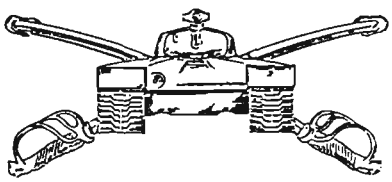
ARMOR

May-June 1987

SCHWERPUNKT



This is my final issue of *ARMOR* as your Editor-in-Chief. I depart for Germany and the 1st Armored Division following the Armor Conference this month. Over the past twenty-one months I have read hundreds of manuscripts, articles, essays, letters, and briefings on Armor and Armored Cavalry. Some of these writings we have published; some we have not. In this, my final column, though, I am going to give you one soldier's opinion on what I believe should be our professional concerns now and in the future.

No one can survive on the battlefield, the training field, or even in an office, by himself. **Teamwork** is absolutely essential to success. We need to concentrate our efforts at building and maintaining teams, whether they be squads, crews, sections, platoons, company teams, battalion task forces, squadrons, regiments, or brigades. Working for the success of the team should be our personal goal.

The best way to achieve that success is first-class, tough, realistic **training**, and lots of it. In times of constrained resources, first-class training is very hard work, but there simply is no good substitute for it. The veritable survival of our soldiers, our units, and our nation depends on how well — and how often — we train. Nothing else should ever have a higher priority. The best form of welfare for the soldier is, truly, first-class training.

Robert C. Waddington, in his article, "Emerging Technology: Too Far, Too Soon" (*Defense Update*, 72, 1986), wrote:

> Men fight wars, not machinery, and it is men who are, in the end, decisive in winning these wars. No amount of technology can replace a good soldier with a reliable rifle in his hands, a soldier who is well-briefed and knows his task from long experience. It is a man who sits behind the most modern electro-optical equipment. This equipment may be the best thing since the machine gun, but of what use can it be if the soldier behind it is unsure of his task, is shaking with fear, or is so fatigued that he falls asleep?

Many writers have called Armor "a technical branch." All too often, I believe, we use that description as an excuse to permit us to place the balance of our professional interest in technology — in machines — rather than in soldiers. The equipment, the weapons, we are getting today are the finest our Army has ever had. However, we must never, never forget that **soldiers** are the critical element of the battlefield. Excellent soldiers, as parts of a well-led and well-equipped team, will win. However, the best leadership and the best equipment in the world will not prove successful if we fail to care for the soldiers who follow that leader and use that equipment.

Finally, the most effective form of leadership is leadership by example. It's not the easiest form; it's the best, and the most important part of leadership by example is **selfless service**:

> Selfless service means putting the needs and goals of the nation, the Army, your unit, and your soldiers ahead of your personal interest.
>
> As a leader, you must be the greatest 'servant' in your unit. You are not given authority, status, and position as a personal reward to enjoy in comfort. You are given these so that you may be of greater service to your subordinates, your unit, and your country.
>
> FM 22-100, *Military Leadership*

When soldiers see that you are willing to go through their hardships and are putting the unit and them ahead of yourself, they will work, train, and fight beyond any of your expectations.

With those four pieces of unsolicited advice, I bid you farewell and hope that you will continue to read *ARMOR*. This publication has a wonderful, nearly 100-year-old tradition. Through your support, it will continue. —GPR

ARMOR

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FEATURES

DEPARTMENTS

Approval to Print

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The information contained in *ARMOR* represents the professional opinions of the authors and does not necessarily reflect the official Army or TRADOC position, nor does it change or supersede any information presented in other official Army publications.

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Official distribution is limited to one copy for each heavy brigade headquarters, armored cavalry regiment headquarters, armor battalion headquarters, armored cavalry squadron headquarters, reconnaissance squadron headquarters, armored cavalry troop, armor company, and motorized brigade headquarters of the United States Army. In addition, Army libraries, Army and DOD schools, HQ DA and MACOM staff agencies with responsibility for armored, direct fire, ground combat systems, organizations, and the training of personnel for such organizations may request two copies each through their publication account.

Authorized Content

ARMOR will print only those materials for which the United States Army Armor Center has proponency. That proponency includes: all armored, direct fire, ground combat systems that do not serve primarily as infantry carriers; all weapons used exclusively in these systems or by CMF 19 soldiers; any miscellaneous items of equipment which armor and armored cavalry organizations use exclusively; training for all SC 12A, 12B, and 12C officers and for all CMF 19-series enlisted soldiers; and information concerning the training, logistics, history, and leadership of armor and armored cavalry units at the brigade/regiment level and below to include Threat units at those levels.

LETTERS

Thoughts on the Role of the AT-8 Kobra

Dear Sir:

I have read, with increasing interest, various articles in such fine publications as *IDR, Jane's Defence Weekly,* and *ARMOR* on the Soviet AT-8 KOBRA. The contention of these articles is that the KOBRA is a subsonic missile which is either a poor antitarmor weapon or a fair-to-good anti-attack helicopter system. The reasons for these assessments are numerous and need not be reconsidered here. The purpose of this letter is to raise a third and heretofore unconsidered possibility: that the Soviets have mated two advanced technology systems into a potent long-range weapon system.

This possibility was initially investigated by both myself and Dr. John Woehler when we were together at General Dynamics Land Systems' Advanced Development/Operations Research Departments. We investigated the mass of the 125-mm gun system and the recoil required to activate the autoloader, calculating the imparted force required at a resultant projectile velocity of just under 1000 m/s. This velocity is attainable, according to Dr. Woehler, without damage to hardened guidance mechanisms.

Secondly, at the velocity indicated above, a sustainer motor is not necessary. This removes the KOBRA from the "missile" category and into a guided projectile category, thus eliminating the need for single load or connection requirements. The round can therefore be stowed in the autoloader and loaded in the standard way for the 125-mm gun.

While all of this is interesting, so what? Let's move one step further and consider that the KGB or GRU have been active over the past few years in obtaining foreign weapons technology in all areas of the world. Further consider that they have successfully infiltrated or obtained information, during the design and development stage, on the Bofors RBS-56 'BILL' ATGM. By incorporating the BILL's technology (a slanted shaped charge warhead) and adjusting the guidance parameters so that the weapon flies a short way above the gunner's line-of-sight, we have both a good anti-attack helicopter munition *AND* a deadly long range, accurate top-attack AT system.

The question becomes, "Why would the Soviets wish such a top-attack system?" For the answer, examine the NATO battlefield: NATO forces are in defensive position, hull-down, as the Soviet tank forces advance. The hull-down positions provide the NATO force excellent protection from the standard direct fire of the Soviet tanks at long range, permitting attrition of Soviet tanks. As the first NATO weapons begin firing, there is an unexpected return engagement from a Soviet overwatch position outside of the range of the NATO tank guns. As the Soviet rounds pass over the turrets of the NATO armored vehicles, the rounds detonate, sending a jet of superhot plasma into the vehicle. The thin top armor is ignored by the jet as it penetrates into the stowed ammunition and/or fuel...

In a scenario such as this, a high degree of penetration is not necessary, as there is very little armor to penetrate. The Soviets do not need to maneuver to attempt flanking shots to overcome NATO composite armors. The speed of the round makes avoidance and even detection of the shot nearly impossible. Finally, the high hit probability of the guided munition virtually ensures its effectiveness. It is simple — a guided projectile rather than a missile, and requires no special additional training of the gunner, other than to keep the crosshairs on the target for a few seconds, which he would do to assess damage anyway.

All of the above are within the technical feasibility of current Soviet industry and have been demonstrated by Western arms manufacturers in numerous munitions expositions and symposiums. Several of these have been open to the general public. The Soviets have repeatedly shown their ability to adapt foreign technology to their requirements and reverse engineer foreign systems to their needs. While this possibility is only just that — a possibility — I would recommend detailed study of its likelihood as a viable consideration.

HARRY I. NIMON, JR.
CPT, MI
MDARNG

Query On Manual Editions

Dear Sir:

The article, "Required Field Manuals for Armor/Cavalry Leaders," in the Nov-Dec 1986 issue of *ARMOR Magazine,* left me confused. Field circulars and field manuals are apparently issued in four forms: coordinating draft, approved final draft, preliminary draft and test.

Would you please explain the difference between these editions? Hopefully, the manual-writing process is not being managed like the materiel-acquisition process.

JOHN H. DEWING
LTC, Armor
USAR

Reply From Director, DOTD, Ft. Knox

Dear Sir:

Field circulars and field manuals are typically given complete distribution in their final form only. The various draft editions of a single publication are printed in association with a corresponding phase in the publication's development.

For example, the preliminary draft is the first copy of a new publication that is distributed by the author primarily for coordination, staffing, and comment from within the Armor School. Feedback from the preliminary draft serves as a basis for refinement and change in the publication as the coordinating draft is developed.

The coordinating draft is published in limited quantities to facilitate solicitation of comments from TRADOC reviewing agencies, other proponent schools, major commands, and a sampling of Armor Force units. Sixty to ninety days are provided for review, and return of necessary comments. All coordinating draft feedback is reviewed by the author and, as appropriate, incorporated into the final draft of the publication.

The final draft is again published in limited quantities and distributed to the TRADOC agencies and/or other approving authority for final review and approval. Once approved, this approved final draft is edited and camera-ready mechanicals are produced for final printing and fielding of the publication. Approved final drafts of DA publications developed at the Armor School may sometimes be locally printed and distributed for field use, pending final DA print and distribution.

Test editions are not a normal part of the Army publications development process. Until recently, test editions could be DA-printed and fielded for up to 18 months to facilitate tryout of new doctrine and training concepts. After tryouts, the proponent school responsible for the test publications development was then able to decide if the publication would be rescinded or revised and finalized for DA print. Test editions have subsequently been deleted from the DA-TRADOC inventory and are no longer authorized. Therefore, FM 17-15 (Test) Tank Platoon Division 86 was the last test manual developed at the Armor School.

If additional information is needed on the various publication editions, refer to TRADOC Pam 310-6, Armywide Doctrinal and Training Literature (ADTL) Development and Preparation, dated 1 Feb 85.

CLAUDE W. ABATE
Colonel, Armor
Director, DOTD

A Place for Armor in LIC?

Dear Sir:

There is increasing discussion on the subject of low-intensity conflict (LIC) in military and political science journals. Many experts, in and out of the military, agree that, for the foreseeable future, LIC will be the most likely threat facing our nation and its armed forces. Is the Armor Force of the future going to be a contributor to the Army's capabilities at this end of the

spectrum of war? It would appear that current trends in the Armor Force will limit our role in LIC. The Army is not preparing the force in terms of equipment and force structure to be an active participant in this level of war.

Within the Army there is increased doctrinal and structural emphasis on light forces to deal with LIC, yet the Army continues to procure increasingly heavy materiel (M1, M2, MLRS) for the Armor Force's defense of Central Europe. While Europe's defense must continue to be our primary focus, these seemingly divergent avenues raise serious doubts about Armor's viability in the LIC environment. In other words, the Armor Force is "held hostage" by a budget process that forces the Army to develop big ticket systems that compete for tax dollars with aircraft carriers and strategic bombers. Because of this, the Armor Force is best prepared to fight in the *least* likely area of conflict — Central Europe. Procurement continues to drive the mission rather than the mission driving the procurement requirements.

This is an alarming notion in that our superb Armor officers, soldiers, and units are essentially excluded from the Army's preparations for LIC in areas outside the NATO sphere. The result is an unbalanced light force dominated by light infantrymen who need (and would welcome) the expertise and capabilities the Armor Force can provide.

What's the solution? The Armor Force should relook its role in LIC and educate those who do not understand that we *can* have a positive impact on our Army's capability in this area. Let's resurrect the assault gun system (AGS) — it's no longer a threat to M1 procurement — and get behind it this time. Let's develop a global view within the Armor Force to temper our tunnel vision in Central Europe. And finally, let's see some dialogue here in *ARMOR* about how the Armor Force can be an active participant in the Army's preparation for low intensity conflict.

GUY C. SWAN III
Major, Armor
Alexandria, VA

Base Armor Badge on CIB, EIB

Dear Sir:

I have been reading about the Armor Force Badge/Tanker Badge controversy in nearly every issue of *ARMOR Magazine*. As a tanker, I feel that we deserve both. The reason that the Armor Force Badge is meeting resistance, I think, is that it is based on an entirely new design. Anything new is bound to raise a few eyebrows. If the proposed Armor Force Badge were to be based on an existing design, I feel that it would stand a better chance of being accepted by the Army.

I propose that the Armor Force Badge be based on the current Combat Infantryman and Expert Infantryman badges. Why should the Infantry be the only combat arms branch to have badges showing their proficiency/combat experience?

In the same vein, since the combat arms are the cutting edge of the Army, each combat arms branch should have its own proficiency/combat badges.

SGT RUSS SUNDLOF
A Trp, 1/26th Cav
Georgetown, CT

Correction

The tank pictured on page 33 of the January-February 1987 issue of *ARMOR Magazine* is wrongly identified as a Soviet T-80 MBT. It is, in fact, a Soviet T-72 that was being shown to a French delegation in October 1977. *ARMOR* regrets the error.

Company Master Gunners as U-COFT Instructor/Operators

Dear Sir:

In reference to the article in January-February 1987 *ARMOR* by SFC David M. Gray, entitled: "The New Company Master Gunner":

The M60A3 Displaced Equipment Training Teams are located at Camp Shelby, Mississippi, and Gowen Field, Idaho. Our mission is to provide M60A3 transition training to National Guard tank crews currently equipped with M60, M60A1, and M48A5 tanks. The program will be in effect until September 1990. Obviously, there will be many crews to train, to include COFT utilization. Our team is anxiously awaiting the arrival of our M-COFT in May 1987. The M60A3 M-COFT training matrix is almost exactly the same as the M-1 U-COFT.

There has been much discussion between myself, the operations officer, and the team master gunners (currently, there are four assigned to the team) regarding the integration of the M-COFT into our training schedule. The problem of "instructor burnout" has been identified in our initial concept discussions. Since only one TC/gunner combination can be trained at a time the COFT must be utilized many hours during the day. The concensus is that one man simply cannot sit at the I/O console, staring at video monitors, for more than four hours a day without serious mental impairment.

Our solution to this problem is to train all of our armor instructors as M-COFT instructor/operators. The initial fielding package from General Electric provides for the training of 12 I/Os. In addition, one person can be trained as an I/O trainer. This individual can train additional I/Os as turnover occurs.

My suggestion to SFC Gray is to have his tank commanders and SGT gunners qualified as COFT instructor/operators. This would prevent "instructor burnout" and provide a broad base of COFT expertise throughout the company. The company master gunner could then overwatch the COFT training program as the crews progress through the training matrix. In this manner he could effectively manage the COFT program and be a better advisor to the company commander. In my opinion, making the company master gunner the U-COFT I/O is not the solution. Having him tied up in the U-COFT all day will leave no time to perform training NCO duties.

COFT utilization and training techniques will be of great interest to units in the National Guard. Rest assured that all of us at the M60A3 DET Teams will be tuned in to your fine publication for further discussion on this subject.

HUBERT J. GRANT, JR.
MAJ, Armor
MSARNG

Comments on Crews, Training, Ammo, Simplicity

Dear Sir:

After reading last month's issue (January-February 1987) and many other issues, I would like to interject a few comments concerning some of the often discussed topics.

This is based on discussion with fellow armor soldiers and heavily influenced by recently listening to the experiences of insightful veterans of WW II (Eastern and Western fronts), who saw many fierce tank battles.

Don't reduce crews below four. The five man crew was optimum. More crew members meant better target acquisition and the ability to destroy many targets simultaneously. The bow gunner earned his pay by keeping off a determined infantry effort in the urban environment and dense terrain often found in Europe and Asia. Twenty-four hour continuous operations will require tank crews to rotate on night watch or dismounted patrols/OPs (seat-bound tankers will die). A tremendous strain will result in a 2-3 man crew. These facts seemed to hold true in WW II and for all soldiers who have experienced the NTC. A dedicated and tightly knit 4-5 man crew will have a better chance of survival and success than an exhausted 2-3 man crew. Casualties will occur. A 4-5 man crew can continue to fight effectively for a sustained period of time. A 2-3 man crew will be severely debilitated by inevitable casualties. A 4-5 man crew can better maintain a vehicle in garrison and in wartime conditions. Who will maintain these increasingly complex fighting machines that "scoot" around the battlefield with 2-3 man crews? We are maintaining vehicles in garrison with 2-3 man crews because of the normal personnel turnovers. A TO&E of 2-3 men will have the result of often having only 1-2 men assigned to maintain and fight a very complex piece of machinery.

Train the drivers as driver/mechanics, such as the wartime Germans and Russians. How specialized should we become? Perhaps the progression of the

mechanic should be driver/mechanic and then mechanical-pure MOS. There are basic advantages to having drivers/crewmembers fulfilling the role of first line maintainers of the vehicle in a manner more specialized than current doctrine shows. Drivers are often the overlooked crewmember. He holds more responsibility in regard to the survival of his crew than acknowledged. Could basic turret mechanics make similar progressions? Perhaps our gunners could have training in simple turret repair and troubleshooting. The driver/mechanic is a proven technique that should be more closely examined and pursued.

Keep the conventional round. Veterans talk of using the tank in an ever-changing environment, from destroying tanks in the Western desert to the dense jungles of Burma. Our experience in Korea and Vietnam shows the advantage of the MBT being able to fire a number of armor/antipersonnel rounds. We have learned and relearned many lessons at the NTC (a tremendous training experience) but we cannot forget the ability to fight close in, clearing jungle trails or street rubble, both infested with determined infantry and well-concealed armor. With that in mind, the tanker needs better and more flexible small arms weapons.

Finally, keep it simple. Veterans remember the weapons that were simple to maintain, reliable and produced in quantity. They will be used in all conditions and must be maintained in the worst environments. German veterans talk of using Russian submachine guns, not for their range or sophistication, but for the knowledge that they would continue to fire in zero-degree temperatures, or bathed in mud. It is insightful listening to German tank commanders speaking of fighting the Sherman tank or Sherman Firefly. Although the Panther commanders were confident in their technological and tactical advantages, they knew that for every two or three vehicles destroyed, three would press on the attack. These veterans speak of the fundamentals of training and drill. Fire commands were kept simple and the lessons were stressed again and again. Target acquisition and range estimation were the key to building a well-drilled tank crew. The stories and lessons are numerous and we continue to draw new conclusions and similarities.

