ende*, Paulinus-Druckerei, GmbH, Trier, Bundesrepublik Deutschland, 1978.

Parker, Danny S., *Battle of the Bulge*, Combined Books, Conshohocken, Pennsylvania, 1991.

Perret, Bryan, *Knights of the Black Cross*, St. Martin's Press, New York, 1986.

Whiting, Charles, *Bounce the Rhine*, Stein and Day, New York, 1986.

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50th Anniversary - 14th Armored Division

14th AD, in Seven Months of Combat, Liberated Thousands in Nazi Empire



The 14th Armored Division will celebrate its 50th anniversary this November. The "Liberators" were an active unit for only three years, but played a major role in the liberation of Europe.

General Orders, Headquarters, Armored Force, activated the 14th Armored Division on 15 November 1942, at Camp Chaffee, Arkansas. As early as September 1942, the initial cadre for the new division had started to arrive. At that time, the 6th Armored Division was moving out. As soon as the 6th vacated a building the 14th occupied it. By December 1942, more than 13,000 men joined the cadre to bring the 14th up to full strength. Most of these new men were draftees or enlistees fresh from civilian life. The "Liberators" included men from every state in the Union. MG V. E. Prichard, the 14th's commander, forcefully stressed that the job of the division was to prepare for combat.

Training began immediately. On Christmas Eve 1942, MG Prichard addressed the entire division for the first time. He explained the necessity to work hard and prepare for combat, and he gave the season's greetings. Then, the "Liberators" celebrated Christmas Day with a dismounted road march and dinner in the



Tanks and infantry of the 14th AD move down a forest trail in Germany.

messhall. Later, they began the new year with a road march and bivouac. For nearly two years, training would be the sole activity of the 14th. The Mobilization Training Program prescribed the conduct of all training. Officers attended the Division Officers Training School. The training plan was progressive, and the "Liberators" steadily grew combat ready.

In May 1943, the nearby town of Camp Smith suffered the worst flood in its history. Fields, highways, and houses disappeared under the rising water. Flooding destroyed power lines, water mains, and reservoirs. MG Prichard ordered the division to assist local authorities in a massive rescue and relief effort. The 14th used all wheeled and water-going vehicles to rescue and evacuate stranded families. Soldiers sandbagged bridges, highways, and railroads. Mechanics ran generators. Medics established aid stations. Engineers set up water purification points and repaired bridges. The 8th and 11th Armored Divisions sent additional men and equipment to help. Finally, the waters subsided, and the grateful people of Fort Smith offered their thanks.

Once again, the 14th turned its attention to training. Each soldier went through an infantry assault course, an urban assault course, an infiltration course, and a close combat course. During free time, the "Liberators" took part in an extensive program of competitive athletics.

In September 1943, the 14th reorganized according to the new light division table of organization. A team from the

Armored Force inspected the division in October 1943. The 14th exceeded all expectations. General Gillam, the Armored Command's commander, expressed his sincere congratulations to the "Liberators" on a job well done.

In November 1944, as the 14th moved to the Tennessee maneuver area, the 12th Armored Division moved from the training area to Camp Chaffee. The "Liberators" cleaned their vehicles and barracks and turned them over to the 12th, and the division moved by battalion to the training area, drawing vehicles from the 12th. The division participated in eight consecutive training problems, living tactically in the field.

The "Liberators" spent Thanksgiving, Christmas, and New Year's in the field, and in January 1944, moved to Camp Campbell, Kentucky, just as the

World War II Campaigns

Rhineland

Ardennes-Alsace

Central Europe

World War II Commanders

MG Vernon E. Pritchard
November 1942 - July 1944

MG Albert C. Smith
July 1944 - Deactivation

26th Infantry Division moved out for maneuvers. Quickly, the division settled into their new camp and resumed training. American casualties in Europe mounted, and the 14th had to provide individual trained replacements. New men arrived to bring the unit back up to strength, and soon, the 14th began preparation for overseas movement.

Throughout September 1944, the men of the division carefully packed equipment and sent personal belongings home. Units loaded on trains for New York. By early October 1944, the 14th had closed on Camp Shanks. For about two weeks, the division processed for deployment. The "Liberators" enjoyed classes on boat drill and passes to New York City.

Finally, the 14th loaded onto the *U.S.S. Santa Rosa*, the *U.S.S. Le Jeune*, the *U.S.S. General James Parker*, and the *U.S.A.T. Sea Robin*. An additional 14 freighters and Liberty ships carried their equipment. On 14 October 1944, the ships set sail for an unknown destination. Although the ships were crowded and uncomfortable, the voyage was uneventful.

On 30 October 1944, the "Liberators" arrived at the southern French port of Marseilles, and two weeks later entered the line at the French-Italian border. In November 1944, the 14th attacked into the Vosges Mountains as part of the U.S. Seventh Army. Despite the rugged terrain, and

stubborn German resistance, the "Liberators" penetrated to the Alsatian plain, linked up with the 3rd Infantry Division, and cut off the retreat of the defending Germans. By the morning of 16 December 1944, it combat commands had crossed the Lauter River into Germany.

In late December, 1944, the 14th was ordered to defend an expanded sector, allowing other divisions to move north to halt the German offensive into Belgium. On 1 January 1945, the Germans launched a savage, eight-division attack against the thinly spread "Liberators." Support personnel served as infantry, supported by anti-aircraft guns. Isolated outposts held key road junctions against overwhelming odds. After much vicious fighting in harsh weather, the 14th gave ground but held the line. Then, the division counterattacked to relieve the hard pressed 79th Infantry Division and push the Germans back.

In February 1945, the 14th assumed a defensive posture for rehabilitation. Much-needed replacements and new equipment arrived. On 15 March 1945, the 14th attacked across the Rothbach and Moder Rivers. Quickly, the tankers exploited breakthroughs and reached the vaunted "Westwall."

The "Liberators" fought through determined resistance and captured the German cities of Gernersheim and Schaidt on 23 March 1945. Then, the 14th crossed the Rhine River on 1 April 1945 and continued east. It rapidly seized Lohr, Gemunden,

Nuestadt, and Berg. After a fierce fight, the 14th liberated the prisoner of war camp at Hammelburg. Resistance became uncoordinated and sporadic as the "Liberators" drove even deeper into Germany. The division crossed the Danube River on 28 April 1945. Next, the 14th seized Landshut and liberated the prisoner of war camp at Moosburg. Finally, the division reached the Inn River near Aschau when hostilities ended.

The "Liberators" remained near Wasserburg and processed German prisoners and displaced persons. The "point system" slowly changed the face of the 14th. Veterans rotated home, and new men from other units arrived. In August 1945, the entire division moved to Marseilles and sailed for the United States. The 14th arrived at Hampton Roads, Virginia on 16 September 1945, and deactivated at Camp Patrick Henry the same day.

During the drive across Europe, the 14th liberated 200,000 Allied prisoners and over 250,000 displaced persons. The "Liberators" played a key role in the fighting to defeat Germany, and captured 64,000 prisoners. Today, the "Liberators" maintain an active veterans association.



An enemy antitank gun put two shots through this Sherman's transmission.



An M10 tank destroyer attached to the 14th AD moves past a shell-pocked church in Rohrwiler, Germany, in February, 1945.

Captain John Buckheit prepared this unit history while on temporary assignment to ARMOR.

The Two-Man Tank — Its Fightability and Endurance

by RobIn Fletcher

Captain Mike Newell, in his article in the March-April 1992 issue of *ARMOR*, sets out to demonstrate “the advantages and the feasibility of a future MBT concept with a two-man crew.” He considers that “any future MBT design is likely to place a reduced crew in the tank hull, mount an external gun, have an automatic loader and, because of the proliferation of blinding battlefield lasers, depend on indirect optics for viewing... This is basic FMBT design used throughout [his] discussion.” He says that “a two-man tank is potentially more survivable than a three-man tank. Survivability is the critical issue... [But] can two men effectively fight the tank in sustained combat operations?”

Captain Newell’s contention that survivability will be increased simply by reducing the number of crewmen and so reducing the vehicle’s armored volume should surely be accompanied by an acknowledgement that increased survivability will, in fact, be attributable as much to the adoption of the new turretless configuration as to straightforward volume reduction. The proposed turretless configuration will give a significant reduction in the MBT’s frontal area, which will then be able to be more heavily armored, with the vehicle’s components, such as crew stations, ammunition stowage and power plant, arranged in series behind it. If a front-engined hull layout is preferred, as it almost certainly will be, these components will be arranged in a different order, with the ammunition magazine at the rear of the hull for crew safety and easy replenishment.

There are other factors which will affect survivability, apart from config-

uration and volume, and these will be addressed later, but for the moment, let us address the key question: “Can a two-man tank crew maneuver the tank, acquire and engage targets, and exercise command and control of the tank (and tank unit for leaders)? And can a two-man tank crew remain combat effective during sustained combat operations?”

Maneuvering and Fighting the Tank

In the case of a three-man, automatically-loaded, turreted tank (e.g. Russian T-72), two men can handle the vehicle when it is road marching and maneuvering out of contact with the enemy, with one man driving from his position in the front of the hull and the other exercising all-around observation from the top of the turret. It will be even easier to march and maneuver a tank specifically designed for two-man operation with both men seated together in the hull and having “360-degree vision as well as duplicate driving, viewing, and weapon controls,” as was found necessary in the German VT 2X2 trials quoted by Captain Newell. For instance, the crewman driving a two-man tank will be able to reverse without having to be supervised by the other crewman, which is not the case at present in a turreted tank where the turret blocks rearward vision.