The challenge remains to design and build formidable AFVs, but not to forget the valuable lessons learned in our proud heritage as armor soldiers and leaders.

1LT BART HOWARD
DCO 5-73 Armor
194th Bde
Fort Knox, KY

Quick Fix For Spiral Threat

Dear Sir:

The threat of the Soviet AT-6 Spiral antitank missile, with its supersonic 5-km range, is potentially devastating. As shown in the article in the March-April issue, the Army is lacking any weapon that can effectively engage a helicopter armed wth Spirals. Two "quick fix" solutions are available off the shelf.

The Chaparral is the Army version of the early Navy Sidewinder. This weapon has the necessary range, but lacks the head-on attack capability required to engage an approaching helicopter. The solution is to obtain the Navy's new AIM-9L version of the Sidewinder, which has a more sensitive heat seeker and can engage targets head-on. This would require no R&D time or funding. Simply cancel further production of the existing Chaparral and increase the ongoing production of the AIM-9L to satisfy Army requirements.

The other solution is not quite as quick, but is available. The Italians have mounted a 76-mm naval cannon (the OTO-Melara Compact) on a tank chassis. While still a prototype, it has proven to be a workable system. This cannon has a fully-automatic capability and is designed for anti-aircraft use. It has a maximum range of 19,200 m and a wide range of ammunition. It is produced in the US by Northern Ordnance and used by dozens of Navy ships. Adding it to a surplus M48 chassis should be simply a matter of welding and wiring. It should be noted that if a contractor is allowed to "design" such a system, it will take a decade and a billion dollars. To save time, why not deliver a few cannons to selected tank battalions and let the ordnance sergeants figure it out? This should take about two weeks.

There are other possibilities. A flechette round could be firied at the launch signature in an attempt to intercept the missile. The versatile AAI Light Tank (in prototype form), with its 76-mm automatic cannon, could be added to mechanized units. Israeli-style reactive armor (already in production) could be added to tanks to make them less vulnerable to missile attack.

While three of my five proposals are cannon systems, as opposed to missile systems, there is a reason for that. Cannon systems are cheaper to build and supply, can fire faster, have shorter flight times, have a multi-round, fire-and-forget capability, and are invulnerable to countermeasures.

As you can see, a number of "quick fix" solutions are available. Let's pick one (or better, pick several) and implement them immediately.

STEPHEN V. COLE
Amarillo, TX

Take Another Look, Lieutenant

Dear Sir:

In reference to a letter by 1LT Jeffrey D. Newsome, Jan-Feb 87 *ARMOR*, it should be pointed out that he has made some rather rash statements concerning armored units during the Ardennes Campaign of 1944.

Specifically, which armored division retreated from the Germans?

Has Lieutenant Newsome ever heard of a town called St. Vith, or a couple of guys called Clarke and Hasbrouck, and a pretty fair armored division, the Seventh?

Has Lieutenant Newsome ever heard of Combat Command R, 9th Armored Division, or Combat Command B, 10th Armored Division, whose units held blocking positions in front of Bastogne, along with surviving elements of the 110th Infantry, 28th Infantry Division, long enough for the 101st Airborne Division to take up positions in and around the city?

Is Lieutenant Newsome aware that better than fifty percent of the Bastogne garrison were not part of the 101st (although they were attached for command and control purposes)? The facts are that the actions in and around Bastogne were a prime example of a successful defense carried out by a heavy-light force mix.

Lieutenant Newsome can have justifiable pride in the accomplishments of airborne soldiers and units, they need not take a back seat to any unit. However, his sense of pride should not cloud his perspective. Wars are won by a combination of all arms working together for a common purpose.

In my opinion, volunteer or draftee, paratrooper, ranger, tanker, or garden variety leg, it takes a pretty good man to face an armed enemy on the field of battle, present his credentials on the point of a bayonet, or the business end of a main gun, and defeat him.

CHARLES W. TREESE
LTC, INF, MDARNG
Clifton, VA

The Lieutenant Self-Destructs

Dear Sir:

As a proud member of the Armor Branch and a dedicated follower of the continuing controversy over the black beret and the Expert Armor Badge, I cannot fail to answer the letter by First Lieutenant Newsome printed in the January-February 1987 issue of *ARMOR Magazine*.

Lieutenant Newsome's final comments totally destroy the rest of his unasked-for attack on Armor. All would agree that "it is not the beret that makes soldiers elite." Simply put, armor soldiers are asking for the same recognition of dedication, volunteerism, and advanced skills that distinguish the soldiers in airborne, infantry, and even the crews of army helicopters. Armor soldiers currently are, or will, operate some of the most technically advanced, tactically awesome fighting equipment the world has yet to see. Compare the complexity of the systems installed on the M1 Abrams tank (named in honor of General Abrams — even if he took away our berets) with those of the various attack helicopters and other systems being fielded.

Armor soldiers are also volunteers at least twice: once for joining the army and

again for choosing ARMOR. They prove themselves a cut above the average soldier by choosing COMBAT ARMS as their vocation and profession. There is no comparison between an airborne finance clerk and a non-airborne armor platoon sergeant. The platoon sergeant is the cutting edge of the army: Responsible for the training, health, and welfare of his soldiers both on and off duty, the maintenance of his assigned vehicles, and in the forefront of combat when it occurs.

Jokingly, Lieutenant Newsome refers to the availability of the Parachutist Badge, the Air Assault Badge and the Ranger Tab. When was the last time, if ever, that tanks and tankers were parachuted from aircraft, assaulted with their tanks from helicopters, or were directed to accomplish Ranger tasks using tanks? Again, these badges and tabs are in recognition of special skills and dedications, and the same volunteerism that Armor soldiers also seek. Just as the modern infantryman tests for and can receive his Expert Infantryman Badge, so should Armor soldiers be able to test for and receive his Expert Armor Badge.

In closing, the "Bottom Line" is: Regardless of branch, recognize soldiers who, by volunteerism, dedication, and special skills, have set themselves above the normal soldier. No matter what the recognition, be it a beret, a badge, or different pay, we in the Combat Arms have already set ourselves apart from those that couldn't or wouldn't accept the Combat Arms challenge. Armor — The Mounted Combat Arm of Decision.

GEORGE THOMAS FEAGANS II
CPT, Armor
Vint Hill Farms, Warrenton, VA

The Lieutenant Stands Corrected — To A Fault

Dear Sir:

I have been following, with interest, the debate over berets for tankers and cavalrymen in *ARMOR* during the past few months and must confess considerable sympathy for those desiring to resurrect the distinctive headgear. After all, tankers can claim that the black beret has been the "traditional international headgear" for tankers just as paratroopers can for the maroon cover.

Although I understand (even if I do not agree with) the reasons for avoiding the proliferation of distinctive uniform accoutrements in our army, I have never understood the attitude that the award of a beret to tankers somehow impugns the distinguished history of our airborne troops. This seems to be the gist of the letter written in the Jan-Feb issue of *ARMOR* by First Lieutenant Newsome of the 82d. Unfortunately, in his emotional attack against the black beret, Lieutenant Newsome manages to do violence to the reputations of just about everyone but the airborne. For that reason I feel compelled to offer a response.

First of all, he alleges that during the Battle of the Bulge "the only soldiers to stay to fight were paratroopers." This must come as a surprise to the veterans of the 2d, 4th, and 99th Infantry Divisions who gallantly held the shoulders of the German penetration. It also overlooks the brave contributions of the 51st Engineers at Trois Ponts, the 203d Antiaircraft Artillery at Parker's Crossroads, and the 10th Armored Division, whose delay of the 5th Panzer Army made possible the stand at Bastogne. He also forgets that it was Team Browne, built around the 420th Armored Field Artillery, that turned aside perhaps the most serious threat to the 101st Airborne's perimeter. Had "only" the paratroopers fought, the Germans would have gotten across the Meuse before the two airborne divisions left their rest areas near Paris.

Lieutenant Newsome also refers to an "entire U.S. armored division [that] had retreated from the Germans." He obviously took this from a slick, though historically misleading, poster popular at Ft. Bragg. It shows a heavily laden paratrooper moving up to the front along a snow-covered road. Underneath, the poster recounts the words of a trooper of the 82d to a tanker from an armored division retreating through his position. The trooper said something to the effect that, "Don't worry, I am the 82d Airborne and this is as far as the b-----d's are going."

Great stuff, but it neglects to mention that the armored unit retreating through the 82d in that fight was the 7th, the division that for six days had held the vital crossroads of St. Vith against overwhelming odds, receiving a Presidential Unit Citation for its efforts. It retreated only upon the order of higher authority.

Taking nothing away from the achievements of the 101st or the 82d, many historians regard the stand of the 7th Armored Division at St. Vith as the decisive engagement of the Battle of the Bulge.

No branch or unit had a monopoly of courage in the Ardennes. Should Lieutenant Newsome wish to know more about the history of the Bulge than he can glean from a poster, I suggest Charles B. MacDonald's *A Time For Trumpets.*

The lieutenant is right, however, when he suggests that it is not a beret that makes a soldier elite, or compels him to stand his ground when outnumbered. But the airborne community was sure upset when, for a brief period, they were denied their distinctive hats. They should have some empathy, therefore, with their brethren from the other combat maneuver arm who, while seeing the plethora of infantry-related uniform accoutrements, can wear none themselves.

WILLIAM R. BETSON
Major, Armor
School of Advanced Military Studies
Ft. Leavenworth, KS

"Make It Happen" — Differently

Dear Sir:

I was disheartened to read Captain Thomas R. Searle's feelings about the phrase "make it happen," in *ARMOR Magazine,* Nov-Dec 86 issue. Although his experience is certainly not unique, the phrase "make it happen" can also connote aggressiveness, assertiveness, and can affect one's destiny as often as, if not more so than, "do the impossible," as he alluded.

As a Professor of Military Science charged with training potential officers for the U.S. Army, I have designated the phrase "make it happen" as the cadets' motto, with its former meaning.

I'm sure we've all heard the saying, "Some people make things happen, some people see things happen, and some people wonder what's happening." Since Captain Searle took the time to express his thoughts in *ARMOR Magazine,* I suspect he would consider himself in the first category.

PAUL W. FELLINGER
Lieutenant Colonel, FA
PMS, Youngstown State University

High Tech at ARMOR

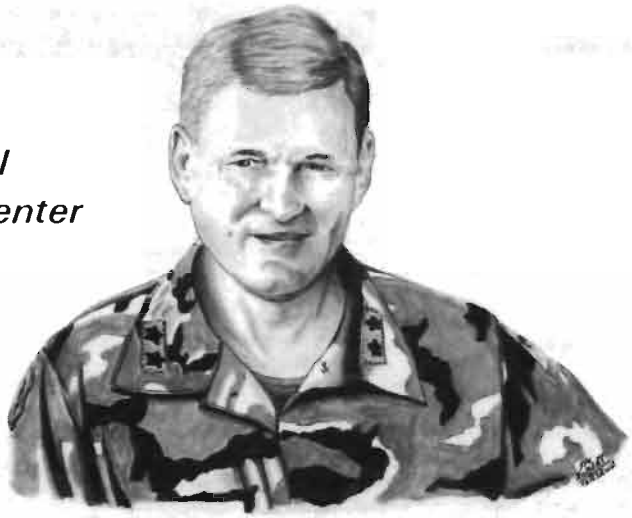
Beginning with our next issue, *ARMOR* will be produced on a desktop publishing system under a pilot program set up by TRADOC. This equipment, which is driven by the Ventura Publisher program, now permits our acceptance of stories on 5¼-inch DS/DD floppy disks in certain word-processor formats. These include Microsoft Word (Version 2.00), Multimate (V 3.31), Wordperfect (V 4.1), Wordstar (V 3.31), and Xerox Writer (V 2.). If you do send a disk, please include a printout, too.

New text scanning equipment also permits direct computer entry of typed stories, but we've found that the scanner does not "read" dot-matrix copy or copy typed with a faint ribbon very well. And it cannot pick up penciled-in corrections. Clean, typed copy is read accurately and quickly.

If authors are able to make use of either of these two options, the result will be fewer transcription errors and faster processing.

COMMANDER'S HATCH

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



Noncommissioned Officers

The noncommissioned officers (NCO) of the Armor Force are the best ever. They are leaders, and they lead the finest soldiers in the world. They seek responsibility and operate under the old adage "lead, follow, or get the hell out of the way." They are take-charge people, and we, the officers and senior noncommissioned officers, need to ensure they have every opportunity to take charge.

When examining the effects of the Force Alignment Plan (FAP), wherein we lose or have lost up to 60% of our reserve captains, it is evident that casualty replacements for leadership at the company and battalion level will have to come from these highly trained and motivated sergeants via a battlefield commissioning program.

One of our challenges is to retain our current NCOs and those superb young soldiers who are the sergeants of the future. We have some roadblocks; however, retention has been excellent for a long time. In 1986 we retained 45% of our 19K, 48% of 19E, and 27% of 19D while the Army average was 36.7%.

However, we are having a problem with promotions, which could cause some of our soldiers to not reenlist because the future doesn't appear too bright.

Our promotion statistics for the past couple of years are not favorable when compared to the Army average.

1985	E-7	E-8	E-9
19K	44.2%		
19E	16.1%		
19D	4.3%		
19Z		22.9%	37.1%
Army Avg.	14.2%	19:3%	17.3%
19 CMF Average	16.9%		
1986			
19K	20.1%		
19E	23.8%		
19D	15.2%		
19Z		14.6%	8.6%
Army Avg.	19.8%	15.5%	13.3%
19 CMF Average	20.2%		
1987			
19K	4.4%		
19E	2.8%		
19D	9.9%		
19 CMF Average	5.3%		

We need to do better.

We are taking action to fix the problem. We are recoding a number of positions at Fort Knox that will increase the Army NCOs in the Training Group and elsewhere on the installation. We are working with corps and divisions to recode some TDA positions on their staffs that are filled, without support, by tankers and cavalrymen. We also believe we have stopped the encroachment of other specialties into the positions normally identified with 19D and will turn some of them around. These actions will increase the number of sergeants available and should increase the number of Armor NCO promotions.

Another factor that hampers the promotion of some of our best sergeants is repetitive Master Gunner assignments at the E-7 and E-8 level without being given the opportunity to serve as platoon sergeants or first sergeants. If a Master Gunner is double slotted, as many of them are, when writing his Enlisted Efficiency Reports (EERs) ensure that you highlight the fact that he was a great platoon sergeant or first sergeant and that he was also a superb Master Gunner.

This is the only way we can ensure that our super soldiers are justly rewarded. Take the time when you're writing the EER to ensure that you are making meaningful comments. We owe it to the rated soldier to do it right.

In order to be a Command Sergeant Major (CSM), an NCO must be a graduate of the Sergeants Major Academy. If we do not get enough graduates, then we will be forced to take CSMs from other MOSs in our tank battalions and cavalry squadrons. This is unacceptable because the CSM is the senior trainer in the unit, and unless he understands the MOS he will not be able to provide adequate training guidance or advice. The development of the CSM starts and matures in the unit. We need to ensure that our best NCOs make the grade. Think, and do something about it.

Treat 'Em Rough!

DRIVER'S SEAT

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

A Progress Report: The System's Working

Every once in a while, we need to do an assessment to find out where we are and where we are going. With the Excellence Program, Certification Program, changes in the Armor Noncommissioned Officer Education System, Master Gunner Program, assignment procedures, and increase in NCO positions, we are moving in the right direction, maybe faster than some might think, especially as we introduce new systems, doctrine, simulators, and training programs to the force.

What we do have to watch, however, is that we give our programs time to grow. Sometimes we have a tendency to be over-anxious and expect too much too soon.

The Excellence Program is on track, especially with regard to the soldiers that were identified in One Station Unit Training. During my last visit to Europe, I became personally convinced that units are responding well to the program. There are some slowdowns that can't be helped: (1) early promotion to Specialist Four and, (2) early assignment to the gunner's seat. Early promotions are driven by the needs of the Army. The slowdown is due to the BEAR program and retention. The gunner's seats are being filled by second-termers who are experienced tankers. It just takes you longer to get there. Most units, though, are using extra UCOFT time to keep Excellence Program soldiers trained up to, or to train them beyond, their present duty requirements. More attention is needed to identify a unit's outstanding soldiers for the program. When I am introduced to soldiers who, the chain says, are outstanding, I immediately ask if they are part of the Excellence Program.

The Scouts in the EIA Program are starting to appear in the field in numbers. Soon, they will be given an opportunity to attend Airborne School after OSUT, enroute to their next assignment.

The Tank Commander Certification Test I (TCGST) and the Certification Test 3 (Master Gunner) are being administered in a timely manner. Standards are being demanded and met. The Scout Commander Certification Test is now being fielded. The standards of the certification test are being met as a graduation requirement from the Basic Noncommissioned Officer Course for both tankers and scouts.

We have not been too successful with Certification Test II. With the new armor BNCOC in the Noncommissioned Officer Education System, I believe we will start to see the success of the program; however, the Certification Test II is not easy and does require a lot of studying of the Advance Study Guide (see your TCO).

The Noncommissioned Officer Education System for Armor BNCOC and ANCOC is growing by leaps and bounds. The POI is tougher, and the NCOs are demonstrating a much higher degree of proficiency and excellence as they graduate.

BNCOC for the most part is fixed!

We graduate noncommissioned officers who have demonstrated competence in the technical and tactical requirements of the system, both in tanks and cavalry. Each must be certified and demonstrate his capability to be a vehicle commander by negotiating a series of tactical exercises.

ANCOC was upgraded a year ago; however, we are now doing the new POIs (see *ARMOR Magazine* Driver's Seat (March-April 1987).

The Master Gunner Course has been opened for sergeants (E5). There have been some pros and cons concerning this issue. I personally feel we are on target for both tanks and the Bradley M3. We have had excellent soldiers to work with over the last few years and we need to take advantage of and retain these soldiers in the force. A sergeant (E5) master gunner extends the longevity of the unit master gunner and retains outstanding NCOs in Armor rather than losing them to other-than-Armor assignments.

There are other training programs being looked at for the master gunner. With all gunnery skills being taught as you graduate from ANCOC, the opportunity is there to look at other areas in which the unit master gunner must be technically proficient. Simulators are quickly becoming the commander's primary training vehicle. He needs an expert who can advise him and monitor the application of standardization as each crew/platoon trains on the simulators.

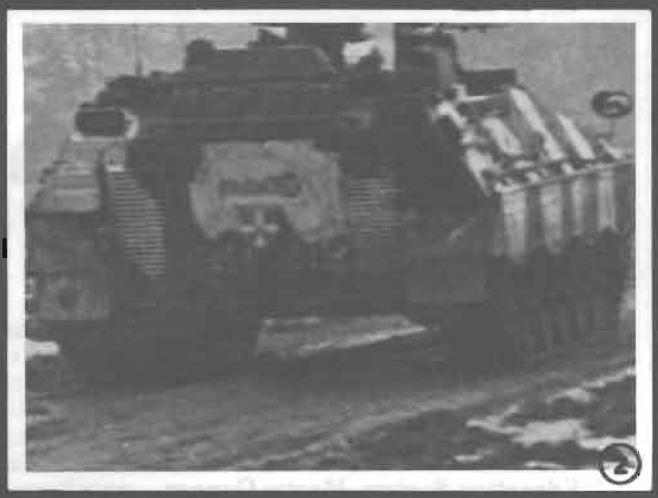
The new multipurpose ranges and combined arms live-fire exercises introduce many new weapons sys-

Continued on Page 37

RECOGNITION QUIZ

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

Answers on Page 51



Mission Tactics

by Captain John F. Antal

The May 1986 edition of the U.S. Army's FM 100-5, *Operations,* states that the dynamics of combat power decide the outcome of battle. Combat power is measured by the effect created by combining maneuver, firepower, protection, and leadership in combat actions against an enemy in war. AirLand Battle doctrine demands a command and control system that is superior to the enemy's. To gain this superiority, AirLand Battle doctrine stresses the use of mission orders; orders that specify *what* must be done without prescribing *how* the mission must be accomplished. The aim of mission orders is to "leave the greatest possible operational and tactical freedom to subordinate leaders,"[1] and thus gain speed in decisive execution over the enemy. Indeed, it may be said that an army's war-fighting style, as displayed in its command and control philosophy, is often *the* decisive element of combat power. But is our training keeping pace with doctrine? Is the U.S. Army practicing the techniques required to develop the superior command and control system that will win on the battlefield? This discussion contrasts U.S. war-fighting command styles with Soviet styles and proposes techniques to improve the communication of mission tactics, a technique that emphasizes the traditional strengths of the U.S. Army.

Orders-Oriented Tactics

The Soviet war-fighting style is aptly described by the German military term *Befehlstaktik,* or orders-oriented tactics. Orders-oriented tactics epitomize attrition warfare, a method of warfare that suits the Soviet style of war and plays to the Soviet numerical advantage. The Soviet system of command is derived from a bureaucratic Soviet society that emphasizes exaggerated planning and the uninterrupted control of almost every aspect of an individual's existence. The Soviet system, therefore, is orders-intensive and orders-dependent. "Divisions and lower organizations are required to fight according to a detailed battle plan which specifies the who, what, when, and how for every part of their operations."[2]

Nothing is left to chance or independent judgment. The Soviets expect their leaders to execute the plan efficiently. Improvision be-

Mission Tactics, Operations Order Format

1. Situation

a. Enemy Forces
b. Friendly Forces
c. Attachments/Detachments
d. Commander's Intent — A clear statement of the intent (what is to be accomplished) of the commanders two echelons up.

2. Mission — A clear statement of what the unit is to do, usually defined in terms of the enemy, not the terrain.

3. Execution

— Commander's intent — A clear statement of the intent (how the battle will be fought) of the commander of the unit that is to accomplish the mission. The commander's intent is explained in the terms of the AirLand Battle:

- Close operations — how the commander intends to fight the close-in battle. The focus of the main effort must be clearly stated.
- Deep operations — how the commander intends to fight deep operations within his area of interest (optional for units below brigade level). Deep operations are aimed at inhibiting the freedom of action and cohesion of the enemy.
- Rear operations — how the commander intends to fight the rear operations battle. The aim of rear operations is to retain freedom of action to continue operations.

a. Concept of the operation
b. Subordinate unit missions
c. Coordinating instructions

4. Service support

5. Command and signal

a. Signal instructions
b. Command posts and the location of the commander

Figure 1

yond the letter of the order is not encouraged. "Any Soviet officer who acts on the American premise that regulations are but a guide... will probably have a very short, undistinguished military career."[3] The Soviet command style, therefore, is at a disadvantage in a fast-paced, mobile war, where events do not always go according to plan. In such a war, the synchronization of combat power will depend on the mental agility of junior leaders to seize and retain the initiative.

Mission Tactics

The concept of *Auftragstaktik* or "mission tactics" is not new to warfare. The Prussians in the mid-19th century adopted "mission tactics" as the logical method to control the decentralization of the battlefield brought about by the technological improvements of the rifle and field cannon. This increase in the killing capabilities of more modern weapons forced armies to seek safety in greater dispersion. It was no longer possible to lead men in a tight mass formation. The Germans attacked this problem with historical military thoroughness and determined that there were two methods of battlefield control on the decentralized battlefield.

One method, the attempt to plan for every eventuality and seek precision in execution through the strict adherence to a pre-arranged plan, was adopted by the Soviet Union and is described above. The "German solution" is the antithesis of the orders-oriented process. This process was labeled "mission tactics."

Mission tactics are based upon trust. Leaders are expected to make decisions without constant supervision and without asking for permission as long as their decisions are within the framework of the commander's intent. Mission tactics replace control with guidance and allow the subordinate leader to "do without question or doubt whatever the situation requires...Even the disobedience of orders was not inconsistent with this philosophy."[4]

Mission tactics are the preferred method of waging maneuver warfare. The technique is as much a mental thought process as it is a tactical concept. The point is always to gain a time-decision advantage over your enemy. Any command and control method that increases your speed of decision and action should be employed. To gain this time-decision advantage the following command and control elements are essential: (1) employ mission type orders, (2) shorten tactical reports by reporting by "exception," and (3) develop well-trained and trusted subordinate leaders.

Mission Type Orders

Mission type orders are designed to speed up the decision-reaction cycle and gain the initiative over the enemy. An example of a mission type operations order is shown in figure one. The mission order is different from the standard five-paragraph field order in three significant ways:

- SITUATION; paragraph 1.d: The commander's intent is added to clearly explain how the battle is visualized by the commanders two echelons above the unit that will execute the order.
- MISSION; paragraph 2: The mission statement, in a mission type order, is usually defined in terms of the enemy, not the terrain.
- EXECUTION; paragraph 3.a, includes the commander's intent, which clearly states how the commander visualizes the battle and why. The focus of the main effort is designated.

The mission order should be issued orally, from brigade level down, to preclude unnecessary time delays. A verbal order issued by the commander on the battlefield is better

than a written order, prepared in quantity, but issued late.

Reporting By Exception

In the confusion and "fog" of battle, commander's concentrate on fighting their units. Reporting to higher headquarters takes a back seat to the deadly business of maneuvering against the enemy. Reporting by exception accepts this phenomenon and trusts subordinate leaders to continue the mission as established by the commander's intent. Major successes or failures are the only reports that are transmitted over the command frequency. Higher headquarters should employ the "eavesdrop" technique of listening in on subordinate radio nets, without interfering with the command and control of the fighting units. With commanders forward, the need for reports is lessened further still.

Trained Subordinate Leaders

Distractors in garrison consume inordinate amounts of time which should be spent on training leaders for combat. Commanders must relieve their subordinates of these mundane, non-war-fighting tasks that drive much of our day-to-day peacetime training. When leaders fail to develop subordinate leaders in garrison, they lack trust in their leaders on the battlefield and are reluctant to delegate tasks and authority to these leaders in combat.

Commanders must develop subordinate leaders capable of seizing and exploiting battlefield opportunities and trust these subordinates to take such actions within the guidance established by the commander's intent.

Junior leaders must also become

tactically proficient with their weapons and the employment of their units (both the science and the art of war). This can be accomplished by concentrating their time on a serious study of war. Only when commanders set priorities, designating training hours for study, wargaming, and war seminars will junior leaders have the opportunity to mature and develop into the kind of leaders capable of fighting under the mission tactics style of maneuver warfare.[5]

Conclusion

The U.S. Army's ability to defeat the Soviets in battle will be determined by our ability to execute the elements of combat power. The Soviet Army's greatest weakness is their orders-oriented approach to battle. Mission tactics attack this Soviet weakness by launching a series of aggressive actions and counteractions that are designed to disrupt the pre-planned sequence of the orders-oriented approach to battle. By contfronting the enemy with surprising and unanticipated situations, we can multiply the potential of men, weapons, and combat resources into superior combat power. To develop this combat power, the U.S. Army must be deadly serious about the training and development of its junior leaders. Techniques such as the use of mission orders and reporting by exception must be the norm, not the exception.

Mission tactics is a concept that seeks fast, decentralized decision making. It is an important concept to the success of the AirLand Battle and must have immediate emphasis in all our tactical training. We desperately need leaders who can operate decisively with minimum guidance. These leaders are our greatest combat multiplier.

CAPTAIN JOHN F. ANTAL III is Chief of Collective Training, G3 Operations, 1st Cavalry Division, Fort Hood, TX. He graduated from the United States Military Academy in 1977. His most recent assignments include, aide de camp to the Deputy Commander USFK, command of A/1-72 Armor (M60A3), and Battalion S3, 2-72 Armor at Camp Casey, Korea.

Footnotes

[1]Field Manual (FM) 100-5, *Operations*, Department of the Army, Washington, D.C., May 1986, p 21. On page 22, the manual states that, "if an unanticipated situation arises, committed maneuver unit commanders should understand the purpose of the operation well enough to act decisively, confident that they are doing what their superior commander would order done were he present."

[2]Lieutenant Colonel William A. Walker, USA (Ret.), "The Deep Battle," *ARMY Magazine*, July 1986, p. 28.

[3]Lieutenant Colonel William P. Baxter, USA (Ret.), *Soviet AirLand Battle Tactics*, Presidio Press, Novato, Calif., 1986, p. 71. For an excellent summary of the Soviet command and staff system, see Chapter 3 of *Soviet AirLand Battle Tactics*.

[4]Lieutenant Colonel John A. English, *A Perspective on Infantry*, Praeger Publishers, N.Y., 1981, p. 76. On page 76, LTC English further states that "as far as the Germans were concerned, the first demand in war was decisive action."

[5]William S. Lind, *Maneuver Warfare Handbook*, Westview Press, Boulder, Colorado, 1985, p. 44. Lind's book on maneuver warfare is an excellent collection of lectures and tactical problems that highlight the techniques of maneuver warfare, officer education and tactical reform.

The Soviet Forward Detachment

by Joseph R. Burniece

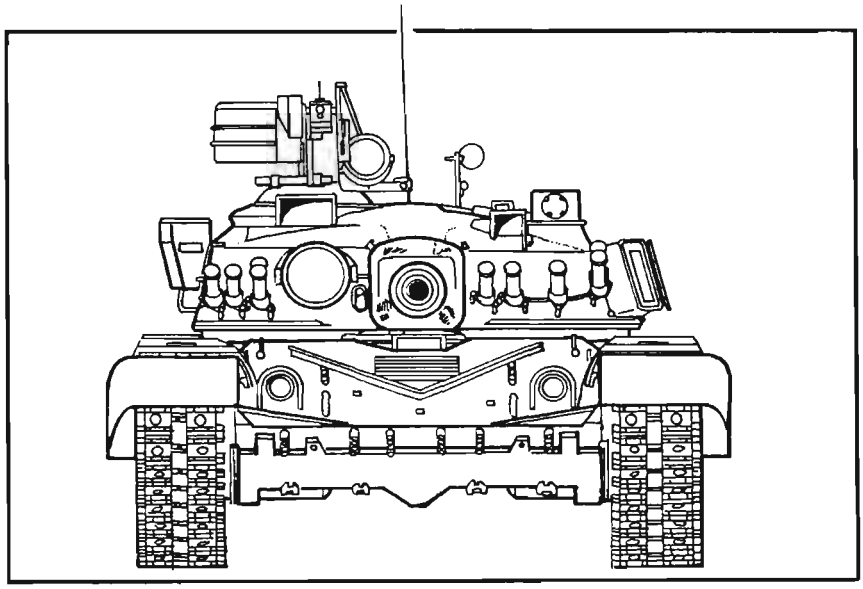
Introduction

Over the last few years the experiments, developments, and combat possibilities of the Soviet operational maneuver group (OMG) have captured the imagination and attention of many Western analysts. Often overlooked, but of equal importance, is the past and present development of the forward detachment (FD), forerunner of the OMG.

Historical Background

Most readers are probably well-acquainted with the conceptual developments of the Soviet OMG. For our purposes, we might briefly recall that the OMG was developed from a WW II predecessor known as the mobile group. That formation was usually a standard division-sized tank corps of some 150 tanks, six battalions of infantry, and supporting arms. The mobile group designator was then assigned for the course of an operation. Generally, one mobile group was assigned to a rifle army (today a combined arms army) of three to five infantry divisions, in the first echelon. Its assignment was as the mobile element designated to assist the first echelon achieve its objectives and, where possible, simultaneously push deeper into the enemy rear area to break open the front. At that point, a second echelon might be committed to continue the combat and create a major breakthrough in preparation for a mobile operation. As the war continued, the Soviets became ever more adept at mobile group operations until by 1944, few operations lacked such formations.

In that same time frame, the Soviets recognized that major combat formations to either flank of an operation involving mobile groups could often benefit from, and in some cases match, the performance of the forces on the primary axis through the use of smaller, local mobile elements fielded by the first echelon rifle divisions themselves. These mobile forces were known as forward detachments.



The Forward Detachment in WW II

The forward detachments in the early (1942-43) stages were often hastily trained or ad hoc formations created by drawing upon divisional resources. First came selection of several of the younger officers, who had demonstrated initiative and leadership, to lead the FD. The activity and demands of the FD were expected to exceed those normally expected of the rifle battalion in the line, so the most trained, aggressive, and resourceful battalion was often assigned. Since nearly the entire rifle division was on foot while supplies and heavy weapons were transported by horse and wagon, the troops of the FD were often assigned to ride on the back of assault guns or tanks assigned to the division for the current operation. Support arms, to include mortars, air defense weapons, communications and logistics elements, were in like manner hastily organized and equipped or supplied on a catch-as-catch-can basis.

As the war progressed, the Soviet field commanders at every rank became more adept and aggressive. Simultaneously, equipment — particularly tanks, assault guns, and infantry mortars/artillery — became more plentiful as Soviet factories recovered from the dislocation brought about by the German invasion and moved into high production with the influx of raw materials and Lend-Lease aid.

By 1944, the FD became a fixed feature of most rifle divisions as well as tank and mechanized corps (Figure 1). Continuing war experience had created the additional trained leaders and troops to create supplemental FDs. As one FD was committed to an axis of advance, suffered attrition, or fell out exhausted, a new FD would be organized and sent forward to continue the advance into the depth of the enemy operational area.

From the middle of 1944, every operation had numerous FDs. For example, in the Crimean operation of that year, no fewer than 11 FDs were detailed from formations of the 2nd Guards Army first echelon alone. In the Lutsk-Rovno and Mogilev offensive operations, the 13th and 49th [Rifle] Armies each detailed eight detachments within their operational zones. Furthermore, corps and army detachments were detailed in addition to the FDs of the divisions constituting those senior field organizations.

The more experience gained with the FDs, the more clear became the lesson that greater numbers of FDs

substantially improved the operational performance of the parent formations.

Forward Detachments in the 1970s

As both the Soviet Union and NATO fielded and enlarged their stocks of tactical and theater nuclear weapons, the Soviet Army intensely studied the means to best exploit nuclear fire strikes.

As the most mobile and, theoretically — given the correct choice of aggressive commanders — the most skilled battalions, FDs of the past were expected to fulfill two very valuable functions. First, the FD was tasked as previously to drive deeply into the enemy rear area, to overrun enemy artillery positions and headquarters, disrupt communications, and delay the forward or lateral movement of enemy reinforcements. Secondly and perhaps a more important role, was to seek out, or drive for under mission order, any of the local nuclear weapon storage and launch sites.

It was furthermore expected that proper employment of the FD could ensure rapid and effective exploitation of nuclear fire strikes by Soviet forces. Whether awaiting the outcome of a nuclear strike and the follow-on combat of the NATO survivors by Soviet/Warsaw Pact first echelon forces, or in some instances initiating forward movement through previously identified weak sectors in the NATO lines prior to the nuclear strike and general engagement, the FD as a battalion-sized formation was seen as the tool to once again facilitate the forward movement of the parent division.

Once again, the FD would most likely consist of a tank-based battalion formation with attached infantry, air defense, and artillery assets tailored to the situation, and as limited by the available resources.

Soviet Analysis of NATO Defenses

Critical analysis of the NATO defenses over the years has provided the Soviets with the clear understanding of the limited numbers of Western combat troops in the Central European Theater. Although relative parity in tactical and theater nuclear weapon forces has resulted in a reported general reluctance on the part of the Soviets to continue discussions of their employment in a future war, the similar relative abundance of chemical weapons, for which the Soviets are best prepared, or the often-promised, soon to be fielded "smart" weapon technology of NATO, predisposes the Soviets to believe that the battlefield of the future will be much like that postulated in the 1960s for the nuclear battlefield.

With resources scarce and flanks usually not just open — but wide open — in the projected initial encounters on the inner German border, the Soviets apparently believe the conditions in Central Europe for NATO will be analogous to those of the German Army in 1944 and 1945. In those times, when the Germans lacked the troops and equipment to prepare more than one major defensive line, the FD could, as noted, rapidly find a gap to penetrate and plunge deeply into the enemy rear area.