But things will become more complicated when the two-man tank enters combat and the three separate crew tasks of all-around observation, target engagement, and driving have to be handled by only two crewmen. These three tasks can be shared between them in three different arrange-

ments and, due to the duplication of their crew stations, can be exchanged from one to the other almost instantaneously. In practice, it will be difficult for one man to combine driving with all-around observation and command of the vehicle, and it is doubtful if the other crewman can be allowed to remain unoccupied until he undertakes target engagement. Therefore, the vehicle commander might make himself responsible for all-around observation in the normal manner and then go on to engage targets himself while his junior crewman would look after the driving and only assume responsibility for all-around watch while his commander was actually firing. Or the commander might confine himself to all-around observation and the command of his vehicle and hand off acquired targets to his driver who would have the assistance of an automatic target tracking and engagement system. An advantage of the latter arrangement would be that with both driving and gunnery being handled by the same crewman, he would be able to maneuver the tank rapidly when engaging from behind a crestline and reposition it immediately if an obstruction were to block his view of the target.

There are, however, a number of problems that should be acknowledged, of which the first is that the tank commander’s all-around observation will have to continue to be exercised from the highest point of the vehicle. If this is not done, the enemy may spot the external gun on its raised mounting as the tank moves cross-country before our crewmen are in a position to see the enemy. The enemy will then simply wait and open fire when ready and probably destroy our vehicle. No doubt, Captain Newell has appreciated this potential hazard and has avoided it by specifying that the all-around observation sensors

are to be located on top of the external gun mounting.

A second problem will be that, although it will be easy to display both driving and sighting vision on flat screens in front of each crewman, it will be far more difficult to make all-around remote vision available to the crewman commanding the vehicle who will need to be given the widest possible field of view to observe the battlefield. Indeed, as already mentioned, the VT 2X2 tests found that "360-degree [remote] vision [was] required [not only for one but] for both crewmen."

The commander of a present day conventional tank will fight "head out," if that is at all possible, in order to continue to use his natural 150-degree wide angle vision. The all-around vision cupola, with its array of vision blocks or episcopes, gives him more or less the same ability while also giving him protection. If the introduction of battlefield lasers makes the use of indirect vision from remote sensors essential, he will only be able to watch part of the battlefield on a flat screen at any one time, and enemy movement and gun flash in other sectors will be likely to go unnoticed. No doubt, an automatic detection system would be able to draw his attention to enemy vehicles appearing outside his observed sector — and even identify them for him and then go on to track them — but how will he become aware of enemy bunkers and infantry tank hunters outside his restricted field of vision?

Will this result in crewmen having to be surrounded by an array of screens giving full 360-degree coverage (as is believed to be the case, initially at least, in the German VT 2X2 trials vehicle), as in that case the volume occupied by their crew stations is likely to become excessive. Might crewmen not have to be given Helmet Mounted Display (HMD) and helmet position-sensing systems so that they can quickly and naturally turn their restricted fields of view to observe in any direction?



Array of TV screens needed for 360-degree viewing in German VT 2x2 test vehicle.

A third problem will be that of the gun itself. Its raised external gun mounting will make it very prominent and is bound to attract enemy attention. No doubt, it will be able to be camouflaged, screened against thermal emission, and covered with radar absorbent materials, but an external gun mounting is not the most suitable configuration with which to start before applying low observable technology (see *ARMOR*, March-April 1992, p. 7).

A fourth problem will be that of protecting an external gun raised permanently above the hull of the vehicle. Although the barrel itself may be able to accept a great deal of punishment, protection will be needed for the breech and for the recoil system. Also, reloading a gun in such a position will not be easy, although the probable adoption of a front-engined hull layout with a sealed and vented ammunition magazine at the rear of the vehicle will certainly make it easier.

Continuous Combat For an Extended Period

If the above-mentioned series of problems are acknowledged and can then be overcome, our two-man tank can certainly be fought for 24 hours continuously given night vision devices which are now available or

which are in development. But can the two crewmen carry on beyond that period when they will become exhausted, or will they have to be removed from the vehicle and two fresh crewmen substituted?

Captain Newell sets out to support his two crewmen with all manner of new technology and states that "with basic near-term technology improvement, we [can] give the crewmen of a two-man tank over eight hours of free time a day." Frankly, I don't believe it. This might be so in some outmoded 24-hour combat cycle in which tanks are expected to maneuver and fight by day and to use the night for rest and replenishment. But this will certainly not be the case in the immediate future, when full sets of night vision devices are made available and tanks are able to maneuver and fight almost as well by night as they can in daylight.

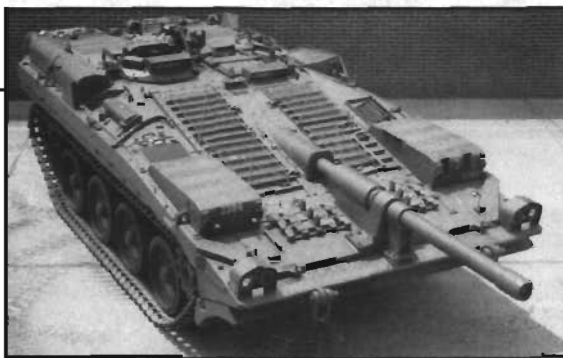
In this new environment, maneuver and combat will be almost continuous, apart from pauses of minimum length for maintenance and replenishment so that crewmen will be on duty constantly and get no rest to speak of. Should the tanks of a formation be held in reserve, and be dispersed and stationary, the most that can be hoped for will be that a proportion of the formation — perhaps every other vehicle — will be allowed to switch off and for crewmen to sleep in their crew stations. An infallible alerting

system will then have to be provided so that resting tanks can be contacted and again become available.

Operating under this pressure, a two-man crew will last for 24 hours — or 48 hours at the utmost — before fresh crewmen will have to be introduced into the tank to keep it operational. If two two-man crews are available to man each two-man tank alternately, the off-duty crew will have to be carried in some form of light armored vehicle which will then have to meet up with the tank for a crew change to be effected. An advantage will be that all four crewmen will then be available to work on their vehicle together, doing maintenance or replenishment, but will the so-called “fresh” crewmen have been adequately rested and will they be able to reach the designated rendezvous? Captain Newell says that “extra crews and maintenance crew chiefs may not be necessary” but it is difficult to see how they will not be needed given the availability of night vision devices and the increased tempo of maneuver demanded by AirLand Operations.

However, an alternative system of crewing might see a third crewman carried within the vehicle, not to take part in its operation but to change places with the other two crewmen when they become exhausted. If all three crewmen are similarly trained in the operation of their vehicle; they can change places every four, six, or eight hours according to a fixed schedule of rotation and each man will then have the “eight hours of free time a day” for resting and sleeping mentioned by Captain Newell.

Such an alternative crewing system can, of course, be rejected out of hand on the grounds of reduced survivability. The tank would have to be enlarged to accommodate the resting crewman and would be bound to present a larger target, and three men would be put at risk in a larger crew compartment. But the inclusion of a third man would not be so contentious



Although Sweden's "S-Tank" is designed to operate with only two crewmembers, a third travels at the rear of the hull compartment to provide added endurance.

if he were able to occupy space within the vehicle which had been provided for another purpose. For instance, if he were able to rest and sleep in a passageway running between the fighting compartment of a front-engined tank and an entrance in the rear of the vehicle, he would only be making full use of armored volume which was already available.

It is of interest to note that in the case of the Swedish “S” tank, which is the only tank in service currently operated by only two crewmen, a third crewman is, in fact, accommodated in the rear of the hull to extend the vehicle’s endurance.

Conclusions

Surely, the increase in survivability sought by Captain Newell has been achieved as much by the adoption of the proposed turrettless crew-in-hull configuration as by a reduction in the number of crewmen, leading to a reduction in the vehicle’s volume?

It is doubtful whether the term “external gun” should be taken to mean only one that is permanently raised above the hull of the vehicle because, in that case, it will be prominent and vulnerable and reloading will be difficult. Several other external gun mounting systems are now the subject of proposals, and these should be examined and considered as possible alternatives.

Can only two crewmen fight such a vehicle? Yes, certainly that will be possible, particularly if they are seated in duplicate, fixed hull crew stations with “360-degree vision and duplicate

driving, viewing, and weapon controls” and are given the assistance of “an automated acquisition and engagement system.” With only two crewmen handling the three crew tasks of all-around observation, target engagement and driving between them, it is possible that the reactions of a two-man tank will be more rapid than those of a vehicle which needs a team of three to operate

it. However, while there will be little difficulty in presenting driving and target engagement images on fixed screens in front of each crewman, giving them wide-angle 360-degree vision from raised remote sensors will remain a problem.

Can only two crewmen “remain combat effective during sustained combat operations?” No, that will not be possible because night vision devices will make 24-hour operation entirely feasible and AirLand Operations will demand a continuous war of maneuver. Either a fresh two-man crew must replace exhausted crewmen or a third man must be carried within the vehicle to join in a crew rotation system, which will make two crewmen available to operate the vehicle 24 hours a day for long continuous periods.

Robin Fletcher was commissioned in the Westminster Dragoons in 1941 and later served in the Special Operations Executive and 2d Special Air Service Regiment. After the war, he attended the technical staff officer’s course at Shrivenham, spent two years on tank design at Chobham, and returned to Shrivenham to lecture on tank armament. After leaving the service, he raised crops in Kenya and cattle in Ireland. His articles on armor have been published in *International Defense Review*, *Soldat und Technik*, *Military Technology*, and other journals.



PHOTO BY LTC DIANA OBENAUER

Armor's Own Private Idaho

by Major James Brewer

When Idaho National Guardsman CSM Larry Steele's great-grandfather came by covered wagon to Idaho in 1896, elements of the U.S. Cavalry were gatekeepers of the Oregon Trail. Charged with protecting settlers from hostile Indians and their own unpreparedness, the cavalry inspected each wagon train to make sure the pioneers had enough provisions to last through the journey further west. Today, U.S. Army forces, in the form of the Idaho National Guard, are still serving as gatekeepers — only now at Gowen Field, an Air National Guard Base turned Armor Training Center, they are evaluating tankers to see if they're ready to head into the 21st century.