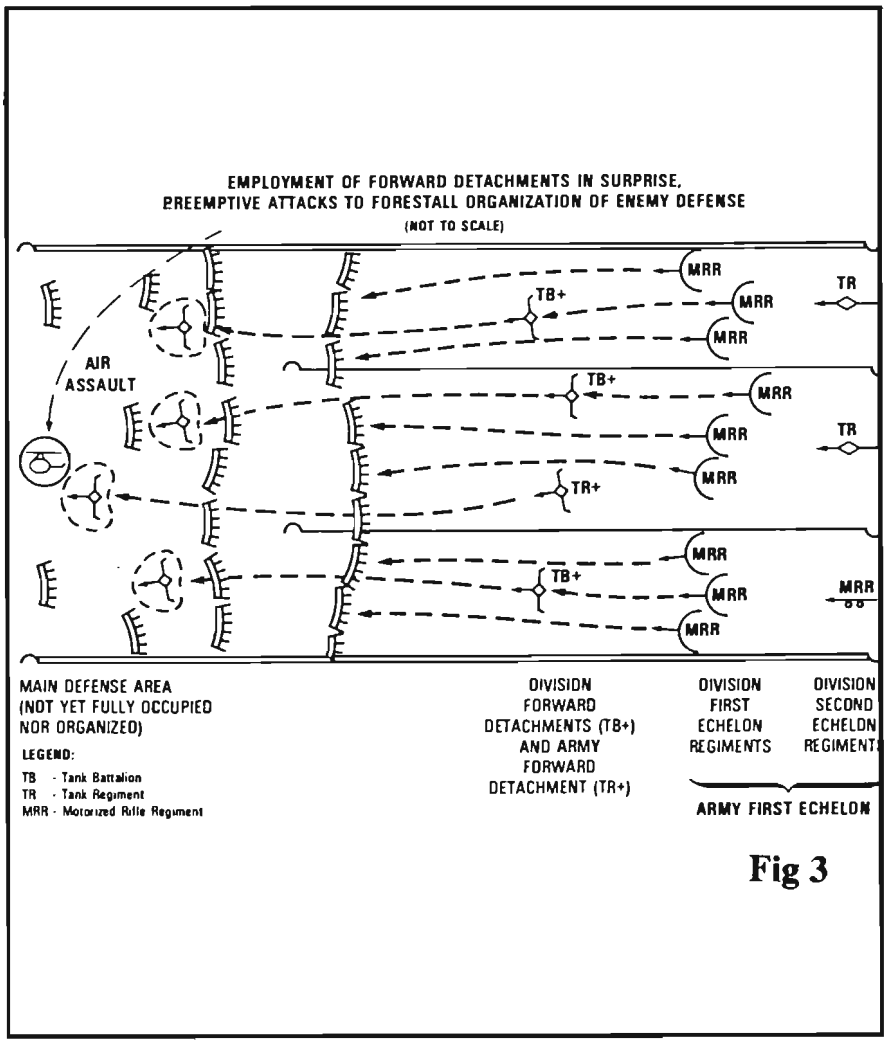


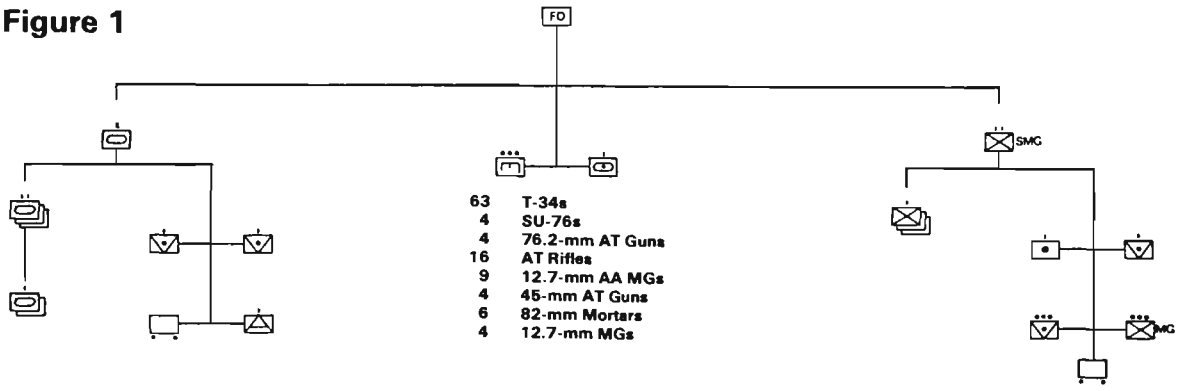
Fig 3

Supporting Assets for the Forward Detachment

Stemming from discussions and debates in the 1970s, the expanded support requirements for a battalion organization performing the role of FD in many ways reads like that of the larger OMG.

Of paramount concern to the Soviets is the establishment and maintenance, under all circumstances, of a strong and reliable communications systems. With it, the FD may rapidly move, change direction, halt to repel an enemy counterattack, or strike off on an entirely new mission. It can receive and, in some instances, specifically lend support. Without it, the FD is essentially a powerful but "blind" boxer. It may still move and attempt to complete its mission, but has no means other than the limited re-

Figure 1



Soviet Forward Detachments — 1945

A forward detachment of this type was formed by Gen. Beloborodov in August, 1945 to assist the 300th Rifle Division, 26th Rifle Corps, push rapidly forward to bypass Japanese units in Manchuria.

connaissance assets immediately at hand to identify either potential trouble or very real disaster.

Intelligence on the enemy and his movements is perhaps the second most critical facet for the reasons already cited. As the forward-most combat element of the Eastern forces, the FD is in the position to require both the most timely information and intelligence — including especially available air reconnaissance photos and reports as well as intercepted radio traffic — and to provide such intelligence on NATO forces, deployments, and situations as it can, given the situation.

Air defense is considered a role as much for the Soviet air force as for ground-deployed air defense weapons. Once again, in order to successfully maintain a combat air patrol of MiG-21, MiG-29, MiG-31 or HIND-E over the FD, to defeat our attack helicopters, a reliable communications net is mandatory. Given the intended high-speed movement of the FD and the high probability of encountering NATO combat elements — and, particularly, NATO close air support aircraft — in the first five days of a major offensive, Soviet tactical air support is critical. If discussions of similar problems confronting the Soviets and their Warsaw Pact allies on the employment of the larger OMG are relevant, it may be that NATO air power is currently the greatest concern to the FD planners.

The Forward Detachment in the 1980s

The value of the FD has traditionally been recognized for its inherent ability to act as a *"reyd"* or raiding force. Of battalion size or larger, (Figure 2) the FD constitutes a force with firepower similar to that of the standard NATO mechanized combat battalion which would theoretically be encountered on any given 3-5 km frontage in Central Europe. Free to operate outside of, but in coordination with, the Soviet/Warsaw Pact main forces rate and axis of advance, the FD has the wherewithal to elect to engage in combat or decline and seek another path further into the rear of the enemy defenses.

Avoiding battle is a primary facet of the FD mission. Even given that, the FD has usually been a standard tank or motorized rifle battalion organization augmented with artillery and communications assets, the FD role is one of finding a way deep into the rear in numbers (Figure 3). Combat near the line of departure would simply reduce the power and effectiveness of the FD at the crucial moment deep in the rear area — if it even managed to arrive there after combat.

By avoiding combat, and selecting the most propitious axis for advance, the FD may — and usually in exercises (and history) does — increase its mobility relative to its sister battalions in the Soviet line wearily thrashing their way forward through the tough Western defenses common to NATO.

Unshackled from the responsibility to maintain strict coordination and overlapping front lines with units on either flank, the FD, like the larger OMG, can move much more rapidly with the same amount of equipment and troops, given its freedom of maneuver.

The desire on the part of Soviet STAVKA (high command) is certainly that any and every motorized rifle and tank battalion could perform as a FD. In theory, of course, this would be true, given the relative equipment and training equivalency of all Soviet (and Warsaw Pact) formations. In reality, this simply isn't the case. More important than training of the troops, equipment available, and desire on the part of senior command components, is the realization that one of the most important, indeed vital elements of the Soviet FD is the extremely important and often hard-to-come-by qualitative element of junior officer command skill. In a national system which frowns upon deviation from the norm and views with suspicion in peacetime any overt display of originality, the personality requirements for the commander of the FD mission calling for exactly that individual role presents a formidable challenge.

As difficult as it may be then to find a number of gifted junior officers to entrust with the role of FD commander, the more pertinent question is where will the relief FDs be found? With offensives requiring up to 800-km drives from Central Europe to the English Channel, and assuming combat in any number of circumstances and locations along that route, it stands to reason (as the Soviets well recognize) that FDs will of necessity have to be replaced from time to time.

Since the number of qualified junior officers and staffs possessing the initiative and training to perform in the role of FD is probably limited in the Soviet society, it may well be a case that those few qualified are given even greater responsibility. That is, rather than limiting the effectiveness of the superior command staff by restraining resources, actions could be taken to "increase their effectiveness" by increasing the size and number of combat attachments in order to create an even larger FD with greater fighting and staying power.

This latter possibility was brought up as early as 1966 by then Colonel I. N. Vorob'yev, Soviet Army, as he postulated the future of FDs.

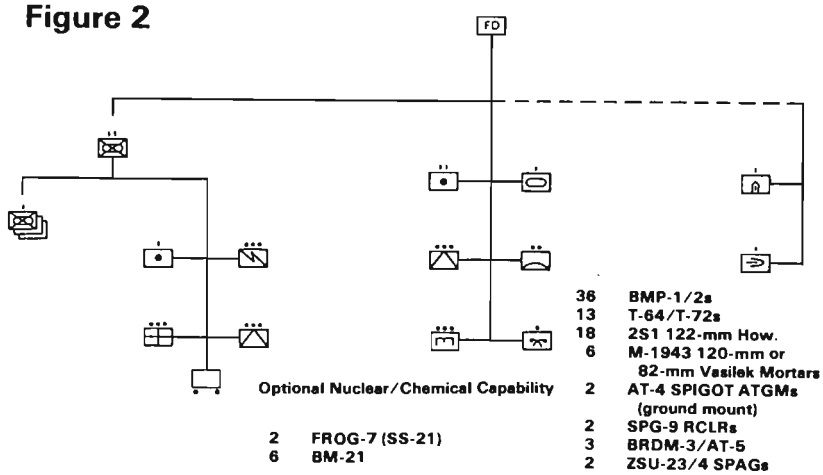
Blitzkrieg Regiments and the Operational Forward Detachment

According to Vorob'yev, the size of the FD could grow in order to increase the impact of the individual FD on the enemy defenses. The larger the FD, the greater the ability to overcome small (company to battalion)-sized NATO blocking forces which might attempt to obstruct forward movement and thus reduce Army momentum. It is possible that Vorob'yev's arguments were not only soundly understood, but steps may have been taken to implement the means to make FDs more powerful and, therefore, more independent.

In 1977, General George Keegan, USAF, identified a series of seven Soviet formations in the Group of Soviet Forces, Germany, which were at that time termed "blitzkrieg regiments." According to General Keegan, these formations exhibited much greater firepower, while also displaying a considerably increased logistics capability. The latter would be of great importance for deep, long mission penetrations, while the former would certainly emphasize the importance of the FD to the army commander seeking a means to lever forward his four or more divisions.

As larger formations the FD, or blitzkrieg regiments, would by definition fit progressive conceptual arguments for the eventual development of "operational forward detachments" (OFD). Though nominally controlled by division, it is possible that such otherwise inexplicable formations as the fifty-tank "reserve" battalion of the motor rifle division is not half so much a tank reserve as a very vital connector between the divisional tactics and the operations of the army.

Figure 2



Soviet Forward Detachments — 1980

The FD depicted is representative of those which might be formed at division and army level (NATO corps level). It is organized around a motorized rifle battalion and supporting weapons. A tank battalion could also serve as the base organizational structure, and it is often suggested that such units would serve best for such a mission. Larger (regiment) level FDs, similar in structure, may be created as well.

In concert with airborne and air-mobile-inserted infantry elements, the FD or OFD, of whatever size, is expected to drive fast and deep into the enemy rear area. In this combination, it should be expected that great confusion will arise on the part of NATO forces. This is exactly as desired by the Soviet commander.

With greater confusion on the part of the enemy usually goes greater mobility on the part of friendly forces. Greater mobility in turn usually begets lower casualties and a greater willingness on the part of the junior commander to "mix it up" with NATO tactical field forces. If this should occur, it is almost to be assumed that the pace of advance of forward Soviet/Warsaw Pact formations will quicken, given the limited number of NATO forces readily at hand in the opening stages of a potential future conflict in Central Europe.

If the rate of advance increases, it is very probable that intermingling of tactical combat formations will in turn increase. The result in Soviet eyes, would most likely be that NATO could not employ tactical nuclear, chemical, or biological weapons — which, in turn, would assist in speeding up the advance of operational forces (divisions), since their tactical densities would remain the same at battalion level but would be very concentrated by comparison at division level as the breakthrough of the NATO line was effected.

The most significant problem for NATO forces may be that the FD (as is the army OMG) is expected to operate considerably in advance (as much as 30-100 km) of the parent conventional Army formations.

The Forward Detachment and Advanced Guard

Given the strategic value of FDs to the Soviets, one of the interesting problems facing NATO commanders is finding a means to identify them. With the possible exception that in a rare event a given Soviet/Warsaw Pact battalion-sized combat element may strive mightily to avoid combat when it would otherwise seem most reasonable to en-

gage (say a NATO combat-reduced mechanized company), the odds would seem rather slim that a FD would be recognized as such. Size, as noted, would also seem to offer little assistance in this regard. Very simply, the FD role, as any role, is little more than a mission assignment for a particular battalion and its affiliated supporting elements. This is also certainly the case for the mission assignment of a battalion within a regiment to act as advance guard. Since, theoretically, any Soviet battalion, tank or mechanized, may be assigned either the FD mission or the advance guard mission, and both formations will include attached supporting arms as available or mission oriented, it may be that the more critical FD escapes to complete its mission as outnumbered NATO battalions seek combat with any elements seemingly willing to come to terms.

The problem becomes more acute as we consider the hypothetical situation in which the advance guard for three Soviet/Warsaw Pact regiments advancing in line are suddenly activated as FDs, to be replaced by follow-on battalions assigned as the new advance guard. Or, in a more sinister vein, the problem of NATO dealing with perhaps a division-sized OMG which, once in the rear area, spawns battalion-sized FDs on lateral axes to confuse, confound, disrupt, and ultimately encircle and entrap NATO forward elements.

It is very possible that the only fair means to recognize the more important role of the FD will be either by the absence of reconnaissance detachments left far to the rear (an unlikely and probably highly suspect method given the likelihood of FDs receiving some form of reconnaissance elements), or by radio intercept of mission orders and reports, also a rather unlikely event, given traditional Soviet respect for radio security.

Conclusion

Ultimately, it seems the problem NATO faces as regards FDs is greater than that posed by the similar, but more powerful, OMG. Unable to ascertain with any degree of certainty that a Soviet tactical element is or is not a FD, or that it might not become one, each such unit encountered near or to the immediate rear of NATO forward positions will of necessity have to be eliminated. As difficult as this will certainly be, it is not beyond the capability of our forces if we use the inherent initiative, ingenuity, and drive of our junior officers and NCOs to arrest the movement of the enemy and maneuver quickly and decisively to shatter each enemy element in turn. It will, however, require an aggressive, well-trained integrated air and ground tactical force prepared for non-stop maneuver and engagements. The question is: Do we now possess the skill and determination to succeed in this task?

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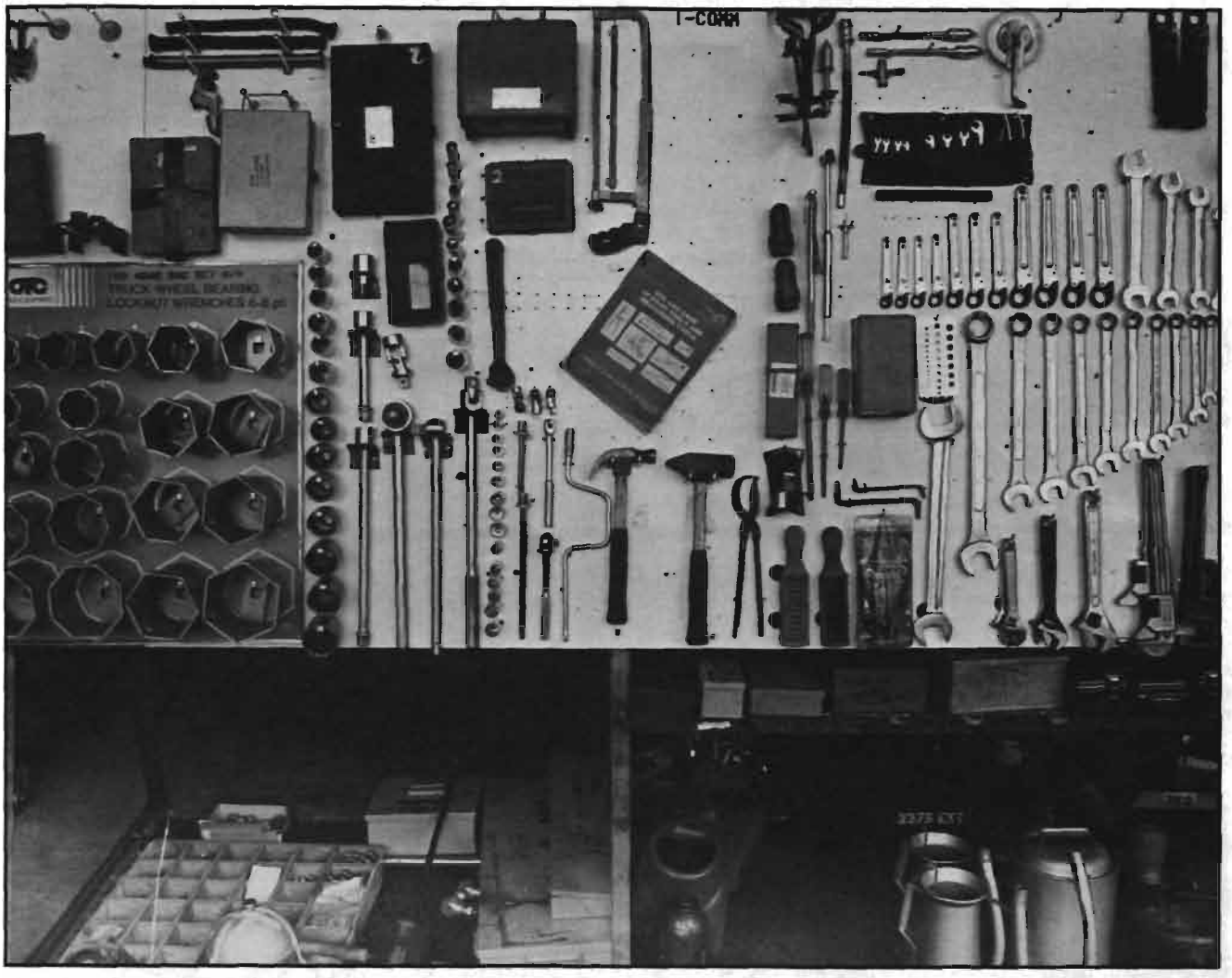