Triggered by the failure of numerous Guard tankers to pass the Tank Crew Gunnery Skills Test, the gateway to the Master Gunner's Course, the National Guard Bureau began a Reserve Component Tank Commanders Course (RCTCC) at Gowen Field, just outside Boise, Idaho, in 1984. Since that time, the facility has grown to be one of the premier armor training sites

in the country. Expanding over the past eight years, the program now includes a Basic NCO Course, Advanced NCO Course, Battle Staff Course, New Equipment Training Teams, and a state-of-the-art Multipurpose Range Complex. The instructors at Gowen Field like to refer to themselves as "Fort Knox West," and have requested the new official title of National Guard Bureau, Armor Training Center.

The continued drawdown of active duty forces, the deactivation of some units, and the conversion of others to the Reserve Component makes the mission of these National Guard trainers more important than ever.

Current projections call for some 53 percent of the heavy armor force to be housed in the Reserve Component by 1996, thus the quality of instruction and the curriculum at this remote Idaho site become critical to the future effectiveness of the combat arm of decision.

But the confidence and pride of the trainers here leaves little doubt that they are prepared for the mission.

"Over eight years," says LTC Richard L. Brown, commandant of the

school, "when you see over 5,000 soldiers, you really get a feel for what they learn, how they operate, their capabilities."

Brown describes the soldiers who come to Gowen Field as mature, motivated and well educated, averaging some 13 years of education. But he insists that Reserve Component trainers and leaders must continue to shoulder the lion's share of the training burden for traditional Reserve Component soldiers.

"We know where their motivation is, ... and a guy who hasn't served in a National Guard or Reserve unit doesn't really understand how a civilian makes that transition to a soldier ... and back again."

Reserve Component Tank Commanders Course

The Tank Commanders Course, the heart of the Idaho program, is some 156 hours of training, written by Guardsmen for Guardsmen; but the umbilical cord of doctrine with Fort Knox remains strong as the program of instruction (POI) is inspired by, and certified by, Armor Center staff.

"We've had a great working relationship with Fort Knox since 1984," Brown says, indicating that they mirror the Armor Center's 19K program of instruction and adapt it to the 19Es they train.

Initially, the Guard had planned to export its TCC, but later decided to centralize the training at Gowen Field. The present focus is individual/crew training up to platoon level — capitalizing on the DESERT STORM lesson that maintaining training at platoon level is critical to successfully integrating Reserve Component forces. Using modest, yet effective, classroom facilities, together with the 138,000-acre Orchard Training Area, some 26 miles south of Boise, students undergoing NCOES training at the TCC "actually spread out to cover or maneuver a section of ground and see for themselves the expanse of terrain they must be prepared to control," according to LTC Brown.

Of the 17 instructors in the TCC, 14 are master gunners, trained at Fort Knox, most of whom began on M60A3s and transitioned to M1 Abrams. Approximately 38 states send soldiers to the Tank Commanders Course, including the Kentucky National Guard. When asked why the latter would not use the Fort Knox course, the school Sergeant Major, Larry Steele, explained that most National Guard soldiers cannot break free of their civilian jobs for the six weeks required of the Knox program.

About the Photo on Page 39...

LTC Diana Obenauer captured the spirit of mobile warfare, old and new, in this photo of an M1A1 and a horse cavalryman taken at the Gowen Field Multipurpose Range Complex.

The trooper portraying "Old Bill" is SFC Tom Lill of the 107th ACR, Ohio Army National Guard. He's astride "Winsome," LTC Obenauer's 20-year-old registered quarter horse. The trooper's uniform was borrowed from the 2/116 Cav Regiment, Twin Falls, Idaho. It took five or six tries at full gallop to get the angle right, LTC Obenauer said.

The Gowen Field Course takes only two weeks, so a Guardsman can either attend during an annual training (AT) period, or in a school status.

With the TCC compressed into two weeks, students have little free time; but they also discover a challenging, highly functional course.

Some active duty units, unable to spare a soldier for six weeks, have sent students to the National Guard course.

Course Organization

- Diagnostic Test
- Maintenance — 25 hrs
- Armament Controls/ Equipment — 25 hrs

A one-to-four ratio of master gunners to students ensures that this portion of the curriculum, what LTC Brown calls "the meat of the program," is solid.

"They look at every bit of that turret," Brown declares, "and that's what the National Guard soldier needs—confidence in his trigger-pulling skills."

- Conduct of Fire — 28 hrs
 - Training Devices — 7 hrs
 - Auxiliary Fire Controls — 8 hrs
 - Crew Drills — 2 hrs
 - Prepare-to-Fire Checks — 10 hrs
 - Firing Engagements — 16 hrs
 - Course Review — 4 hrs
 - Hands-on Performance Evaluation — 10 hrs
- (A modified TCGST that the crewman gets three chances to pass)
- Written Final Exam — 1 hr

Like most other soldiers, the cadre at Gowen Field are concerned about the effects of the drawdown and subsequent budget cuts.

According to the information contained in the Armor Functional Area Assessment Briefing, to field an armor force today equivalent to that of DESERT STORM, says LTC Brown, six battalions would have to come from the reserve components. With the majority of future Reserve Component NCOES and tank crew sustainment of training being done at Gowen Field, the real challenge is "how to best utilize our assets. Qual-

ity must remain. Content and quantity, based on need, is the task at hand. One thing is certain, constrained resources will mean a limited number of slots in a limited number of courses. A 20-percent cut in staff would just about close the doors," Brown argues.

Combat Vehicle Transition Training Team

As more of the Reserve Component moves from the M60 series to the M1 Abrams, Gowen Field also supports that training requirement. The Combat Vehicle Transition Training Team (CVTTT) is a National Guard Bureau/Department of the Army-sponsored program that transitions tankers from the M48A5 and M60-series to the M1. But, rather than an individual training effort, the CVTTT is more akin to the National Training Center's approach, in that whole units come to Gowen Field.

"We're a *unit* training activity. We train battalions," explains LTC Rick Hoverson, commandant of CVTTT.

When a battalion arrives at Gowen Field for Hoverson's course, it can be garrisoned and begin training within four hours, an important point since time is critical to Reserve Component soldiers. The battalion training cycle consists of 63 days, with 21 days per company, including some overlap in instruction time. There are no days off. Every minute is filled. Tank commanders and gunners must test-out in all four crew positions, and there is a parallel maintenance instruction program as well.

"We try to show them that what an M1 can do in an ambush, or at night, because of its speed and agility, it's the difference between night and day [over an M60]," says Hoverson. Seeking crew integrity, the course tries to avoid what Hoverson calls a "schoolhouse syndrome" of just cooperate and graduate. Each soldier maintains a job book that allows the unit to retrain or retest, as required. With video cameras mounted in the turret, transmitting images to the tower and

A spotless maintenance facility supports the students in Gowen Field's Tank Commander Course.



(PHOTO BY SGT MARK ZWEIFEL)

recording both actions and voice commands, the CVTTT can offer both specific, timely critiques during the after-action review, and ensure safety on the range.

The 116th Cavalry Brigade

Headquartered in Boise, and with units throughout Idaho and Oregon, the 116th Cavalry Brigade (HSB) is an integral part of the activities at Gowen Field. As a RoundOut brigade to the 4th Infantry Division (Mech) at Fort Carson, Colorado, the "Snake River Brigade" (so called as it historically included units along the Snake River in Idaho and Oregon) relies heavily upon the staff and facilities at Gowen Field to maintain its training edge. Brigadier General Kane, commander of the brigade, is proud of the progress of the Idaho National Guard training center.

"Mobilization of Reserve Component forces during DESERT STORM was better for having been a part of Gowen Field's program," Kane suggests. "They're proud of the title 'Fort Knox West,' and they work to keep close ties with the Armor Center. Nothing is trained here that Fort Knox isn't aware of, or doesn't monitor for standards."

Kane ties the growth of his own brigade training program to the expansion of Gowen Field. With the RCTCC, the CVTTT, the NCO education courses, and the multimillion-dollar Multipurpose Range Complex nearby, the 116th Cavalry Brigade is

reaching beyond traditional levels of preparedness for National Guard units.

"In the past, it wasn't the mission of a National Guard armor unit to progress beyond Tank Table VIII in crew capability," Kane explains, "but [with these facilities] the mission is evolutionary. It's get as much training as you can and go as far as you can." When asked where he sees his brigade two years from now, Kane suggests a continuing relationship with the 4th Infantry Division (Mech), company-level training using the MPRC to its maximum potential, company-team CALFEXs, and progress up to Tank Table XII.

In describing the program at Gowen Field, BG Kane says, "It's the first time ever that National Guard units were able to train without running ranges themselves. They simply make sure their soldiers arrive on time for training and they function as the leaders of their own soldiers. They finally get to be leaders at their own AT."

Kane is referring to not only the user-friendly setup at Gowen Field, but the BOLD SHIFT training philosophy and initiatives that sent some 1,000 active duty Fort Carson soldiers to support training this past summer at Gowen Field.

While remaining doctrinally tied to Fort Knox, Gowen Field is beginning to roll up some impressive statistics of its own. The base goes through more gun tubes and tank track than any one post in the Army. Last year alone, Gowen Field trained over 3,500 armor

soldiers, all the while stewarding the environmentally sensitive Orchard Training Area well enough to receive accolades from environmental groups and government officials alike.

The staff and faculty at Gowen Field want to promote more of a "leveling" attitude about part-time and full-time soldiering, but they recognize that old notions are hard to change. Since volunteers marched up to fight alongside the regulars at First Manassas in 1862, some have believed that Guard and Reserve training is a step down from active duty training. But the efforts ongoing in Idaho will make an observer think twice about such a notion.