"Tool Room's Got It"

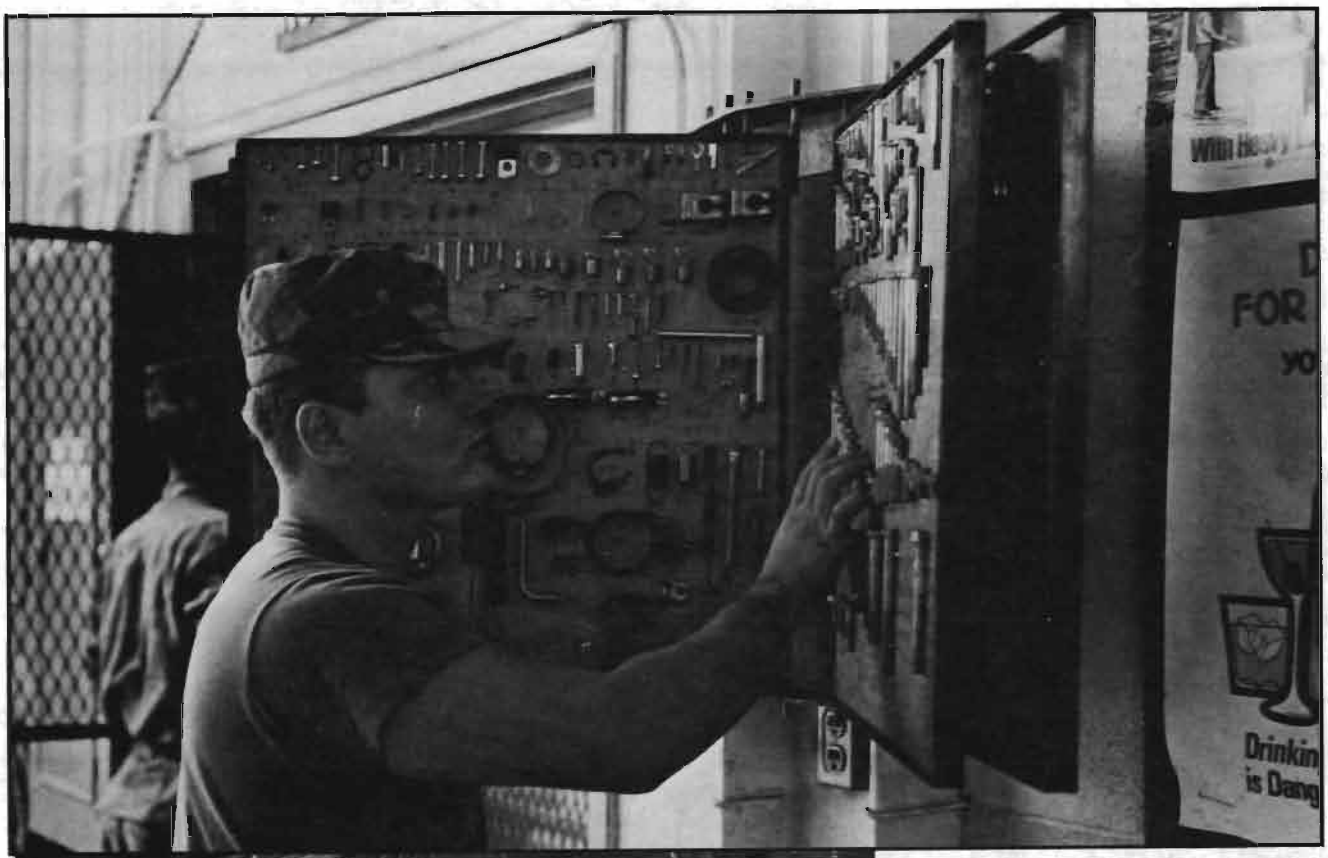
A Cavalry Squadron Develops Its Tool Room As a Maintenance Indicator

by Captain Tyler N. Shewmake and Mr. James L. Cassel

The 3d Squadron, 2d ATB, was formed in September 1985, and immediately began organizing a squadron maintenance tool room. The unit personnel literally built the new tool room from the ground up, having no established standard operating procedures (SOP) and little written guidance. After a year-long learning process, geared toward perfecting the tool room, we've developed both procedures and philosophies that go to the heart of the maintenance operation, and we believe others can benefit from our progress report.

Our original goal was simple: to quickly and inexpensively develop a system to support more than 100 MOS 63- and 45-series mechanics who service a 180-vehicle cavalry squadron that employs more than 20 vehicle types.

Although located at Fort Knox, the Home of Cavalry and Armor, the squadron was plagued by the same problems and frustrations encountered by any organization attempting to start up or improve its tool room operations. There were the usual shortages of space, personnel, materials, and time, all of which influenced operations to



Commonly used parts are mounted on plywood sheets, marked with the bin locations of each part (top photo). Mechanics can locate the parts they need — and the bin number — before going to the parts attendant's window.

some degree, prompting constant change. So the resulting product reflects a year's worth of daily compromises and adjustments in our tool room operation.

Although the tool room is but a small slice of our maintenance operation, it is the foundation of our service program. More often than not, our tool room accurately reflects the health of our overall maintenance. The centralization of the tool room systems with the maintenance indicators they provide, allows the unit leadership a quite valuable view of overall operations. The tool room accurately reflects the areas critical to effective maintenance. In the course of our normal tool room operations, we constantly revise, implement, review, and revise our operational procedures to address these critical areas. This article includes some of the operational procedures and inspection methods we found effective.

Of course, this squadron has not achieved the optimum in tool room operation in only a year; that would be an absurd claim. But we have successfully assembled a tool room and a system — under less than optimum conditions — and we have a healthy start.

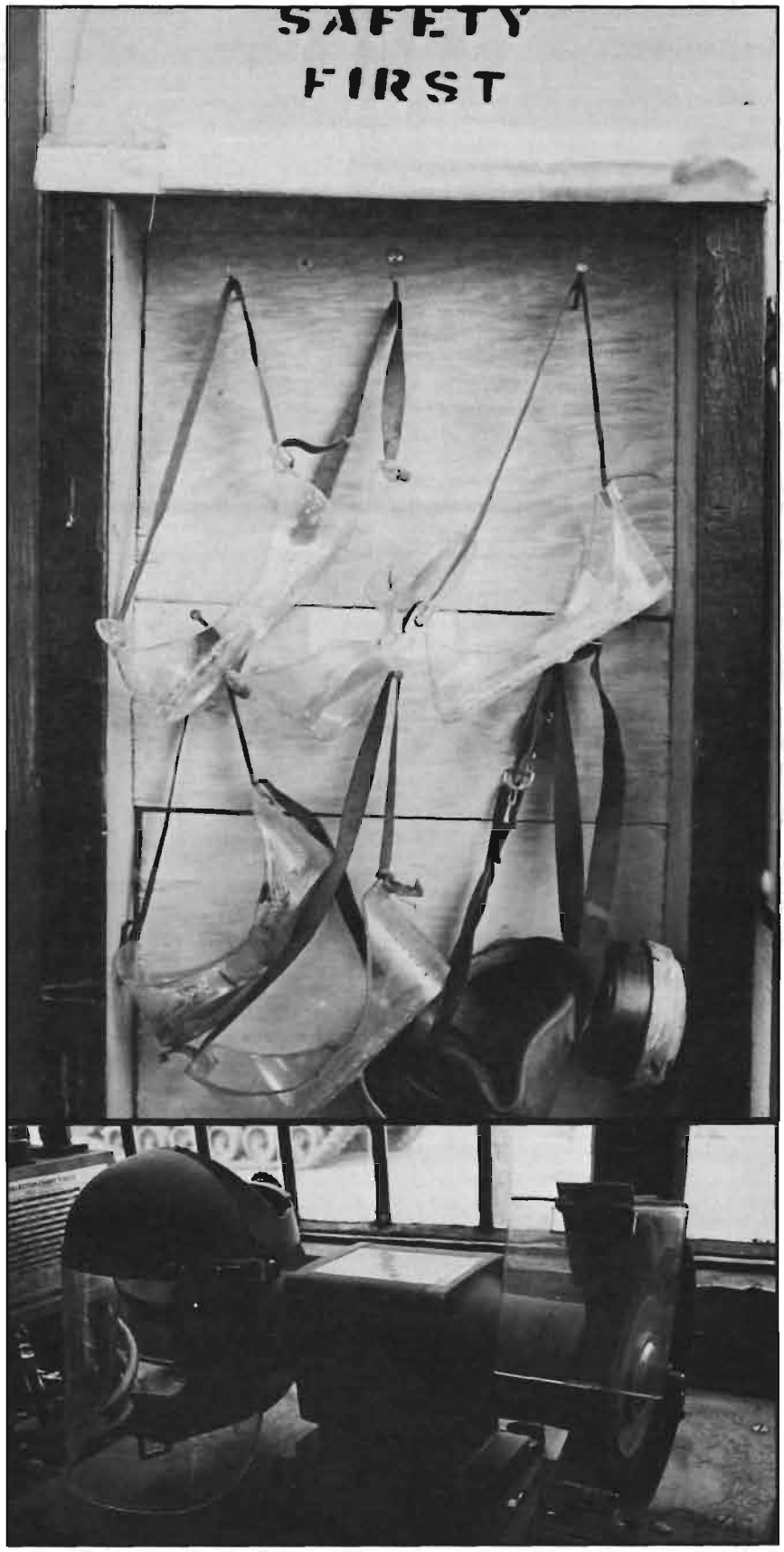
The Tool Room As Information Center

It is possible — the way our, and most other maintenance operations, are configured — to determine the status of five or more critical maintenance operating systems without leaving the tool room. Making a one-hour, on-site review of your tool room operations can provide greater insights into your operations than just about anything else you can do in 60 short minutes.

During a routine stop — when we spot-check test, measurement, and diagnostic equipment (TMDE), for example — we obviously can see the overall condition and calibration status of that equipment. But more importantly, we gain insight into what *isn't* being done. It's a pretty good bet, for example, that if the 600-foot-pound torque wrench or STE-ICE is unserviceable or not calibrated, it's not being used. Good maintenance depends on following procedures and meeting tolerances. Field expedient repairs have no place in a scheduled service. Guesswork is expensive.

Special tools — the category of tool that the Army expends limitless time and effort to field — enable your mechanic to accomplish specific maintenance operations on a specific vehicle. Without those special tools to accomplish an operation, it generally doesn't get done. For each vehicle type assigned, we review the special tool listings in the corresponding -20 maintenance manual, and compare the list with the tool room's on-hand quantities. At a glance then, we see that Bradley Fighting Vehicle fire suppression tests aren't being done because the tool isn't on-hand. Also check to see if the special tools and TMDE on hand are displayed and easily available. Odds are good that if they are cubby-holed, they aren't being used. The frequency of using parts and tools usually determines how easily they can be issued: The tool room attendant will, by nature, keep the often-used tools handy.

We can form a fairly accurate picture of the supply status of the operation on a weekly basis, in a very few minutes, by inspecting the items we stock and the due-in status of missing bench stock items. The questions asked are simple.



Monitoring the condition of safety equipment gives the leader a good indication of how frequently it is used. Keeping the safety equipment readily available helps ensure that it *will* be used.

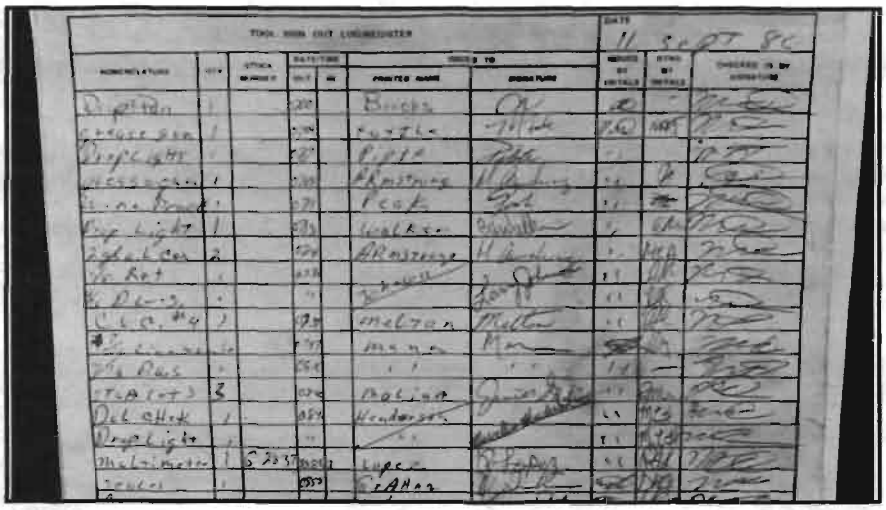
Are there empty bins? Does the tool and spare parts attendant have stockage control cards or some system to ensure that the part's national stock numbers are retained? Are there stockage levels for each part? Does the tool and repair parts attendant have document numbers to account for all zero balance items? Does he stock sufficient part lines for the number and types of vehicles we maintain?

Are there metric items on-hand to repair those vehicles requiring them? (Deadlining an M1A1 for a critical metric washer should not be a common practice. How difficult is it to identify, locate, and issue a bench stock item? One way to find out is to grab a bolt off the shop floor — there are always a few on the floor under the parts washer — and ask the attendant for a nut to fit. Then observe. What process must the attendant complete prior to issuing the nut? Try to think of a simple process so that the customer can easily, accurately, and quickly identify the needed part by a cataloging system before involving the attendant. One way to do this is to mount all stocked QSS items on 2' square sheets of 3/4" plywood, within reach of the mechanic, and cataloged by alphanumeric bin location. All the mechanic has to do is match the in-hand part to the desired part mounted on the board, and provide the attendant with the corresponding bin location. All the attendant has to do is locate the bin specified by the mechanic, and issue the part. The less time the attendant has to spend in the transaction, the better.

Monitoring Shop Safety

In looking at the status of safety items, your operation comes into even clearer focus, and it will be quickly obvious the extent to which your organization stresses safe operation.

The presence, serviceability, and location of safety equipment, (or lack of same), graphically reveals how often it is used. By checking the tool issue log for a past issue of an item of equipment requiring protective gear, it is easy to see whether protective gear was issued with the item. Are there sufficient sets of hearing protection readily available to each person assigned? Are safety glasses issued to each soldier wearing glasses? Are face shields serviceable?



Sharing Home-Grown Ideas

A major building block toward effective maintenance, is the use of "home-growns," the equipment and tools fabricated to meet local needs. This is not new, nor will an operation operate at maximum potential without them. In many instances, a tool may be locally fabricated at a post or civilian machine shop to meet a very real, yet local, need. Missions dictate needs. No two organizations have exactly the same mission or environment. Different mission executions require differing maintenance reactions and operations. We must encourage the use of this incredibly valuable, yet relatively untapped, resource. When a valid need is identified and a tool or device is unavailable through normal supply channels, it must be fabricated.

Any device showing great promise to improve operations by shortening or simplifying a maintenance process should be sketched and submitted to an appropriate local fabrication operation. (*P.S. Magazine* is an excellent resource for ideas here.) Many costly organizational-level parts may be "revived" through the use of part-peculiar taps, dies, and the like.

Conclusions

In summary, the tool room is both an extremely important part, and a visibly accurate barometer, of motor pool operations. The degree to which "the tool room's got it" depends on you, the maintainer. To the interested observer, the tool room is a wealth of ready information on the status of the unit's maintenance operations, and can offer the maintainer a cornucopia of information. The 3d Squadron 2d ATB tool room is indeed the heart of our maintenance operation, and it is viewed as such. It has proven essential in assisting vehicle crews, and the organizational-level equipment maintainer.

There are a finite number of hours in a day. An efficient, complete, and aggressively maintained tool room packs more productive time into each hour in that day. An hour spent looking for a tool, nut, or bolt, is an hour not spent repairing an equipment fault. When it seems the dike will burst, the tool room, in a very unassuming way, can be the Dutch boy.

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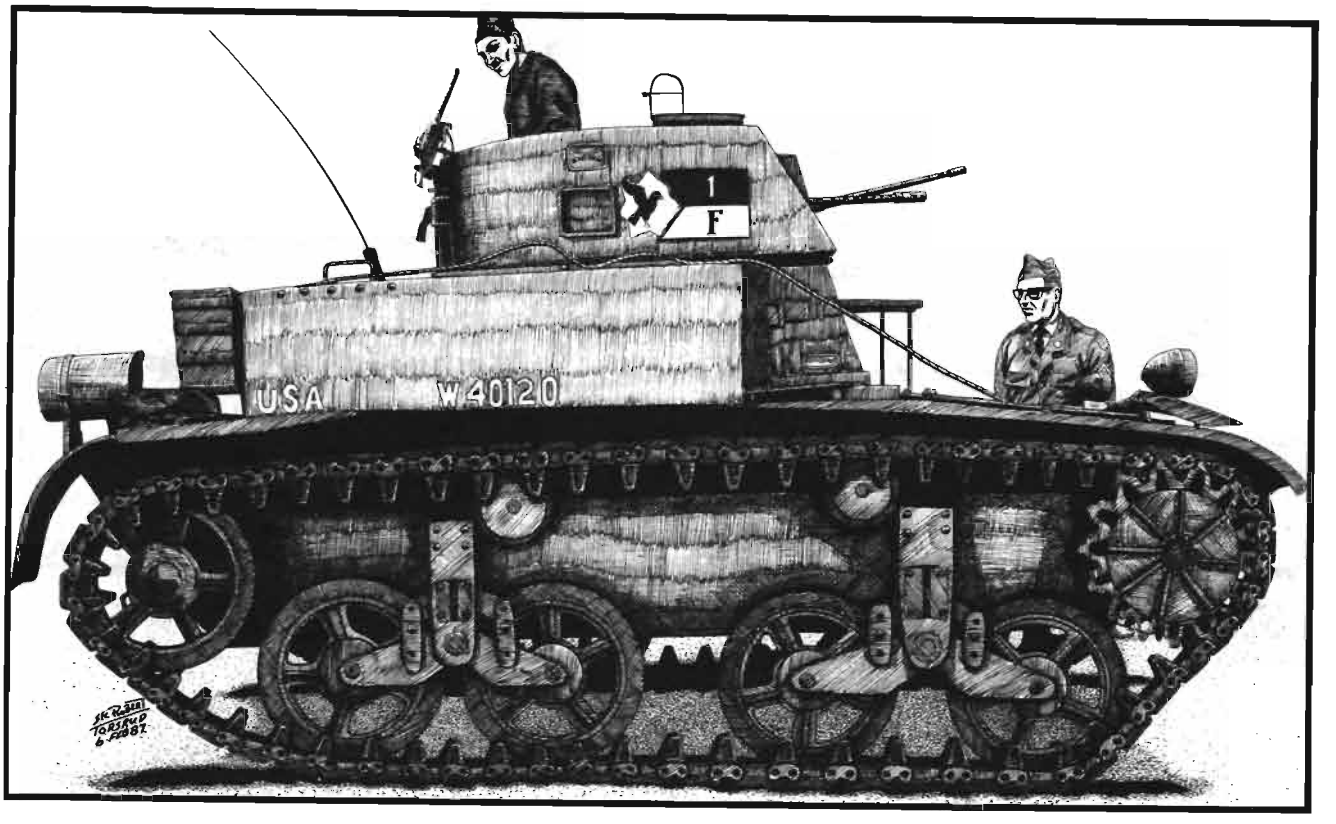


The Ten Lean Years

From the Mechanized Force (1930) To the Armored Force (1940)

by Major General Robert W. Grow, USA, Retired

(Part 3 of 4)

After our return from the Marfa march on 16 January 1933, the 1st Cavalry (Mechanized) was reorganized at Fort Knox. By the 1st of February, schools for both officers and enlisted men were underway and the regiment was out on its first march. My diary recalls:

> Had a strategic situation which worked out pretty well...some Christie trouble and some 6-wheel Chevrolet trouble but generally a very good march...radio left much to be desired, but we had enough to try out some pertinent problems.

We were finally able to test out our new doctrine with a complete unit.

Work on temporary garages and motor parks from salvaged stables and our own rock quarry kept us busy all winter. On 20 February, I noted in my diary, "It seems as if our whole existence now revolves around rock." The engineer company was sent back to Fort Belvoir, Virginia, in May. This threw all construction work onto the regiment. As the engineers left, I commented in my diary:

> The old Mechanized Force is fast disappearing. It is hard to recall it now. Only a few scattered men and officers, the 19th Ord., and 28th MRS but they are no longer part of us but post troops.

The new officers and men, however, were equal to the challenge.

We learned from the Chief of Cavalry in late February that we were due eight M1 armored cars, four personnel carriers, and one combat car during the fiscal year and nine more combat cars the next fiscal year. Counting substitutes, we had enough equipment to carry on a good training program. After some exercises on the reservation in February, our first extended overnight problem began on 7 March. My diary records:

> Van Voorhis called me at 0600 announcing alert plan effective. Troop A out at 0730, regiment at 0830 on tactical march to Lawrenceburg. Problem excellent. Outstanding points: Everyone needs much map reading. Advance guard lost several times. Too many baggage trucks. They should all be in HQ troop or rather in a service troop. Bivouac and outpost system still needs to be worked out. Radio not reliable...Advance guard distances and communications must be worked out...Kitchens must carry more food. Main body arrived at 1400 (100 miles). Trains left at Bloomfield until they were sent for, arriving at 1645, made distribution, and returned to rear echelon bivouac at Bloomfield. Kitchen and baggage stayed up. Outpost established at Tyrone on the river. Troop A recon covered Shakertown to Frankfort.

"Major Philips of the German Army paid us a visit during the spring and gave us his impression of Hitler..."

8 March: Withdrawal from Lawrenceburg, Troop A covering and Troop B rear guard...return march via Hodgenville.

The regiment was learning its business.

With the regiment together we had an opportunity to think about organization. Of many new ideas, some were a service troop taking all supply trucks away from combat troops; a separate armored car troop; one squadron of two similar troops with scout combat cars, machine guns, and riflemen; and a second squadron of combat cars. The idea was to have a balanced regiment with the reconnaissance under the regimental commander's control, one squadron primarily for holding and support power, and one squadron for striking power. In a sense this was a carryover from the Mechanized Force, but with better balance except for artillery and the other non-cavalry units.

Organization Day was celebrated on 2 March 1933 when the regiment became 100 years old. Beautification was not overlooked this spring. On 17 March we transplanted one-hundred and thirty sugar maples from the outer reservation to the barracks area. One of the more important projects was the establishment of a "Mechanized Board" under the name of "Technical Committee." The press noted on 27 April:

> Orders have been published in the 1st Cavalry (Mechanized) setting up at Ft. Knox a technical committee to deal with the testing of experimental equipment in that regiment...Membership is Maj. R. W. Grow, Capt. R. N. Atwell, Capt. C. J. Rohsenberger, Capt. W. D. Steiger and Lieut. W. P. Withers. The Committee conducted tests Thursday on three of the experimental units now assigned [to] the regiment. An exhaustive test was made of the new kitchen truck...At the same time, a road march test was given the new 4-ton, 4-wheel-drive truck...the command car from the same troop was subjected to a test in which a new experimental generator manufactured by a Louisville firm was tried out.

The Committee became increasingly important and eventually became the Armor Board.

The Civilian Conservation Corps (CCC) descended upon us in April, but aside from preparing their area and furnishing them a few officers, we were not initially involved with their projects. Construction work, which had continued all spring in spite of a very rainy season, was nearing completion by the end of the month. My diary records:

> Clearing, fencing, leveling, shops, grease racks, wash racks, lights, drainage, etc. take more time than the garages themselves. It is beginning to look like the end.

All work had been troop labor. By June, the CCC, a task which had started out mildly, began to take such a large toll of officers that the regiment was down to a skeleton staff and troop commanders. In return, however, we began to get a good bit of fatigue work from the CCC. We were still able to keep up field exercises and demonstrations during the summer.

Major Philips of the German Army paid us a visit during the spring and gave us his impression of Hitler (favorable) and described the German Army. He was given rides in an armored car and the Christie. I was pleased to note that the German ideas on Mechanization agreed with ours and not with those of the Chief of Cavalry.

He returned during the summer, this time accompanied by Major Hans Von Greiffenberg (both were General Staff officers who went on to become generals during WW II). Their visit brought about some very interesting discussions. We gave them rides in the M1 armored car and showed them the radio. (The caliber .50 machine gun was kept under wraps). After a pleasant dinner at Doe Run one evening, we had a discussion on comparative mechanized development. My impression at this time (as well as subsequently) was that our thinking was ahead of theirs with respect to the employment of self-contained fighting units, but that they were ahead of us in the development of vehicular equipment. They were going all out in anticipation of a European war in the near future, while we were hamstrung by the Depression and no imminent threat. International politics, in fact, affected us deeply. Van Voorhis came back from a conference in Washington in June and asked me to work up the reorganization necessary in case combat cars and tanks were ruled out by the disarmament conference.

We were "deep in the taxi business" during the summer, running range convoys for ORC and ROTC. Demonstrations, tests of new equip-

ment (pilot personnel carrier; 1¼-ton, 2-ton, and 4-ton trucks; Christies with both La France and Liberty engines; the kitchen truck; etc.), and command post exercises (CPXs) were worked into the schedule. Our recommendations on the kitchen truck were not too kindly received by the War Department. The Deputy Chief of Staff, Major General Van Horn Moseley, opposed the truck because he felt it was too elaborate and thought that men should eat if and when they could. My diary records:

> This is one of those discouraging things that have come up repeatedly in the past three years — old men who can't accept progress, who want mechanization without modernization.

Our Christie tests led me to note that what we really needed was an all-track vehicle and not a convertible. Training lessons were also evaluated. After one combat exercise in which the troops failed to deploy promptly or properly, I noted, "Moral: You can't learn to fight by marching on the highway." Nevertheless, by the end of the summer we could feel that the 1st Cavalry (Mechanized) had developed into an effective, self-contained fighting unit.

The four-day September field exercise that covered most of central Kentucky seemed to bear this out. I recorded in my diary:

> The Forrest Hill battle which terminated the four days worked like a charm. Main body arrived on 7th Ave at 0830 (from Hodgenville). Fragmentary orders were issued by 0900, the attack over and position consolidated by 0925. One Christie changed to tracks in 23 minutes, the other a little longer. The French general and Norwegian captain (visitors) quite enthused. All reserve officers did well. Van Voorhis very enthusiastic about the whole exercise. Chaffee, Otto Trigg, and Paddy Flint had their eyes opened. The best one-sided maneuver I ever saw. Staff work and enlisted staff excellent. Orders were put out in the field in a correct and realistic manner. Communications were good.

Things were coming together well.

Vehicular combat firing during the fall developed many points. I recorded in my diary:

> There is too much tendency to halt in exposed places to lay down fire. Combat cars must not halt to fire but continuously press forward, firing as targets appear.

On the subjects of march formations and ambushes, I wrote:

> Must be prepared for the latter [ambushers] and have platoons of combat cars designated to promptly leave the road and attack without waiting for a regimental order.

After a 700-mile march to Jackson, Tennessee, and back, my most enthusiastic comment was, "Christies came through fine, all four of them." The training would have its payoff in the spring when the regiment deployed to Fort Riley for maneuvers.

A garrison dismounted review on the field in front of the club was held on 8 November 1933 to officially celebrate the opening of construction of the new post. During the winter of 1933-1934, much time was devoted to experiments with vehicular weapons mounts and squad organization as we began to prepare for the big Riley maneuvers scheduled for the spring.

The Riley Maneuvers

The 1st Cavalry (Mechanized) was relatively isolated from the rest of the cavalry arm. Some horse units were stationed on the Rio Grande, some in a few small garrisons in the Northwest, and the remainder were located at the Cavalry School in Fort Riley, Kansas. Although the impact of the mechanized development at Fort Knox was felt in the War Department and by Regular Army and civilian component units in the V Corps area, cavalrymen as a whole failed to recognize the significance of the evolution that was under way.

The maneuvers of 1934 at Fort Riley, which pitted mechanized cavalry against horse cavalry, were an important factor in establishing the fact that the cavalry role in battle could be performed with iron horses. Although the equipment available to the 1st Cavalry Regiment (Mechanized) was crude and experimental, the forward-looking officers at the Cavalry School, as well as those at Fort Knox, could see the great possibilities ahead.

Tentative planning had started in the fall of 1933. During the winter we had conferences on tactics, supply, and maintenance, while we carried on correspondence with the Cavalry School. Meanwhile, the regiment was faced with a considerable turnover in personnel. Colonel Van Voorhis was reassigned as the Chief of Staff, Hawaiian Department, and left at the end of February. Lieutenant Colonel Adna R. Chaffee took command of the unit and I remained as its executive officer. Major I. G. Walder became the S3 and Major H. A. (Paddy) Flint took the 2d Squadron. I was ordered to Fort Riley early in March for 10 days of consultation on the maneuvers.

My reception by the commandant, Brigadier General Lott, and by all of the school and post personnel was cordial. Colonel Bruce Palmer, who was due to take command of the 1st Cavalry in July, was assistant commandant and Lieutenant Colonel John Millikin was director of instruction. We worked over the plans for all of the exercises. I reconnoitered by car and horse all of the areas, and we finally settled the administrative and supply matters. Although some changes were made, the problems were not slanted to favor either the horse cavalry or the mechanized cavalry. They were designed to bring out the capabilities of both, operating together as well as against each other. I was highly satisfied about the plans and arrangements we had made.

Back at Fort Knox, we tried to work the bugs out of the regiment and its equipment. We were still trying to develop the principle of the convertible tank, although I had lost faith in it. After three years of training it still took us far too much time to change the vehicle from its wheeled configuration to its tracked configuration. A new combat car, the T4, was given ex-

tensive tests both before deployment and at Fort Riley. Several field exercises in March did much to develop a smooth-working, self-contained fighting unit. My diary recalls:

> Took defensive position Roosevelt Ridge-Forrest Hill and withdrew after dark to OP6 area. Regiment did the best of the year...operations at night easy. Plane worked us both day and night. Communications excellent. Regiment is shaping up into a maneuverable unit. Chaffee well pleased.

The organization was flexible and could be easily adapted to fit the situation. We were ready for the maneuvers.

As we were about to leave for Fort Riley, orders were received which designated General Henry as commander of the 7th Cavalry Brigade (Mechanized), beginning in July, replacing General Lindsey who was due to retire in September. The orders also announced that Colonel Leon B. Kromer would be the new Chief of Cavalry. Both Henry and Kromer attended the Riley maneuvers.

The regiment donned its new shoulder patches (yellow circle with tank superimposed) and received its new standards at a review and full field inspection on 14 April 1934. We dispatched on the first leg of a six-day march to Fort Riley on 19 April. We conducted an exercise each day along the way. The Chicago *Tribune* ran a story with a picture of Chaffee beside an M1 armored car:

> The 1st Cavalry (Mechanized), one of the most complete fighting units in the peacetime army, will load its 600-odd soldiers into its grim looking fighting cars and depart Thursday for a four-day hike to Ft. Riley, Kan...The regiment will spend two months in maneuvers with horse cavalry, the first time mechanized and horse cavalry are to be coordinated.

We actually took six days, arriving in camp soon after noon each day with reconnaissance and march formation problems en route and careful first- and second-echelon maintenance on arrival. Our arrival at Fort Leavenworth on 23 April was witnessed by the student body, in bleachers, the units being described as they passed by.

The press carried a long article describing our arrival at Fort Riley, part of which read:

> Bearing the old insignia, a black hawk on a yellow ground, of the time-honored First Dragoons, the leading car was followed by a color guard with regimental colors displayed. Each troop carried its own guidon. A Troop contained the 20 armored cars, B Troop the fleet of scout cars, and E and F Troops comprised the combat squadron. The Machine Gun Troop and Headquarters Troop, to which were attached the cars of the supply train, completed the column...Any old-time trooper on the Ft. Riley reservation would tell you, if you asked him, that while the mechanized cavalry might supplement him today, it could never, in a thousand years, supplant him entirely.

The upcoming maneuvers would prove otherwise.

It is hard to evaluate the full effect of the seven maneuvers and several demonstrations on the future of the cavalry arm, but no cavalryman at Fort Riley disputed the fact that mechanized cavalry proved its ability to carry out all types of cavalry missions, both day and night, in fair and foul weather. Weaknesses were demonstrated,

Snapshot above shows command group in bivouac at a roadside stop near a cemetery. LTC Chaffee is second from left. In photo above right, cavalrymen mounted in a scout car orient on their maps prior to moving out at daybreak.

At left, an experimental autogyro maneuvers with light tanks at Fort Knox.

but overall, the speed, flexibility, firepower, communications, and supply of a self-contained mechanized regiment convinced all but the more short-sighted "horsemen" that the future of the army lay in mechanization.The need for vast improvement in equipment was apparent, but that could be foreseen. In retrospect, one wonders why more senior cavalry officers failed to sense the inevitable. We can only assume that tradition and devotion to their faithful mounts clouded their thinking and obscured a clear recognition of the role of cavalry. While there were many converts, there were never enough, especially from the Mexican Border units, to bring about an orderly transformation of the arm which was destined to lose its place on the battlefield to a new force under a new name.

Details of the Riley maneuvers are covered in official reports; however, some extracts from my records are revealing. Three days after our arrival, we staged a review on Smoky Hill Flats followed by an inspection in line of troop columns by all post officers. We were highly complimented by Lott and Kromer. Later demonstrations by platoons and finally the regiment in attack went fine, especially the speed of closing, which made a good impression on those present.

The first maneuver was a reconnaissance problem and is described in my diary:

> To Abilene the afternoon of 4 May in heavy rain...With chains on wheeled vehicles, marched without lights to Wakefield where superior enemy forced change of plan...at 0150 marched via Chapman to Junction City, forced Washington St. bridge and initiated reconnaissance in force to the north...night driving difficult due to slippery mud...Everyone surprised at mud mobility of the 1st.

The mobility of the 1st Cavalry (Mechanized), in fact, was to surprise quite a number of people over the next few weeks.

The second maneuver, three days later, was a meeting engagement with the 1st advancing from the village of Riley to seize Four-Way Divide Ridge. I recorded in my diary:

> Colonel Smith (2d Cav.) was apparently bewildered by the speed of our approach...Armored Car Troop attained a speed of 65 miles per hour from Riley to Estes Gate. The main body marched [at] over 30 [m.p.h.]...Communications were excellent. Chaffee did nobly. The T11 armored car proved very good. The regiment performed exceptionally well.

We were making our point.

The third two-sided maneuver began on the afternoon of 10 May, with the 1st Cavalry (Mechanized), reinforced by a battery of artillery, jumping off from Dwight. We were ordered to hold the horse brigade north of the Riley and Junction City bridges. It was too much front for a regiment. The night was dark and the driving difficult without lights, but only one vehicle was damaged. The cavalry brigade was handled very well.

On 14 May, starting at 1400 from Topeka, we carried out the great encircling maneuver that astonished everyone, including ourselves. We lost the race to the Big Blue River, whose bridges had been destroyed by the horsemen. We sideslipped to the north, marching all night and testing all crossings now held by the enemy, till we finally made a crossing at Barnestown, Nebraska, and headed west. We moved to the Republican River bridge at Republic, turned south there at 1100 on 15 May, advanced to Bennington, and then turned east to Talmadge, where contact was made late in the afternoon. We bivouaced for the night and attacked at dawn on 16 May, terminating the maneuver. It was the longest and fastest tactical operation ever made by American cavalry to that date.

The Leavenworth class came to Fort Riley on 22 May. We put on a demonstration for them, then marched to Council Grove for the next exercise, a combined exercise with the brigade. Troop A moved out at 2230 and the main body at 0200 via Dwight, Manhattan, and Keats. We advanced north of the reservation and attacked Morris Hill in conjunction with the brigade for the benefit of the Leavenworth visitors. My diary records:

> Poor brigade communications. Palmer tried to plan his battle too far in advance. Horse cavalry is tired...Chaffee gets better every problem.

In my mind, Chaffee was the finest tactician that I ever knew. George Patton was the next.