"It doesn't matter what status we're in," says CSM Steele. "Whether you're active duty, AGR [active Guard & Reserve], or traditional Guard, we're all soldiers."

There is a local legend that the word "Idaho" is taken from a Shoshone Indian term, "Eeda-How," which means "sun shining on the mountain." But a visit to this growing training center — this natural tank country where the high desert meets the mountains — will convince you that the sun is shining on the Idaho National Guard and the total armor force as well.

Major James Brewer was recently assigned as editor-in-chief of *ARMOR*.



TOW and Dragon Employment in the Armor Team Defense

by Captain Sande J. Schlesinger

The armor team commander controls three of the world's most lethal armor-killing weapons. When employed together, the TOW, the tank, and the Dragon can satisfy the demands of any armor battlefield. But to maximize the potential of these weapons systems, we should position and employ each to take advantage of its strengths while protecting its vulnerabilities.

The commander who thinks that range is the only difference between these three weapons makes a grave error. Although the TOW has one of the longest direct fire ranges on the battlefield, its disadvantages are a long time of flight, a large signature, and a slow reload time. The tank, with its outstanding fire control system and superior protection, can be restricted by terrain. Finally, the Dragon, with its relatively short range, is an extremely portable direct fire and surveillance system. Keeping these ideas in mind, let's examine how that armor commander can use the TOW and the Dragon to augment his tank defense.

The TOW

The armor team commander will have four TOWs mounted on Bradley Infantry Fighting Vehicles. By following seven basic principles of TOW employment, he will multiply the effectiveness of his TOW fires, increase Bradley survivability, and complement the killing effort of his tanks.

1. Provide for mutual support — Never allow one TOW to cover a sector by itself. One good reason is that volley fire by TOWs against tanks has proven more effective than single TOW shots. Furthermore, when two or more TOWs engage the same sector, one can displace to an alternate position while the other maintains sector coverage. Employing TOWs in two sections of two is the easiest way to apply this principle. At some point, the two sectors should interlock, thus creating mutually supporting sections, but mutual support shouldn't overshadow the need for dispersion. A rule of thumb is to position TOWs so

that fires from the enemy on one vehicle do not suppress another.

2. Provide for security — A Bradley on a flank, employing its TOW, is highly vulnerable to dismounted infantry. If it's not feasible to position friendly dismounts near the vehicle, provide the materials necessary so that the crew can construct and emplace hasty protective obstacles and early warning devices along dismounted avenues leading to the weapon.

3. Strive for flank shots — Tanks are bigger, weaker, and blinder on their flanks. The shape and composition of Threat frontal armor makes frontal TOW shots ineffective. The TOW's HEAT warhead is more lethal engaging the tank's "softer" sides and rear. Position TOWs in an area where the advancing enemy will expose his flank.

4. Use Your Standoff Advantage — Simply stated, engage with TOWs before the enemy tanks can engage them. With a range of 3,750 meters, a TOW can engage a T-80 1,350 meters beyond the maximum effective range

of the T-80's main gun. Position your TOWs where they can get those long shots, but keep in mind that the farther the shot, the longer it will take for the missile to travel (up to 12 seconds), and hence, the longer the enemy vehicle must be exposed.

5. Use cover, concealment, and dispersion — The large signature means that the Bradley has to make itself survivable. Make maximum use of natural cover, such as reverse slopes, hollows, and ravines. Don't position vehicles so that they must skyline themselves to acquire and engage. Above all, disperse vehicles laterally and in depth. A distance of 300 meters is not unreasonable between TOWs, as long as you maintain the balance with mutual support. Don't feel as though you must place four Bradleys in a 400-meter platoon battle position.

6. Employ TOWs in depth — In planning positioning of your TOWs, consider their need to displace to alternate positions after firing. Position TOWs so they can engage targets in depth; for example, place one where it can engage the lead elements of a column while another engages the middle of that same column.

7. Fight as a combined arms team — An enemy formation will have a harder time reacting to that TOW signature if, at the same time, it's also being engaged by tank, artillery, and mortar fires.

Figure 1 demonstrates one method of employment that achieves depth, mutual support, standoff, dispersion, and flank shots. The infantry platoon leader who owns those TOWs should know these principles and put them into practice. Commanders, however,

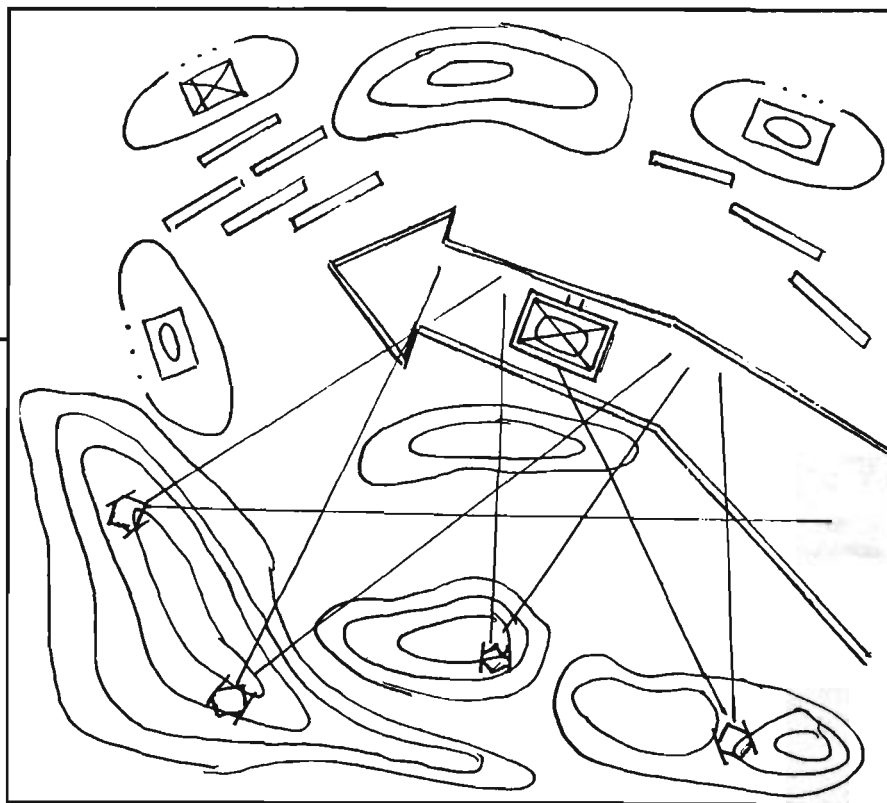


Figure 1

TOWs engaging from Bradleys in an Armor Team engagement area.

must also consider them when arraying their forces.

The Dragon

Dragons are often employed to support the main engagement area in the role of close-in antiarmor weapons targeted at enemy vehicles threatening to penetrate battle positions. Although this is a legitimate employment technique, one exists which makes better use of the Dragon's ability to go where tanks and TOWs may not be able to go, or may not be able to engage. Few, if any, engagement areas are perfectly flat; many have wadis, dry creek beds, or eroded irrigation ditches running through them. Enemy reconnaissance elements can use these features as mounted avenues of approach. In some cases, a vehicle in one of these avenues can remain concealed throughout the depth of the engagement area and enter a battle position undetected.

Placing a TOW or a tank into one of these avenues would take valuable combat power away from the main engagement area. Furthermore, a tank or a Bradley may have trouble turning, getting out, or maneuvering in a close fight, if the ditch is very deep and narrow. By employing the Dragon in such terrain, the armor commander can place effective antiarmor fire on an advancing enemy along an otherwise concealed approach, and hopefully deny its continued use. Consider the following factors when planning for and preparing the antiarmor ambush, to improve its chances of success.

- **Mass your Dragons** — Individual Dragons lack the killing power of tanks and TOWs; volley fires at a single target will increase the lethality of your ambush. Employ all three Dragons at one ambush site, either simultaneously or in quick succession.

- **Make them survivable** — Since this ambush could prove to be a close-

"Also, don't forget the possible use of the ambush team as a reconnaissance and surveillance asset. If positioned far enough forward in the concealed avenue, a Dragon gunner can detach the six-power IR night tracker and observe for enemy movement into the company sector from a well concealed position."

in fight, strong survivability positions are a must. Allocate assets to help prepare and reinforce these positions.

- Reinforce the ambush site with obstacles — If the avenue is narrow enough, plan an obstacle which ties in with the higher terrain on the sides. This obstacle will help slow the enemy as he enters the kill zone and may disrupt him when the ambush is executed. Any obstacle will undoubtedly be reinforced by the burning hull of the destroyed vehicle caught in the ambush.

- Position subsequent ambush sites in depth — If the enemy feels that this avenue is valuable enough, he may try again, sending additional vehicles, even if one is caught in an ambush. To prevent him from breaching and clearing the obstacles of an initial ambush, plan additional ambush sites in depth along the length of the avenue. Ensure each position is prepared, with rounds cached at each location, and always monitor the current location of the ambush team if they have displaced from original positions. Figure 2 illustrates how to apply these principles.

The task force S2, among others, may be very interested in your antiarmor ambush. Tie your ambush planning into the current IPB process to determine whether this avenue of approach is a likely one for division and regimental reconnaissance units or even the CRP. By doing so, you can give specific guidance to the infantry platoon leader about the probable mission and intent of that ambush. Also, don't forget the possible use of the ambush team as a reconnaissance and

surveillance asset. If positioned far enough forward in the concealed avenue, a Dragon gunner can detach the six-power IR night tracker and observe for enemy movement into the company sector from a well concealed position.

For the armor team, an ideal situation would be for the ambush to block the avenue and force trailing vehicles out of the low ground up into the engagement area. Chances are that vehicles coming out of a deep ravine would have mobility difficulties, would expose flanks and undersides, and would be misoriented. Vehicles would emerge and find themselves in the engagement area, where tank and TOW fires would destroy them.