The last maneuver was staged on 25 May when we were brigaded with the 13th Cavalry and attacked the 2nd Cavalry. The exercise went well. The regiment remained at Riley for two more weeks and devoted its time to maintenance, tests, range firing, plus a final regimental exercise of our own to test a suggested reorganization. I recorded in my diary:

> All four troops organized with two combat car and one machine gun platoon each, plus the usual

armored car troop. This made two similar squadrons...This organization is better than the one we have now; much more flexible, but I do not know if it is the best. Sadly needs another squadron. As acting regimental commander, I had no reserve except the armored car troop.

We marched back to Fort Knox from 12 to 16 June, the last leg being a night march from Vincennes.

In June 1934, it is safe to say that mechanized cavalry was established. The lessons of the Riley maneuvers rang out loud and clear to every cavalry officer who would listen. Major General Guy V. Henry, who as Chief of Cavalry fought against apathy and penury to give the mechanized cavalry a start, was now commander of the 7th Cavalry Brigade (Mechanized) and an enthusiastic cavalryman. Colonel Daniel Van Voorhis, who steadfastly and bitterly fought for an independent Mechanized Force and then for a balanced mechanized cavalry regiment, was in Hawaii. Brigadier General Julian R. Lindsey, the old horseman on the verge of retirement, who had come to recognize the fact that the cavalry role in battle could no longer be performed by horsemen, was on terminal leave. Lieutenant Colonel Adna Chaffee, who taught us that "the mission of cavalry is to fight" and how to do it, departed on 28 June for duty in the War Department budget section. I was left in command of the 1st Cavalry (Mechanized) until I, too, left on 12 July for Fort Leavenworth, almost the last member of the old Mechanized Force of 1930. I was replaced by Colonel Bruce Palmer. We were satisfied and enthused about the new officers. Little did we appreciate the opposition, as well as apathy, that remained to stifle the mechanization of more than a single cavalry brigade during the next six years and that would eventually force the creation of an independent armored force.

The Command and General Staff School

Leaving Fort Knox in July 1934 for a one-year tour as an instructor at Fort Leavenworth, I lost touch with the details of developments at Fort Knox but acquired an insight into the impact of mechanization upon the thinking of the Army as a whole. I was able to take an active part in establishing mechanized cavalry doctrine at the Command and General Staff School.

Mechanization had been included in Leavenworth programs to a limited extent, but was confined primarily to infantry tanks and cavalry reconnaissance vehicles, with only brief consideration of mechanized cavalry units. The Riley maneuvers, portions of which were witnessed by the Leavenworth students and faculty, paved the way for an expansion of cavalry instruction, and the integration of mechanized cavalry up to brigade strength in problems of combined arms. Most of the cavalry officers on the staff eagerly accepted mechanization and worked in harmony to develop its potential. Our work included not only the mechanized brigade, but also the mechanized elements of the cavalry division and the horse regiments.

In addition to the normal conferences and problems, we prepared several publications on mechanized cavalry. One was a pamphlet entitled "Tactics and Technique of Mechanized Cavalry", that was coordinated with the War Department and approved for teaching in all service schools. This was a comprehensive document, including TO&Es for a mechanized cavalry regiment and sections on doctrine, marches, bivouacs, reconnaissance, security, attack, defense, special situations, and antiaircraft defense. Another publication was entitled "Characteristics of Mechanized Cavalry Vehicles". This publication defined the basic requirements to be built into fighting vehicles as well as descriptions of current types. The introductory paragraph stated:

> Mechanization is based on the organization of units of fighting vehicles, constructed on designs carefully prepared with a view to incorporating the maximum firepower combined with mobility and reasonable protection.

So much stress has recently been laid on mobility that it is interesting to note that from the earliest days of the Mechanized Force we considered firepower of the highest importance, without which mobility is of scant value.

We were called upon to comment on proposals for the reorganization of the cavalry division which had been drawn up by the 1st Cavalry Division, the Cavalry School, and the Chief of Cavalry. Among other things, we recommended a regimental headquarters for the administration, supply, and maintenance of the armored car and combat car squadrons, but not for their tactical employment or training. In other words, we did not visualize the regiment as a mechanized cavalry regiment for operational purposes.

Among the matters of importance, as recorded in my diary, were the following subjects:

> Agreed with McBride (FA) to teach truck-drawn artillery for mechanized brigade this year. We both think self-propelled is the answer, but don't think it proper to teach it this year.

> A memo to Gill (Inf.) on his protection of motor columns. I think he has laid the foundation for one of the best things I have seen this year. He is going to move troops fast.

> New reference data for next year ...got truck rates stepped up from 8 to 20 miles per hour.

> Combat car squadron of the cav-

At left, Sunday dinner for officers on bivouac in Tennessee was cooked on a mess truck, served on field tables. At right, men of the mortar platoon wait at the Fort Knox motor pool for a parade to form up.

alry division...wants to use the squadron independently. I am opposed as long as we have no carrier support; should only be used in close cooperation with horse units.

Changes we are putting in the division this year — scout cars; cal. .50 machine guns; and combat car squadron. (This was for instructional purposes.)

Dismounted troops (infantry or cavalry) cannot advance against dismounted defenders unless the attackers are supported by artillery and tanks — so says McAndrew. (We did not dispute this.) We simply made the point that cavalry is able to maneuver the defenders out many times and thus permit the attacker to advance better than to employ combat cars in driblets to assist each front-line unit.

We eventually succeeded in getting our fellow instructors to come around to our point of view on the use of fast tanks and combat cars.

An important milestone for mechanization was the publication on 5 April 1935, by the Adjutant General, of a letter to all commanders and schools which updated the directive of 1 May 1931, in which General MacArthur had ordered the breakup of the Mechanized Force and the development of mechanization by all arms. The new directive included:

The 1st Battalion, 68th Field Artillery, has been organized at Ft. Knox to provide the supporting artillery unit of the 7th Cav. Brig. (Mech)... the progressive training objectives for this Mechanized Force are prescribed as follows: 7th Cav. Brig. (Mech): Ability to perform the missions enumerated in 'General Principles to Govern in Extending Mechanization and Motorization throughout the Army'.

The missions of the cavalry arm now, as in the past, include the following:

a. Long distance strategic reconnaissance.

b. Fighting for the control of the theater of reconnaissance.

c. Seizing points of strategic and tactical importance.

d. Tactical reconnaissance.

e. Pursuit of the enemy or delay of his advance.

f. As an exploitation force to take advantage of any break or weakened point in a hostile battle line. In this type of operation, the cavalry may act alone or in conjunction with other arms.

g. As a part of a reserve to be used tactically or strategically. It is not difficult to visualize a reserve of the future, moving out in column from head to rear — Cavalry (Mechanized), units of the Tank Corps, Infantry, temporarily embussed, all elements to be able to move at uniform speed without noise. Field Artillery must be prepared to support such a force with units especially organized and equipped to accompany it.

An equally important function of the army is to preserve the cavalry spirit, an asset which, while intangible, is nonetheless a vital factor in combat.

The directive then goes on to prescribe unit training for the field artillery and combined training of the brigade and the artillery battalion. It should be remembered that the quotations above are General MacArthur's words written in 1931 and carried over in the new directive of 1935.

One of the most significant features of the directive of 5 April 1935 was that it specifically charged the Commanding General, V Corps Area, under the War Department "with the development of the 7th Cavalry Brigade (Mech) reinforced." We found later that this seriously restricted the Chief of Cavalry in carrying out the responsibilities of his office with respect to the development of organization, equipment, and training. It is also interesting to note the use of the term "mechanized force" in the War Department letter, although it referred to the 7th Cavalry Brigade (Mechanized).

I was well-pleased with my tour at Leavenworth. I believe we made great progress in gaining acceptance of the rapidly increasing role of mechanization in all branches, but particularly in cavalry. We made no attempt to make a complete substitution of machine for horse, nor should we have at this time in view of the state of development of equipment. We did solidify the thought that mechanized cavalry regiments and larger mechanized cavalry units must be balanced and self-contained to accomplish all types of cavalry missions. I was both surprised and pleased at the high degree of cooperation among instructors of all branches. My greatest disappointment was our inability to have the close coordination with Fort Knox and Fort Bliss that we had with Fort Riley, chiefly due to administrative restrictions. Incidentally, I took an early morning ride almost every day before going to the office. There is no better place to think clearly than on a horse.

The War College

I left Fort Leavenworth for the Army War College in 1935. For me, the change was a relevation in contrasts. From daily involvement in tactics and troop-leading, I was thrust into a new world — the War Department General Staff. The big point I remembered from the first

A row of scout cars formed up at a maneuver bivouac.

lecture by General Hughes, the G3, was:

> You can't expect the General Staff to act quickly; it is a deliberative body. New members often think they have some get-rich-quick scheme of suddenly improving the War Department, but they soon find out that there is a pretty sound reason for its methods.

He admitted that the G3 was weak on influencing tactical doctrine. He also mentioned mechanized cavalry just enough to show that he knew little about the subject.

A few days later, General Kromer gave a fine lecture on cavalry. Later in the day he invited me to his room at the club to discuss mechanized cavalry with Chaffee and him. The trouble seemed to be that the G3 was holding up the new TO&E, saying that the trains were too large and that cavalry should not have a mortar platoon.

A committee on new training developments gave its report on 25 September. The report had some good things to say about mechanization. The committee also recommended that a board under the Chief of Staff be formed to sit at Leavenworth and coordinate training doctrine. I personally felt that the job should belong to the G3 and that he should be required to do it instead of spending so much time on administration. If the G3 did not have the resources, the section should have been enlarged. The job was apparent and someone should have done it. This board eventually grew into the Army Ground Forces and later, the Continental Army Command.

During the year, I had considerable correspondence with Inspector General Walker and Charlie Unger who were at Fort Riley and sent me reports and problems for comment. We heard a number of lectures at the War College indicating difficulties that would occur in producing sufficient, well-designed combat vehicles to meet the demands of mobilization. At the annual meeting of the Cavalry Association (now the Armor Association) that year, there were short talks, mostly about mechanization, together with some disparaging remarks by some of the "horsey" people.

My individual study paper for the year was assigned by the College. The question I had to answer was: "What should be the policy of the War Department with reference to the organization of a GHQ Mechanized Force?" I recommended a continuation of the development of mechanization by the several arms. I also recommended the establishment of a Headquarters, GHQ Mechanized Force, and assigning to it, from time to time, various mechanized units for experimentation and training so that on M-day, the Army would have a well-trained number of large mechanized units at the call of GHQ. They could then be used for independent operations, cooperation with the Air Corps, or reinforcement of an army or smaller unit. Although my paper was cooly received by the College, it is interesting to note how closely it resembled the eventual Armored Force, which simply extended the idea to create organized divisions from the mechanized units, not as a separate arm but as a GHQ (AGF) force.

Van Voorhis, now a brigadier general, completed his tour in Hawaii in the spring of 1936 and reported back to Fort Knox to command the 7th Cavalry Brigade (Mechanized). The brigade still lacked a second regiment. The plan to reactivate the 15th Cavalry fell through, so the new plan was to move the 13th Cavalry to Fort Knox and mechanize it.

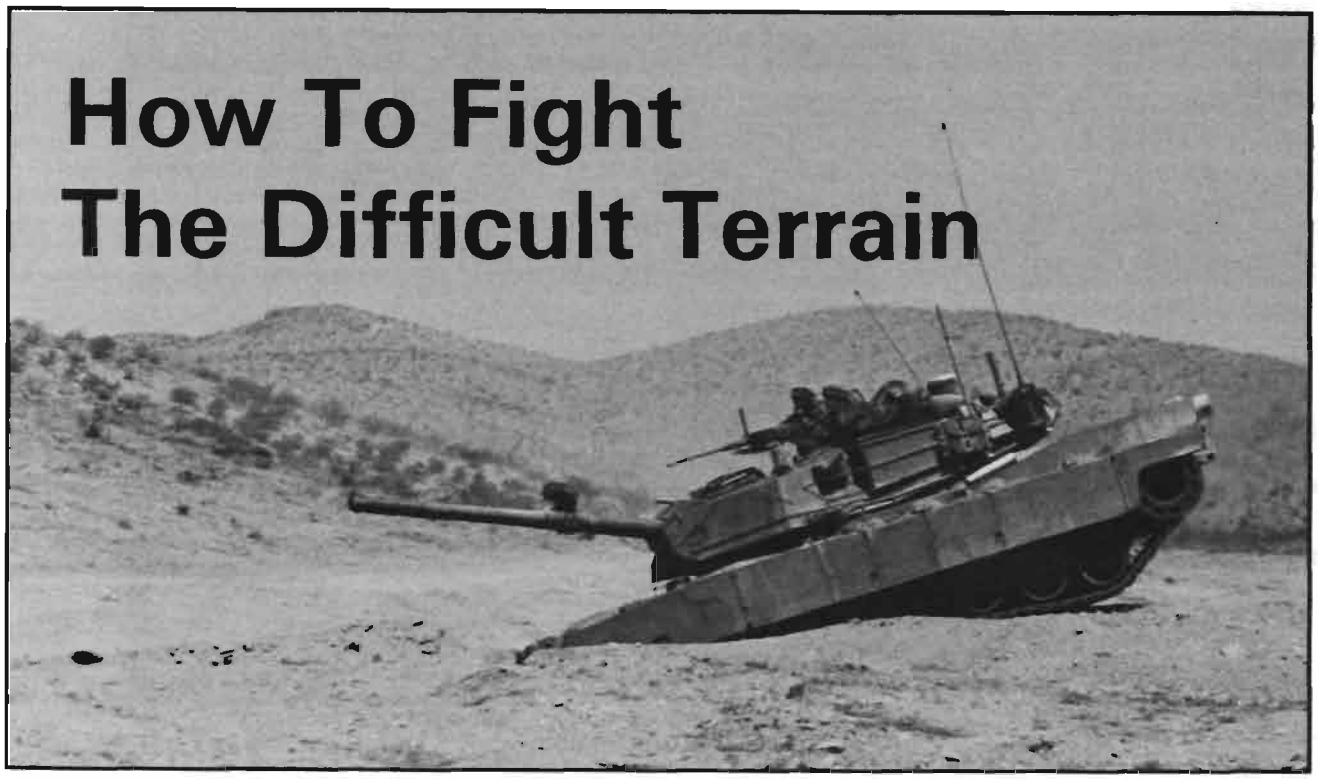
During my year at the War College, it seemed that very little progress in mechanization was being made. The Civil War battlefield tours by the War College were splendid, but placed emphasis chiefly on leadership. No analysis was made as to the results that might have occurred had current organization and equipment, particularly mechanization, been available to the commander at the time. As far as mechanization was concerned, my course at the War College taught me that only with a vigorous push from the War Department, initiated and spurred on by the Chief of Cavalry, could real progress be attained. There was meager evidence of such a push. The Cavalry Branch could not pay the price without giving up horse units to be mechanized, and this it was not willing to do.

(Ed. Note: This is the third part of a four-part serial on the evolution of mechanization within the United States Army.)

MAJOR GENERAL ROBERT W. GROW, whose career began as a horse cavalryman, became one of the pioneers in the mechanization of the U.S. Army. He was the first S3 of the Mechanized Force under Chaffee and Van Voorhis in the early 1930s and later commanded the 6th Armored Division in the European Theater during WWII. He retired as a major general in 1953 after serving as military attache in Moscow during the postwar years. General Grow died in November, 1985.

Captain Peter R. Mansoor and Kathy Cast Garth helped to prepare "The Ten Lean Years" manuscript for publication.

How To Fight The Difficult Terrain



by Captain Clyde T. Wilson

A familiar scene is again repeated. A company team of well-trained, motivated soldiers has worked hard to prepare a defensive position. They have good defensive ground; they know when and where the enemy will attack and they are ready. Soon, reports from the task force scouts charge the command net with excitement and anticipation. A motorized rifle regiment equipped with T-72s and BMPs is headed right down the high-speed avenue of approach, just as expected. The U.S. forces are quickly engaged in a fierce battle. Command and control breaks down as the defenders are forced to fight for their lives against the steamroller attack of the enemy. The team commander tries to break contact and move to his next position. However, the enemy seems hardly to hesitate as it bypasses and breaches the barriers designed to buy the displacement time. The U.S. forces are destroyed as they attempt to move or are overrun. And so ends another day at the NTC.

Many articles have been written on this subject. Usually they explain in great detail what *should* have happened. The fact that the participants knew exactly what should have happened as well or better than any observer is often overlooked. The question becomes not what the principle or theory *is*, but rather *how* do we make it happen. The phrase "how to fight" takes on a lot different meanings when someone is doing everything he can to kill you.

Detailed planning, coordination, timing, and preparation are keys to success in the defense. Armor leaders learn how to plan a defense using METT-T (mission, enemy, terrain, time, and troops available) analysis and the six defensive planning steps:

- Define avenues of approach (mounted, dismounted and air).
- Select tentative positions and tasks.
- Task organize (type and size of unit to cover avenues of approach).
- Allocate space (to include firing, hide, alternate and supplemental positions).
- Plan obstacles and fire control graphics (target reference points, engagement areas, and obstacles).
- Record positions and orientations (execution matrix).

Most company commanders understand troop leading procedures, METT-T, and all the other thinking aids provided. The problem comes in application. The inexperienced leader will try to apply the school solutions to tactical problems presented during tactical instruction simply because he hasn't been exposed to any other solutions. *Unfortunately, our enemies seldom react the way we envision them reacting on a terrain board.*

During the approach march, the enemy can analyze terrain and intelligence from reconnaissance elements to determine the U.S. defensive plan. Based on a knowledge of specific or probable U.S. positions, the enemy commander can quickly adjust his plan to attack down a less likely avenue of approach.

The defending team commander needs flexibility built into this plan to anticipate all the options available to the attacking enemy commander. He must develop a defensive option for each of the enemy commander's possible moves. The team should occupy to defend against the primary avenue of approach and prepare positions to defend against other less likely avenues of approach.

The most critical point of the battle is the repositioning of defensive forces. The team commander must clearly see the battlefield at this time. This does not mean he is at a vantage point where he can

personally observe the enemy formations. Rather, he must have trained observers in key positions that can tell him to what avenues of approach the enemy has committed himself and in what strengths. While he still has good command and control of all his elements, he must quickly shift his forces to counter the actual enemy thrust.

In the direct-fire portion of the battle, the point where the defense plan must be implemented, the commander must have planned well, accurately read the anticipated battle, and be able to meet the threat. If he does this, he will now have a chance to defeat the enemy.