Few would argue that the most effective killer of a tank is another tank. However, terrain and engagement area considerations may preclude a tank from engaging targets. Effective positioning and employment of the Dragon and TOW can cover those areas where the tank may have trouble. Each weapon would then engage in a situation best suited for its capabilities, resulting in a solid defense

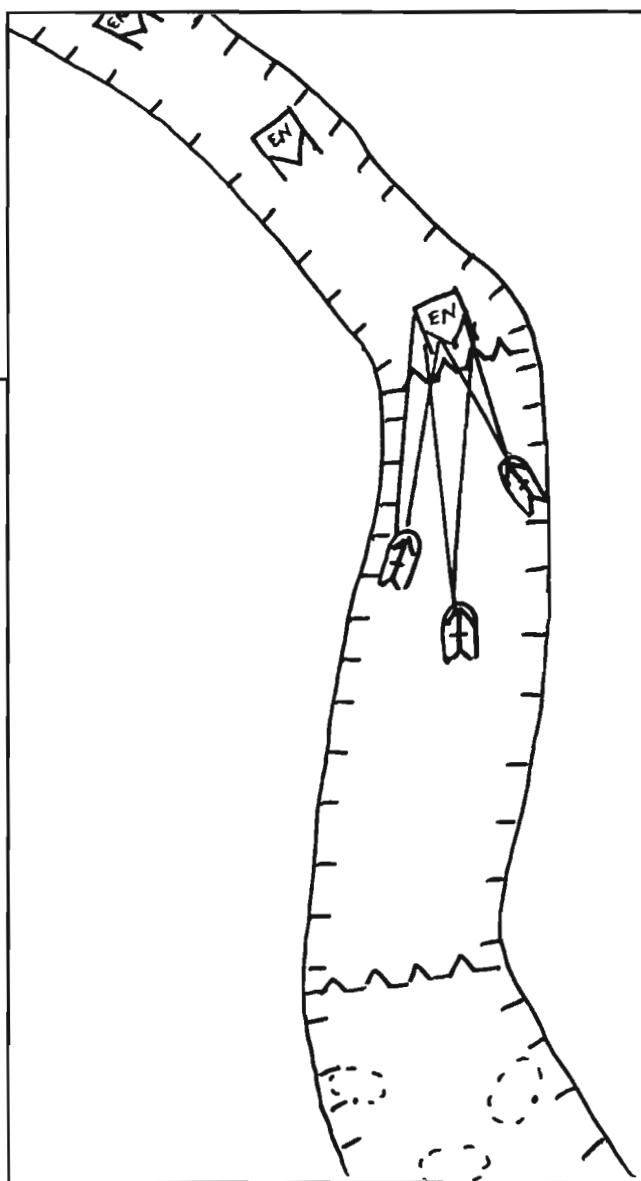


Figure 2

Dragon antiarmor ambushes in depth.

with weapon systems mutually supporting one another in depth.

Captain Sande J. Schlesinger, an infantry officer, served as a rifle platoon leader, an antitank platoon leader, and a rifle company executive officer with 2-23 Infantry and 3-47 Infantry at Ft. Lewis, Washington. He is a 1992 graduate of the Armor Officer Advanced Course.

Leadership Challenge For The Future:

Women in Armor and Cavalry

by Captain Kelly John Ward

The recent success of women in the armed forces, as part of Operations JUST CAUSE, DESERT SHIELD, and DESERT STORM, is causing heated debate over the future role of women in the services. The Presidential Commission on the Assignment of Women in the Armed Forces was to present a report in November, 1992, that could recommend women be allowed to serve in the combat arms branches. There is growing support in Congress to change the Army's combat exclusion policy, and Presidential candidate Bill Clinton has stated his intention to allow women to serve in all branches of the military if he is elected in November.¹ Public opinion polls show that the American people are divided over the issue of women serving in combat, but the percentage of Americans supporting the idea has steadily increased in the past few years.²

The relevance of all this to the young Armor leader is that we must be prepared for the very real possibility of integrating women into the Armor force, probably sooner than anyone thinks, while maintaining combat effectiveness. To say that this is an emotional issue is a dramatic understatement. General Patton and others are surely turning in their graves that the subject is even being broached on the pages

of *ARMOR* Magazine. Bring the issue up at a Friday beer call and you are liable to be thrown out of the club by your peers. My purpose here, however, is not to discuss whether to allow women in the Armor force. I in-



stead want to focus on the issues that will be relevant to us as leaders, if and when the decision is made by our political representatives that women will serve in combat arms branches. It will be the NCOs' and junior officers'

leadership challenge, as it always is, to maintain the discipline, cohesiveness, and combat readiness for which the U.S. Army Armor force is known.

The first issue that comes to mind in any discussion of women in combat

arms is the obvious physical strength differences between men and women. As a tank loader, a woman must be capable of quickly maneuvering a 53.4-pound, 120-mm HEAT round, possibly while the tank is moving over rough terrain. The combustible casing of the 120-mm ammunition creates a severe safety hazard for the crew if rounds are mishandled during firing. For this reason alone, it would be imperative that any woman wishing to serve in the Armor force must pass some kind of upper-body strength test. Keep in mind, however, that the next generation MBT could well have an autoloader, (and the XM8 AGS will have a three-man crew with autoloader) negating this argument against female tank crewmen.³ Vehicle maintenance and recovery, especially track and roadwheel maintenance, also requires a certain amount of physical

strength that not all women (or men) possess. A cavalry scout will be required to conduct dismounted patrols over long distances with radios and possibly M60 machine guns. For women to serve in armor and cavalry

units, they would have to be physically able to perform all of the duties required by that MOS to be fully accepted in the unit.

To ensure that individuals are physically capable of performing as armor crewmen, the Army would have to set and enforce a new physical standard for women. This may be as simple as requiring women who serve in combat arms to meet the same APFT standards as men, or it may involve developing a whole new test for all combat arms soldiers. The Royal Canadian Army, which has allowed women in the Armor force since 1989, has a combat efficiency test with an equal standard for both men and women.⁴ A soldier must be able to run 10 miles with weapon and gear in two hours, thirty minutes, and then run another 10 miles with weapon and gear the next day in two hours, forty-five minutes. They must also be able to jump a six-foot ditch, scale a six-foot wall, and carry a person of equal weight 100 meters. Regardless of the scale that is set, it will be the responsibility of junior leaders to see that the test is administered fairly and to standard. Bias in testing, perceived by either men or women, would be a volatile issue that would quickly destroy unit cohesion and effectiveness.

There will be many unique problems caused by co-ed armor crews that I will address here. Vehicle commanders and small unit leaders will have the task of maintaining professionalism and controlling sexual harassment on a daily basis, something that armor leaders don't normally contend with. The privacy of individual crew members living on the same tank will be difficult to control. Major Russell, the Canadian Army LNO to the Armor School at Fort Knox, states that it is only a matter of respecting the human dignity of the individual. There have been no incidents of sexual harassment or prejudice towards the three enlisted members of the Canadian Armored Corps to date. During DES-

ERT SHIELD/STORM, female soldiers of the American Army simply covered themselves with a blanket if a cat-hole in the open desert terrain did not provide them with privacy. If leaders enforce standards of conduct, the problems of privacy can be overcome.

Not so easily overcome, however, will be the traditional societal values that we and our soldiers share toward women. In joint hearings before Congress in late July, General Merrill McPeak, Air Force chief of staff, stated, "I have a very traditional attitude about wives and mothers and daughters being ordered to kill people."⁵ Put more bluntly, General Robert Barrow, a former Commandant of the Marine Corps, stated, "If you want to destroy the combat effectiveness of a unit, put a woman in it."⁶ The typical attitude of men that women are the "weaker sex," both mentally and physically, is the crux of the entire emotionally charged debate over women in combat arms. The leadership challenge presented to the armor leader will be overcoming these strong societal prejudices to create a battle-ready team that includes both men and women.

One of the most important tasks for leaders will be maintaining morale. This can only be accomplished if high standards are set and maintained. Organizations with the highest standards attract the highest quality people, because individuals want to be part of a team that is greater than themselves.⁷ When and if women are allowed to join the Armor force, there is a potential for the esprit de corps of individual units to suffer. Your soldiers and subordinate leaders could feel that Armor has lost something intangible that made them join it in the first place. Men join the Army and choose to fight in Infantry and Armor because they want to be challenged, pushed to their limits in the traditionally male discipline of warfighting. If women are serving alongside them,

they will naturally question how challenging their service is. Once again, the importance of maintaining high standards, both physically and mentally, is the key to overcoming a loss of morale. Standards must be challenging to all, and enforced fairly, to ensure that morale does not suffer.

Equally as important to maintaining standards will be the principle of leading by example. FM 22-100 states that "no aspect of leadership is more powerful...your personal example affects your soldiers more than any amount of instruction or form of discipline." I personally feel that this will be the biggest challenge for us as armor leaders should women be allowed to serve in Armor and Cavalry. Accepting and integrating women into combat arms units will be successful only if leaders, at all levels, are professional enough to overcome their own feelings and prejudices about the issue. This is a tall order.

Many people have compared this recent debate over allowing women into combat arms to that of the integration of blacks into white units in the late 1940s and early 1950s. On the surface at least, the two debates are similar. The senior Army leadership in 1949 argued that an end to segregation would seriously impair combat efficiency,⁸ much as the leaders of today argue against placing women in combat arms. The Secretary of the Army in 1949 argued that the Army was not an instrument of social change, and that racial integration would dangerously weaken the force, an idea that is ludicrous to us only forty years later. At the time, the President ordered the integration of the armed forces for political reasons, much as the recent study of women in combat arms has been undertaken due to political pressure. The Navy's Tailhook incident and a recent *Army Times* report describing sexual assault allegations by women who served in DESERT STORM has heightened the political climate for change.⁹

The difference between the two cases, blacks and women, is that leaders in the early 1950s had only to overcome racial prejudice, an irrational belief that black men were inferior because of their skin color. If women are allowed in combat arms, we as armor leaders will face a much harder challenge. Overcoming sexism and gender prejudice is more difficult because there are real differences between men and women, gender differences that you cannot refute. Charles Moskos, a Northwestern University sociologist, argues, "The idea that fighting is a masculine trait runs deep. As a cultural trait, it predates any written history. It may even be a genetic trait."¹⁰ Add to this the fact of human sexuality, and the relative immaturity and youth found in the Army, and we will be asked to provide leadership in a situation of almost unimaginable turmoil. The leadership challenge will be to take a unit under these circumstances and create a disciplined, cohesive fighting force capable of winning on the modern battlefield.

Are we up for the challenge? Only time will tell. But it is obvious from

this discussion that the possibility exists that in the very near future our political representatives could ask us as leaders to integrate women into the Armor force. What is also obvious is that it is not something to be taken lightly. The mission of the armed forces involves national security. Our political leaders must do a cost-benefit analysis. They will weigh the importance of equality and equal opportunity as the basis for our democratic government against the potential cost to the nation if combat readiness is not maintained. They will expect us as military leaders to carry out our mission of providing the nation with a combat ready force, whether we agree or disagree with the restraints under which we must operate. We must begin to think about and plan for this contingency, as we would any other. It is our duty as leaders, both to the nation we serve and the men (and women) we will lead.

Notes

- ¹Maze, R., "Bush Offense is Still Defense," *Army Times*, August 31, 1992, p. 6.
- ²Maze, R., "Drawbacks of Women in Combat Jobs Preoccupy Hill," *Air Force Times*, July 1, 1992, p. 16.

³Weapons Department, U.S. Army Armor School, Ft. Knox.

⁴Interview with MAJ Russell, Royal Canadian Army LNO, Ft. Knox, Ky., 3 August 1992.

⁵Willis, G., "Women's Roles: The Debate Rages," *Army Times*, August 10, 1992, p. 8.

⁶Downing, T., "Just Say No!" Naval Institute, *Proceedings*, February 1992, pp. 45-46.

⁷*Ibid.*, p. 45.

⁸Foner, Jack D., *Blacks and the Military in American History*, Praeger Publishers, New York, 1974, p. 186.

⁹Willis, p. 3.

¹⁰Mathews, W., "Military has Basic Link to Sex," *Army Times*, July 27, 1992, p. 16.

Captain Kelly John Ward is a 1988 graduate of the United States Military Academy. He has served as a tank platoon leader, scout platoon leader, assistant regimental S4, and XO of HHT Regiment in the 11th ACR. A graduate of Airborne, Air Assault, Ranger, SPLC, and JMOC, he is currently attending the Armor Officer Advanced Course at Ft. Knox.

Who Was "Old Bill?"

Since 1904, the symbol of the U.S. Armor Association was a drawing of a frontier cavalryman by the noted Western artist Frederick Remington.

Remington, a famous magazine illustrator, loved the U.S. Cavalry and spent a lot of time visiting cavalry posts. And when the cavalry prepared to go to Cuba for the Spanish-American War, Remington was sent by the publishing mogul, William Randolph Hearst, to cover the war and the buildup.

The drawing of the cavalryman was apparently made by Remington at a staging camp in Tampa, Florida in 1898. The cavalryman who posed for the sketch was Sergeant John

Lannen, a snowy-haired veteran on his last enlistment. Lannen would later die of yellow fever, as did so many of the veterans of the Cuba fighting.

In 1904, the archives of the U.S. Cavalry Association note that Remington, an honorary member, had agreed to let the Association use the drawing as its symbol. The sketch of Sergeant Lannen on horseback appeared on the cover of the old *Cavalry Journal* for years. The *Journal*, evolving with the missions of the men it served, later became the *Armored Cavalry Journal* and, still later, *ARMOR*, which became a Department of the Army publication in 1974. Today, *ARMOR*'s office at Fort

Knox is Building 4401, called Lannen House, and the drawing still appears in the magazine from time to time. But over the years, the sketch has been called "Old Bill," not "Old John."

We at *ARMOR* were wondering why. What do we know about this cavalryman, and why was he renamed "Bill"? Could "Old Bill" have been SGT Lannen's horse?

If you have any information at all about the origin of Old Bill, the facts of the matter, personal theories, or just interesting rumors, we'd like to hear about them. We've begun investigating the question and will publish the results in a forthcoming issue.



Armor Center Tank Design Contest

The post Cold War Army demands a new and revolutionary change in tank design and development philosophy. Given the changing global situation and a constantly decreasing defense budget, it is important for us to draw new ideas to the forefront. Do not misunderstand the intent of the contest. The Army materiel development community has and continues to provide the American soldiers with the best and most advanced equipment and weapon systems in the world. This contest was conceived to generate thoughts about Armor and Armored Cavalry and to gain access to your ideas and concepts on the future tank systems needed to equip future tank and armored cavalry organizations. To establish a starting point, relative to all entries, you will find below a definition of the "tank," and the objectives of the contest. Good luck.

Definition of a Tank

The tank is an all-weather, day/night, multipurpose weapon system incorporating a high degree of tactical mobility, and protected firepower, capable of conducting sustained combat operations against a determined, sophisticated threat. The tank accurately fires a variety of lethal munitions (while stationary and on the move), can rapidly move across the battlefield (on roads or cross-country), and with its armor protection (to include electronic warfare sensors and countermeasures), can survive most threats encountered in the close battle area. The tank's inherent lethality, mobility, and survivability provide commanders a high degree of tactical flexibility and enable rapid concentration of combat power at decisive points on the battlefield.

The principle role of the tank is to lead ground forces in offensive operations.

Contest Objective

The role of the main battle tank to lead ground forces in offensive operations will continue for the foreseeable future. There are new and worthwhile ideas as to how this role can best be fulfilled. Consequently, the purpose of this contest is to develop ideas for an advanced land combat vehicle, or components thereof, which will substantially increase the shock effect, lethality, and survivability of tank and armored cavalry organizations in operations over all types of terrain, in all weather conditions. While its configuration and the time at which it might be fielded are not overriding factors, you should attempt to aim your effort at a successor for today's tank. The current Armor community priorities for a future tank are:

- Lethality
- Survivability
 - Mobility/Agility
 - Protection
- Deployability
- Sustainability

The future tank must be transportable by current U.S. transportation assets. The tank must also weigh no more than 55 tons combat loaded.

General Design Parameters

Include in your entry general design information such as: vehicle weight, crew size, type of weapon systems and caliber size, engine type, and tracked or wheeled, etc. You are not limited to the above. This will assist

the judges in understanding your design.

Rules

1. With the exception of the Rules Committee, judges, the contest officials/workers and their family members, the contest is open to all who desire to enter.

2. United States Government employees may not submit work produced in their official capacity.

3. Ideas or designs submitted will not include classified military information or previously published information.

4. Ideas or designs may be simple in format and, where used, only rudimentary sketches are necessary. However, the more detailed the drawings, the easier it is for the judges to understand the concept. Judging will be based on how well your concept matches the priorities listed in the contest objective paragraph above. All of the priorities must be addressed in your entry.

5. Ideas or designs must be for a complete vehicle.

6. Idea/design entries will be no more than five 8x10 pages, one sided, single spaced; that includes drawings/diagrams.

7. Only one entry per contestant allowed and only one prize will be awarded to any one individual.

8. Each idea or design will be accompanied by a signed official entry form. You may reproduce the entry form in this magazine, if needed. However, your signature must be an original.

9. Receipt and evaluation of designs and ideas does not imply a promise to pay, a recognition of novelty or origi-

nality, or a contractual relationship such as would render the U.S. Armor Association or the United States Government liable to pay for any use of the information contained in entries.

10. Entries must be received by 15 January 1993 to be considered for an

award. You must include a self-addressed, stamped envelope in order for your entries to be acknowledged as received! Please do not call the Armor Association or Armor Magazine to verify receipt of your entry. Allow 4-6 weeks to receive your verification in

the mail. There will be no notification for eliminated entries.

11. All entries must be in English and must be legible.

12. At the conclusion of the contest, all entries and forms will be kept by the United States Government. Entries will not be returned!

13. All rules must be followed to preclude elimination from the contest.

Official Tank Design Contest Entry Form

Attach this form to your entry for the U.S. Army Armor Center/U.S. Armor Association Tank Design Contest. I understand and consent that after the receipt and evaluation of my design or idea, the United States Government may use my design or idea without the U.S. Armor Association or the United States Government incurring any obligation or liability to me, my heirs, or assigns. I also waive any proprietary rights that I may have in this design or idea.

Send entire entry to: **Armor, ATTN: ATSB-AM
(Tank Design Contest)
Fort Knox, KY 40121-5210**

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority: 10 USC 3013

Principal Purpose: (a) Address and phone number are required so that winners may be informed and (b) Employment category is required to ensure conformance with applicable laws.

Routine Uses: Address and phone number - to inform winners. Employment category - to ensure compliance with applicable laws.

Mandatory or Voluntary Disclosure and Effect on Individual Not Providing Information: Disclosure of information is voluntary. However, failure to provide any of the information may result in delayed notification of a winning entry.

(Signature)

(Date)

(Print or type name, rank if military or title if civilian)

Home address and phone:

Work address and phone:

Please Check One:

(Who do you work for)

DOD

(Dept. of Defense)

Government
Contractor

Other

Judges

Entries will be judged by a panel of combat and materiel developers from the U.S. Army Armor Center and various research and development centers. Their selections will be final and binding.

Prizes

1. First prize - \$500
Second prize - \$300
Third prize - \$200
Fourth prize - \$100

2. In addition, the fifth through the tenth place contestants will receive an appropriate certificate and a two-year honorary membership in the U.S. Armor Association.

3. Winners will be announced at the Armor Conference in May of 1993.

4. Prizes will be donated by the U.S. Armor Association to the winners.

5. Awards will be presented by appropriate representatives of the U.S. Armor Association. You need not be present at the Armor Conference to win.

We are hopeful that many good ideas will be forthcoming. Let your imagination run wild. Sketches mailed with the entry forms need not be professionally prepared as long as the idea is adequately presented.

Remember, all entries must reach the Armor Magazine office not later than 15 January 1993 to be considered.

The timetable of the contest calls for a preliminary judging in January 1993 with the final judging prior to the Armor Conference in May. Winners will be announced at the Armor Conference and in the following issue of ARMOR magazine.

DRIVER'S SEAT (Continued from Page 5)

•Length of time remaining in unit. Will the soldier extend to complete a 1-2 year tour following graduation?

•Does the soldier meet all the prerequisites? GT 105? CO 110? Tank commander for two years? Qualified his tank in the past year? At least six months' experience on M1/M1A1? Can he pass the TCGST in FM 17-12-1? Does he have a SECRET security clearance?

•Be a volunteer, as confirmed during battalion/squadron commander interview.

As a first sergeant, I learned that, in addition to the mentioned prerequisites, the TABE A test administered by the local education center was an excellent indicator of students who may have reading and comprehension problems. Although the TABE A test is not foolproof, it gives a good indication of soldiers who may have potential problems. The Master Gunner Course requires a great deal of reading and comprehension of complex subjects. An NCO who had a 123 GT score when he was 18 years old may not have the same reading and comprehension level 10 years later. Give the master gunner candidate every opportunity to be successful. We, the senior NCO leadership, must give those high quality NCOs the tools needed to complete the course and work in these demanding positions. To further prepare the master gunner candidate for school, an opportunity to work as an Instructor/Operator (I/O) in the UCOFT helps. Working as an I/O serves a two-fold mission. First, it is a prerequisite for the follow-on Senior I/O course taught after the Master Gunner Course. The three-week Senior I/O course makes a talented NCO more valuable and a greater asset to the unit. Second, working as an I/O expands an NCO's knowledge and grasp of the tank's fire control system and its employment. An NCO who is successful at training his crew as well as other crews is a valuable trainer. In

the *Master Gunner Newsletter* dated October 1992, discussed the problem areas that result in the highest failure rate in the Master Gunner Course. A student attending the Master Gunner Course needs to meet all the prerequisites. Although one or more are waiverable, the waiver is an exception to policy and is intended for extenuating circumstances. If you have an NCO you are considering for the Master Gunner Course who falls short on a prerequisite, you can get a confirmation for approval of his waiver before sending him to the school. Send or fax his prerequisite data to the following address: Weapons Department, ATTN: ATTN-WPG-G (MSG Preston), U.S. Army Armor School, Fort Knox, KY 40121-5212. (FAX number to the branch is DSN

464-5708 or commercial (502)624-5708).

An NCO attending school needs to have a foundation of knowledge and experience from which to draw. Meeting the prerequisites and passing the TCGST are the essentials that establish this foundation. This is why we test the TCGST to standard. The TCGST is tested, step by step, from the checklists in App C, FM 17-12-1 w/Ch 3.

The instructors of the master gunner course and myself want all students attending the course to be successful. It is our belief that the best NCOs are selected for attendance. The intent of this article is to spark ideas and help in the process of selecting the right NCO.

The Armor Hotline: Your Armor Center Connection

The Office of the Chief of Armor, Readiness Assessment Division, maintains the Armor Hotline as a medium for armor and cavalry units worldwide to communicate with the Armor Center, Armor School, and Fort Knox. The Armor Hotline can provide you with the answer to almost any question pertaining to armor and cavalry issues. It can also answer questions or provide you information concerning Fort Knox.

A recent analysis of the Armor Hotline showed that the majority of callers were requesting information on the availability or status of current doctrinal manuals, with questions on FM 71-123 and FM 17-12-1 (Change 3) heading the list. Requests for assistance with maintenance related topics were second, and information on Safety-of-Use messages ran a close third.

We have also answered questions concerning developments in long-range gunnery, recent changes to the divisional cavalry squadron organization, training devices and training ammunition, and correct boresighting procedures for the M1A1.

While this is just a sampling of the questions answered through the Armor Hotline, the continued success of this initiative lies with the armor and cavalry soldiers deployed around the world. Your use of this service will continue to make the Armor Hotline an easy and viable way to communicate with the Armor Center, Armor School, and Fort Knox.

The Armor Hotline is accessible 24 hours a day, 7 days a week. Our charter is to respond to your question within 72 hours. If you have a question or concern or simply want to comment on any issue facing the Armor and Cavalry community, or if you just want to challenge us with a tough question, you can contact us at: commercial (502) 624-TANK, DSN 464-TANK, or toll-free 1-800-525-6848.

LETTERS (Continued From Page 2)

and Companies A and D in the first cycle followed by B and C. The admin/log support packages were duplicated in each cycle and, where possible, additional funding was obtained to help in maintaining the support levels.

The plan (Steel on Target II) was briefed to the brigade commander, who endorsed it, and the division commander, who not only supported it but briefed the Adjutant General on the "concept of the operation." The entire senior leadership was committed to the success of this operation. I might add that during this time period, the 50th AD NJARNG was going to be at BCPT for "War Fighter."

During IDTs, in-progress reviews were conducted to track progress, and to identify and correct problem areas. These IPRs kept the senior leadership informed. The battalion conducted two leader recons to the AT site, Fort Drum, New York. These TEWTS served as coordination visits and allowed us to walk the ground we would occupy during AT. Once we arrived for AT, all of our prior planning paid off. The battalion's first cycle moved to field locations and established bases of operation. In order to maintain the focus, the battalion lived in a tent city as close to the ranges as possible. Field motor pools were established and tanks parked administratively. The battalion MCOFT (mobile conduct of fire trainer) was also in the field within walking distance of the motor park and tent city. An R&R (Recruiting and Retention) tent was also in close proximity, where a soldier could get a cold soda or hot dog at a reasonable price. The R&R tent was equipped with a TV and VCR. Keep in mind, our focus is on tank gunnery and crew qualification on Range 44, a computer range our crews had never fired on before. We concentrated on the basics: good pre-combat checks — prepare to fire checks — screening by the book — TCPC (Tank Crew Proficiency Course) Day & Night — Table VII A&B and then onto Table VIII. Throughout the process, battle rosters were annotated by the leadership. These were the basis for the commander's assessment as to how well crews were progressing. Battle rosters had started with TCGST (Tank Crew Gunnery Skills Test) and kept for all events, to include MCOFT time. These rosters became more and more important as the process of crew qualification continued. They were analyzed by commanders and became consistent predictors and indicators of crew performance. During the process of the commander's assessment, certain tools were available to correct crew deficiencies. For example, if the analysis indicated poor fire commands or lack

of crew coordination, the crew could go back to TCPC or sit and go over engagement cards. If the problem dealt with switchology, reticle/gun lay, control manipulation or acquisition, the crew was scheduled for the MCOFT. Tank crews knew help was available if they needed it and time would be provided to administer that help.

We emphasized command and control at the company level and strongly enforced strict accountability for men and machines, maintaining company integrity wherever possible. While time was flexible, we could not waste it on finding crews or fixing equipment that had not been identified and reported through the proper channels. We demanded that the standards be maintained and met. The leadership chain was exercised and functioned from O5 to O1 and from CSM to E4.

We did experience logistical problems. I agree with SSG Schneider that our Class IX system in the National Guard is broke, and we must do something to fix it. During our first cycle, Class IX was neither "forward nor supporting." In most cases, parts were nonexistent. I could not get a good answer as to "why" there was a problem. We give "Tommy Tanker" a million dollar machine and tell him to "be all he can be," and when it breaks, we tell him to sit around until it's fixed. That's a lot of bull, and becomes a serious training detractor that affects our retention efforts. During the second cycle, with a great deal of help from our 1st Cav assistants/evaluators, this situation changed; we received parts and fixed our machines.

Regarding our "First Team Evaluators," it was a pleasure to have such a qualified group of highly motivated professionals work with our soldiers. It was obvious that these Armor and Cavalry soldiers are highly skilled and very familiar with the gunnery process. Our battalion master gunner took the time to familiarize the Cav soldiers with the M60A3 system. I feel that this gesture paid dividends as our assistants were able to identify with some systemic problems that occurred. We thank them and their leaders for their fair evaluation and qualified assessment of the battalion and our soldiers.

2/102 Armor (The Essex Troop) qualified 98.2 percent (54 of 55 crews) on a tough range. I feel our success is because of "focusing on the basics," allowing leaders the flexibility to lead, providing resources to meet the requirement, and lastly, listening to our soldiers. If a range or a system can't meet the standard, how can we, as leaders, require our soldiers to meet the stan-

dard? It is our charter to provide for those placed in our charge, and we must do everything in our power to meet that condition.

This Annual Training Period was my "Swan Song" as a battalion commander, and I could not think of a more fitting finale. "Armored Knights — Strike with Steel"

WILLIAM J. MARSHALL III
LTC, Armor
NJ Army National Guard

On Command Style, Indirect Fire, and Duds

Dear Sir:

Lieutenant Bohannon's article, "Dragon's Roar: 1-37 Armor in the Battle of 73 Easting," in the May-June 1992 issue, was both refreshing and stimulating, while disappointing in a few aspects as well.

The battlefield achievements of the 2d ACR at 73 Easting are now balanced by other participants not previously published. Lieutenant Bohannon's "ground-eye view" as a tank platoon leader carries important lessons for us all. However, some of the comments were disturbing. For example — a command-directed communications net which accelerates the decision-action process of command and control reminds me of a bad lesson from Vietnam days, that of overcontrol by senior commanders. The command-directed method may best be employed in preplanned ambushes or to initiate a kill-zone or fire traps, but, as soon as the first round is fired, control must pass to the junior leader knowledgeable of his "commander's intent" at the point of battle.

I agree that long-range tank gunnery training is necessary and suggest this be the unit master gunner's responsibility. The Armor School once taught extended range gunnery for the main battle tank, in the indirect fire role, out to eight kilometers with observed fire. We should relook and update those classes, aiming at a range somewhat beyond the tank's effective direct fire ranges — always as observed fire or else we are just wasting precious ammo. In the same sense, "maximum effective range" ought to be reexamined based on the 120-mm's demonstrated (Gulf War) capability along with current thinking on "friendly fire" doctrine for direct fire engagement.

Regarding dud munitions, or rather the unexploded ordnance fired by coalition forces, it is tragic that the tactical scheme of maneuver may be dictated by: "the use

of DPICM and CBU use (and) must be addressed in the operations order. Due to the large number of unexploded bomblets, an area attacked with DPICM or CBUs should be considered a minefield capable of killing dismounted troops and disabling wheeled vehicles."

This is a startling announcement — an abdication of doctrine to technology, rather than requiring that technology dramatically reduce the dud rates.

The U.S. Army munitions developer has long ignored an implied need to mitigate against this danger. Ask any Infantry soldier who experienced booby-trapped artillery rounds in Vietnam if he saw a need to lessen chances of injury from our own duds.

Three years ago, Germany fielded a DPICM round with a self-destruct mechanism on each bomblet to deal with the dud problem. Why haven't we addressed the same issue yet? People in TRADOC are beginning to ask the same of new munitions, that is, a self-destruct feature. However, I confess that the "green eyeshade" bean counters and "not invented here" mentalities still abound in the Army development community. "It costs too much" is heard more often than not. At what price is this capability "cost effective"? At what point does human suffering outweigh the price to develop and field become "effective"? We and our allies are now collectively spending an estimated billion dollars to clean up Kuwait, not to mention the human costs from killed or wounded in the clean up or during the Gulf War. I think it's time the Army accelerated the fielding of self-destruct artillery munitions by joining with Germany and adopting their DPICM round until we can "invent it here."

Again, congratulations to Lieutenant Bohannon for a most thoughtful article.

ROBERT F. GAUDET
Springfield, Va.

Questions Selection For New AGS

Dear Editor:

I have just read your article on the XM-8 "Armored Gun System" in the July-August 1992 issue. I have tried to keep up on this subject since it began in the '80s. The actual selection of a winner has made me curious. Could I ask some questions?

The FMC model was one of four different competitors. The only one not mentioned was the "Commando-Stingray" by Cadillac-Gage. Could you do a story on the competition and the different contestants? I have

not found a really good article on all four, yet. I would like to compare the different features of each contestant to see which one is best.

From reading your story, I think the best feature of the FMC entrant was its ability to be Low Velocity Air Dropped (LVAD), and the automatic gun loader. Did the other contestants have these, or did just the FMC?

I looked at the pictures and drawings, then read an article on the XM-8 in the September *Army*. Several things bother me about the FMC. These are:

- Overall design. The engine deck is too high. It should be longer, flatter. The turret front must be higher to fit over the engine during LVAD. Maybe it would have been better to have a longer LVAD pallet.

- The turret has a prominent shot trap. The armor should deflect fire away from the tank, not into it.

- The turret opens when the main gun is depressed and fired. This breaks the NBC seal. Spent shell cases are to be ejected through a trap door, also breaking the seal.

- The main gun ammo is carried in the turret. This is a bad feature in a light armor vehicle. Are there blast panels in the roof to channel an explosion, as in the M1 tank?

- The automatic gun loader is patterned on naval designs. Navy FMC turrets have no men in the turret. There are several other features I worry about. In cases of autoloader malfunction, the commander had better be left-handed, have the agility of an acrobat, and the strength of a weightlifter to load. Also, can the commander even reach all the shells in the magazine?

- When there are only two men to fight the tank, will the commander be able to fire the main gun? What happens in a two-man crew when the autoloader fails?

- The turret drive is hydraulic. Hydraulic fluid burns. Electric drive does not burn,

but may be too heavy for a light tank.

- The Armored Gun System has a requirement to fight for long periods with a minimum of external support. The FMC has 21 main gun rounds in the magazine, plus nine more stored. The maximum fire rate is 12 shots per minute. I don't think this meets the requirement.

- The coax machine gun is the M-240. In all the battle stories from Kuwait-Iraq, the M-240 coax was not working. Surely, there is a better coax machine gun that works in the desert.

In any competition, there is usually some controversy. There looks like some potential here for a lulu. Maybe there are too many conflicting requirements for the AGS. The Army might be better off using the LAV-105 for its LVAD requirement and something heavier, less complex for air transport. The normal infantry divisions would be better served by the M60 with reactive armor added.

RICHARD B. PRUITT
Sulphur, La.

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A Guidebook to the New National Strategy

Reconstituting America's Defense: The New U.S. National Security Strategy edited by James J. Tritten and Paul N. Stockton. Praeger Publishing Co., New York, 1992. 178 pages, bibliography, notes, \$42.95.

This is an important book.

Most of today's soldiers have served only during a time of defense build-up, especially over the past 12 years. But the build-up is over. Hard times, they are coming and every soldier is painfully aware of it.

In an August 2, 1990, speech at the Aspen Institute, President Bush laid out the outline for a new national strategy that reflected the end of the Cold War, as well as plunging defense budgets. These concepts will guide our defense posture well into the next century (and thereby impact the career of every person on active duty!). Every soldier who has been wondering where the Army is going and how we're going to get there (and even whether we can get there!) should read this slim book for a better understanding of the directions we're following.

The new strategy has four major principles: deterrence, forward presence, crisis response, and reconstitution. The first three are familiar, but will be accomplished with important changes in light of the military force drawdown. The fourth, reconstitution, is a wholly new concept. It would occur when the nation is faced with a major threat beyond the scope of existing forces and involves creating new forces entirely from scratch. Reconstitution is defined as "the ability to restore a global warfighting capability...It includes mobilizing manpower; forming, training, and fielding combat units; and reactivating the defense industrial base."

The whole concept of reconstitution is based on two premises: first, that our intelligence community will give us about two years' warning of a major threat; and second, that once the threat is identified, we will have the political will to recognize it and move promptly to reconstitute our

forces. These two assumptions may be the most crucial weaknesses in the whole security strategy, especially if we go back and look at our own history. Many times, the signs of the threats have been there to be seen, but we either chose to ignore them until it was too late, or we looked for less aggressive (and cheaper) alternate courses of action.

This book is made up of eight short monographs, each looking at a different aspect of the new strategy. The editors, both from the faculty of the Naval Postgraduate School and included among the authors, have pulled the issues together with a succinct introduction and conclusion. The papers address the Base Force, U.S. Intelligence, the Influence of War on Strategy, Congressional Response, Maritime Forces, Nuclear Policy, Strategy for Asia, and Strategy for Europe. They are all excellently written and, while you may question some of the discussions, you will find them uniformly lucid, readable, and thought-provoking. The price is pretty steep, even as good as the work is, so you might want to check your post library first.

But the analyses are important. And you are left with a much clearer understanding of what's driving all the changes, as well as a bit of trepidation on whether we're exposing our flanks again.

JOHN R. BYERS
COL, Ret.
Alexandria, Va.

The Collapse of East German Communism: The Year the Wall Came Down, 1989 by David M. Keithly. Praeger Publishers, Westport, Connecticut, 256 pages, \$47.95.

Certainly overpriced and probably overstated, *The Collapse of East German Communism* has the potential to be a rousing good history, but it falls far short of that. David M. Keithly's book is so dry and wordy that it squeezes all vitality out of an exciting event. Despite this significant

shortcoming, however, the book does focus on the two major reasons for communism's downfall in East Germany in 1989 — national identity and economics.

As a separate communist state, East Germany was doomed to fail because it was never able to establish its own national identity. "German" identity crossed both borders, East and West, and the East German nation-builders erred in thinking that communism would supplant the centuries-old feeling of German unity. This is perhaps best described as "two states, no nation." The communists have never fully understood that no country can free itself from its geography, its history or its culture.

Economics, more than nationalism, however, played a greater role in the collapse of East German communism. Outwardly, East Germany appeared to be an industrialized, relatively modern police state. Inwardly, though, it was economically feeble and diseased. Ambiguous planning and diluted leadership, technology lag and remarkable inefficiency, and raw material wastage combined to aggravate the economic disparities between East and West. Rejection of *glasnost* and *perestroika* coupled with widespread corruption among party officials only heightened the national economic dissatisfaction. The communists failed to see that economic performance is the key to political stability.

Most remarkable is that the collapse occurred almost without violence. Unlike similar circumstances in Romania, the East German officials refused to use force on their own people. The Soviets, of course, refused to intervene because they quickly saw that East Germany was a strategic luxury they could no longer afford.

The author is a university professor with two previous published books to his credit. With this book, he provides no maps or photographs, but plenty of footnotes, mostly from European newspapers. This book is best-suited for the European specialist, not the general reader.

W.D. BUSHNELL
COL, USMC
Shawnee Mission, Kan.



"The Namesake Series"

This portrait of General Philip H. Sheridan and the M551 light tank that later bore his name is another in the new series by ARMOR Contributing Artist SPC Jody Harmon. The portraits are in color and will be available through the U.S. Armor Association.