During the direct fire battle, the battalion commander experiences a loss or degradation of command and control. He should expect this situation. Given the speed and violence of the enemy attack, the forces in contact are locked in a life-or-death struggle, and fire commands from the team commander to his crew, have priority over spot reports to his battalion commander.

During the fight, each tank will have to take out as many enemy vehicles as it can, and as quickly as possible. The enemy forces must either be destroyed or forced to recoil from a furious attack by fire. A commander can't afford to have each tank fire two rounds and move. This action only results in a loss of time and firepower needed to break the enemy attack.

Units must use techniques to improve vehicle survivability rather than shift firing positions. It must maintain a high volume of fire. A passive technique is a good turret defilade firing position. In preparing the firing position, use good natural camouflage and ensure that any berm or spoil is previously knocked down. If a tank does not have a thermal capability, lay a smoke screen at the engagement trigger line. The smoke will slow the enemy down and may disrupt his formations. It may also confuse him. As enemy vehicles break out of the smoke, they will be silhouetted, making excellent targets. Use the same technique with thermal capability for an added advantage: *engage enemy vehicles while they are in the smoke without compromising friendly positions.*

After the enemy has been repulsed or destroyed, command and control will begin to improve. A unit can compensate for the loss of key leaders by having a code word that will place the entire team on one frequency. This allows the team commander to shift individual vehicles or squads within the position as required.

If the defensive plan calls for the team to displace to a subsequent battle position, the team will need time to recover damaged equipment and wounded men. This must be done before the enemy recovers or his second echelon arrives. There are some useful techniques to keep the enemy off balance, but only if the team has previously done a good terrain analysis.

The devious use of mines is one technique. Mines should be buried at the ends of obvious barriers, or on bypasses. Placing mines in positions the enemy will use for cover, or as firing positions, (e.g. wadis) is also effective. If there is little time to prepare the defense or engineer assets are scarce, the shrewd placement of mines and barrier materials becomes even more critical.

Use caution in determining disengagement criteria. Leaving too early negates the effort used to prepare the position. Waiting too long can be fatal. The commander must make the decision to move based upon the changing situation. Are flank units holding? Has the battle gone as anticipated? Disengagement criteria such as "fire two rounds and move," are useless if the firing unit engages prematurely. *Event-oriented criteria, such as "disengage, when two enemy tanks breach the tank ditch" could cause the abandonment of a good defensible position with only two enemy tanks left alive.*

All defensive positions are unique — none are like the examples in the book. Someone has to defend the *difficult* terrain between the imagined *good* positions occupied by flank units. Based on the uniqueness of a postion, a unit can use techniques that vary from the norm to maximize terrain.

In a mixed team, these techniques may take the form of overlapping platoon positions within the team battle positions. If there is an excellent individual tank position within an infantry platoon position, it's better there than next to the other three tanks in the platoon occupying a poor position, as long as the platoon itself operates as a team. In an infantry team position, a tank platoon could be spread across the position, intermingled with the infantry platoons. This does not violate unity of command if the tanks remain under the positive control of the platoon leader. Although this technique requires closer coordination between platoons, it provides dispersion and increases the mutual security within the position.

The best way to visualize a defense is to think of it as an ambush, not a fortress. Try to set up the ambush to shoot the enemy in the back, or the next best thing, in the flank.

The solution that first comes to mind is to position forces on the flanks of an avenue of approach to

ambush the attacker as he enters the kill zone. This method depends on terrain and the available force. This may be appropriate at the task force level, but is not normally feasible to the team commander, unless part of a larger plan.

Another method that could be used by forces occupying linear positions is to fire to the oblique into kill zones directly in front of adjacent units while using the terrain to their front to mask their fires from the enemy. This solution can be used within a team position, or it can be integrated with flank units. This technique is not without risk, however. While the enemy can be engaged at long range by a flank unit, he won't be engaged until he is relatively close to the masked defender, making a withdrawal of the defender difficult at best, unless the attack is repulsed or destroyed. The use of local counterattacks to mass fires on enemy elements that succeed in reaching the defensive line is an added benefit of this solution.

The reverse slope defense is particularly effective if the terrain supports it. Using a hill mass that the enemy must crest to make defensive positions provides security from early detection of friendly positions. Attacking the enemy on the forward slope with artillery disrupts his formation and causes him to crest the slope while buttoned up, seriously reducing his vision. Barriers at the crest can further canalize him into designated kill zones. This method also negates suppressive fires from ATGMs.

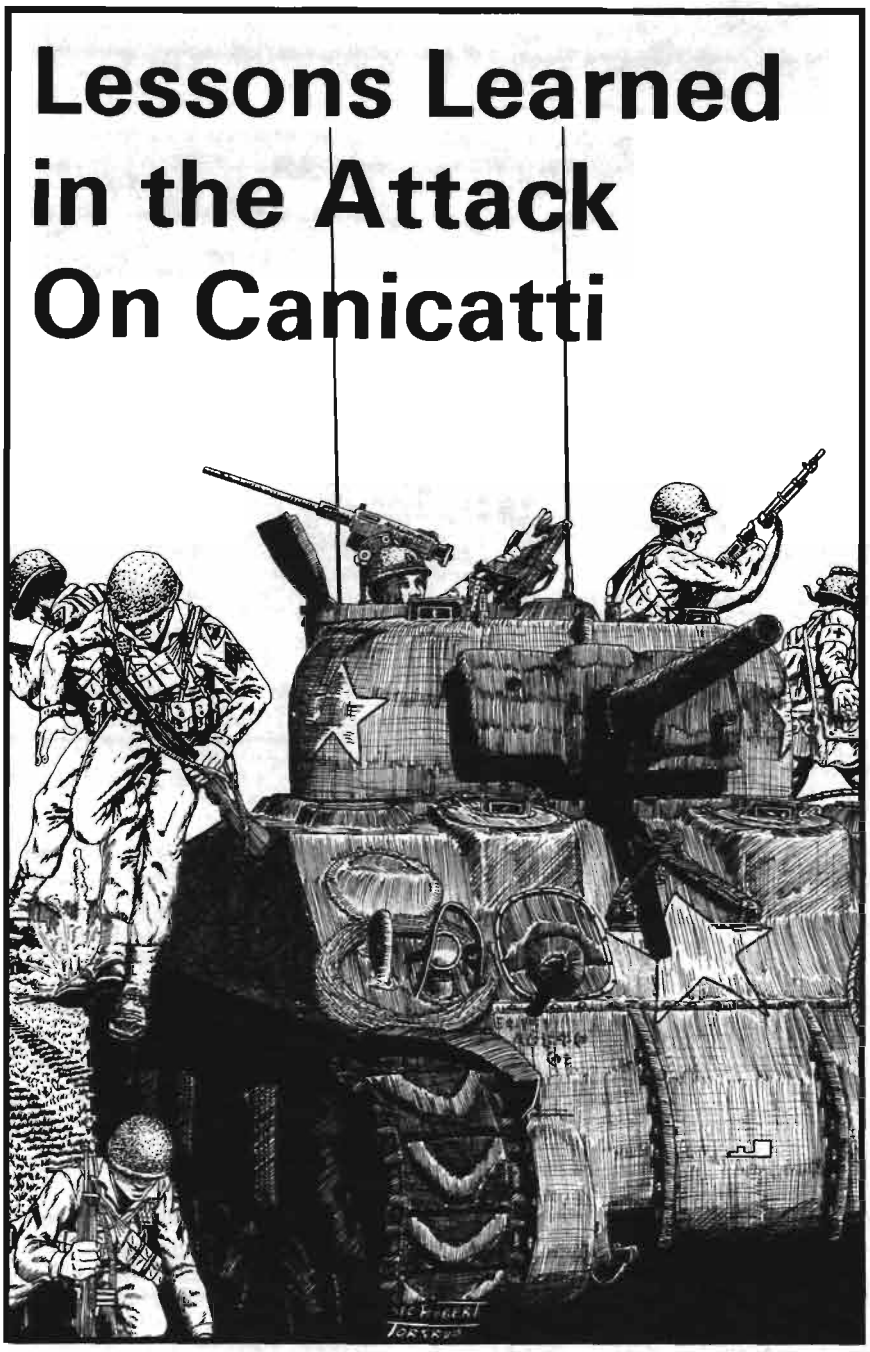
Night security is problem that plagues all units. It becomes more acute the longer a unit is in a position. Security can be increased by running guard duty within the team. Have a platoon leader from one platoon and a platoon sergeant from another platoon serve shifts as officer and sergeant of the guard. This technique facilitates a sleep plan and ensures that leaders are involved in security. When a platoon leader troops the line to check security, not only will he ensure people are alert, but he will learn the detailed disposition of the whole team, not just his own platoon. This knowledge could prove critical should he need to take command of the team.

Conducting combat operations at company team level is both a science and an art. The scientific portion comes through a study of weapons' characteristics, doctrinal material, and the lessons of history. The art of war is harder to master. A leader needs to use his intellect and leadership to make things happen. No amount of study can prepare him for the battle that he and his men will fight. Only practice and the confidence gained from leading a well-trained, cohesive, unit can provide the experience needed to understand the art of war.

Modern warfare is too often considered to be a contest of technology-vs-technology. The team commander *is* concerned with technology, but his primary concern should be the human element. Aggressive, well-trained, motivated teams win battles. The way to develop a combat-ready team is to train as though each tactical problem is real, thereby instilling the warrior spirit in each member of the team.

CAPTAIN CLYDE T. WILSON, commissioned from southwestern Oklahoma State University, Weatherford, is a graduate of the Armor Officer Basic and Advanced Courses and the Combined Arms and Services Staff School. He served as an aeroscout in 1st Squadron, 10th Cavalry, at An Khe, RVN; as a tank platoon leader and S3 air in the 3d Battalion, 35th Armor, at Bamberg, FRG; as a scout platoon leader in 3d Battalion, 67th Armor, at Fort Hood, TX; and as a BMO and tank company commander in 1st Battalion, 73d Armor, at Fort Irwin, CA. He is currently assigned as an instructor at the Armor School.

Lessons Learned in the Attack On Canicatti



by Dr. Norris H. Perkins

The historian is fond of pointing out that today's combat leaders can learn from past combats, no matter how far back in history you care to go. This is a truism, but far too many of today's generation of leaders look back on the battles and campaigns of WW II as mere history.

The principles of battle never change. The armaments and equipment do, but never the principles. And when you ignore or violate these basics, you pay in blood.

This article emphasizes the basics of armor-infantry-artillery interaction and mutual support. They hold just as true today as they did 43 years ago in Sicily when a group of brave men attacked a town named Canicatti.

Introduction

This is an account of a combined, armored infantry and tank attack on the city of Canicatti, Sicily, with emphasis on certain aspects of small unit coordination. The attack was made by CCA, 2d Armored Division, on 12 July, 1943, after it had pushed inland approximately 25 miles, following an amphibious landing at Licata on the south shore of Sicily two days earlier. I was commanding Co. H (medium tanks), 66th Armored Regiment.

General Situation

The terrain: Generally mountainous, with a four-mile long, open, rolling valley in the final approach to Canicatti. The ground provided excellent standings for tanks. The weather was sunny and dry. Hills flanked the valley and rose abruptly on the far side of the compactly-built city of 28,000. Farms and gardens extended all the way to the sharply-demarcated city edge.

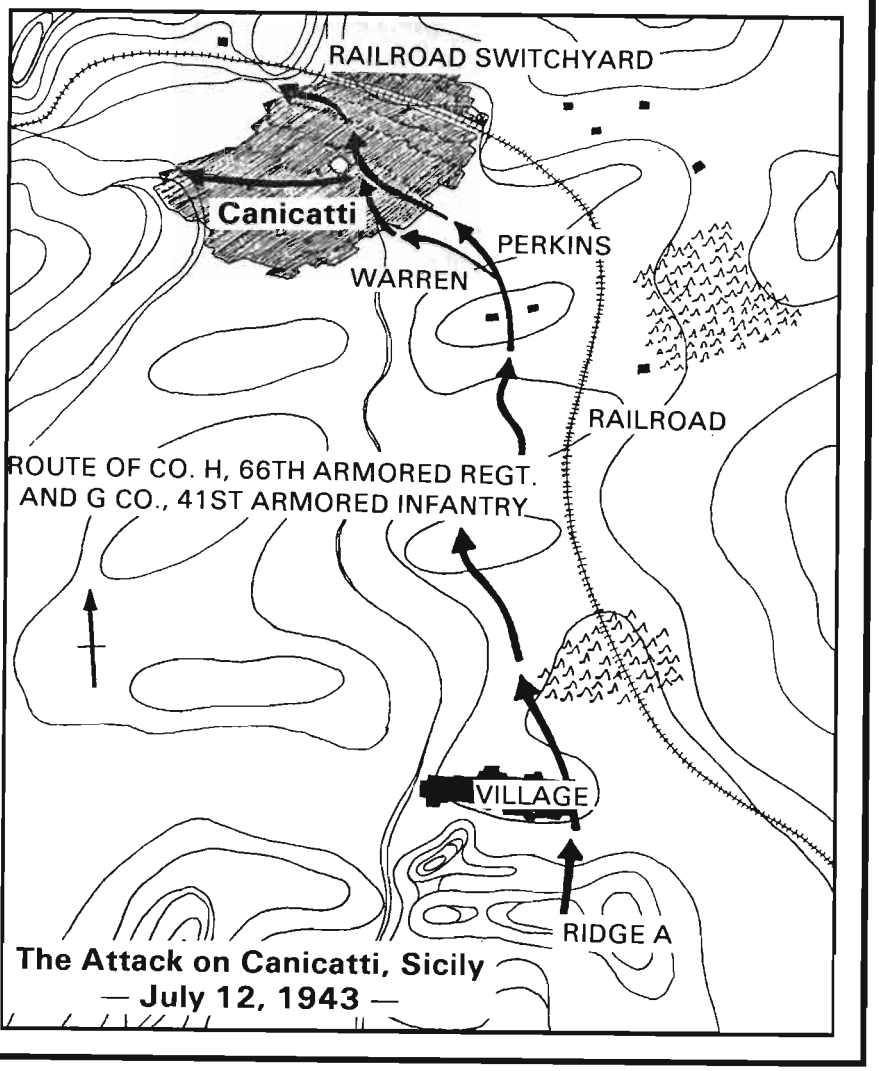
Information on the enemy: The enemy's mobile reserves apparently had been more heavily disposed in the Gela sector to the east, permitting CCA and the 3rd Infantry Division — advancing inland on the west of this sector — to easily overcome local Italian and German delaying actions on 10 and 11 July.

On the afternoon of 11 July, leading tank and infantry elements of CCA occupied a craggy ridge (see map) overlooking Canicatti and the intervening valley to the north. (Ridge A as to the right of a defile through which the road to Canicatti passed.)

At this time, several enemy self-propelled antitank guns located in the valley, or on the foothills flanking the valley, knocked out three tanks as part of Co. G, 66th Armored Regiment, attempted to go down the forward slope of the ridge. Two German light tanks concealed on Ridge A had been discovered and knocked out by Co. G. As friendly infantry were consolidating on the ridge, they were shelled by enemy artillery. Both friendly and enemy air dive-bombed the strafed elements of CCA. We were several miles beyond the "bomb line," but were surprised that our own air did not recognize American tanks and our yellow smoke identification grenades.

All enemy fire was accurate and well-timed, but used so sparingly as to make location of their weapons impossible. After dark on 11 July, a patrol discovered that a volume of

Map outlines route of Co. H, 66th Armored Regiment, and G Co., 41st Infantry Regiment, in attack on Canicatti, a small city in southwestern Sicily. In photo above, taken by Army Signal Corps photographer prior to attack, SSG Tim McMahan, a member of author's crew, awaits signal to move out from Ridge A.



The Attack on Canicatti, Sicily
— July 12, 1943 —

HE fire delivered before dark by tanks of Co. H (which had replaced Co. G on the ridge) and mortars and assault guns of 3rd Bn., 66th Armored Regiment, had unwittingly knocked out or driven the crews away from four self-propelled guns in a small village one-half mile away, below us and to our immediate front, at the base of Ridge A.

Information on Friendly and Supporting Troops: By the morning of 12 July, all of CCA was assembled, resupplied, and ready to attack Canicatti.

All elements of CCA were well-trained but were new to battle. Morale was excellent, but some loss of control had resulted during the first sudden appearance of heavy enemy resistance.

On 11 July, the day before the attack on Canicatti, I had reconnoitered for tank firing positions on Ridge A before shooting up the village at the base of the hill. During this reconnaissance, I had asked several infantry officers and men if they had spotted the source of the fire that had knocked out the three G Co. tanks. None of them had thought to observe for distant muzzle blasts or other indications of antitank positions, although they were present during the antitank fire and saw the tanks get hit. Their chief concern had been to locate machine guns or other weapons threatening the infantry.

Although they were glad to have tanks help them, *they did not seem to realize that there were ways of helping the tanks. Probably we tankers had failed in training to advise the infantry of our needs.* The following paragraph is another example of this.

During the above reconnaissance, my company was temporarily attached to the 41st Armored Infantry. The infantry commander was tentatively planning to employ my company in an attack on the village at the base of Ridge A. The tanks were to go around the right shoulder of Ridge A and attack the village from the flank. When I asked what the infantry was going to do, the answer was, "When we see that you have reached the village, we will come down and occupy it." Not being satisfied with this, I asked three infantry small unit commanders how closely they would follow the tanks. Their attitude was that with our armor we could easily destroy all resistance in the village before they entered it. Darkness occurred at this time, and the attack was called off. We learned later that we had eliminated the four guns mentioned above.

Special Situation

As company commander of Co. H, 66th Armored Regiment (medium tanks), I received the following or-

The following excerpts are from a talk by Dr. Perkins delivered before an Oregon civic group.

ON JOINING THE 2D AD

"...My introduction to the 2d Armored Division was rather exciting. The first night in the bachelor officer quarters I woke up at 5 a.m., hearing a fantastic racket outside. I jumped up, looked out the window, and couldn't see anything, but it sounded like a hundred giant iron cogwheels rolling unclad down an iron roadway. I thought that all the war chariots of ancient Troy had been rolled out. Of course, it was a tank column going by..."

REMEMBERING COMPANY H, 66TH ARMOR

"...Company H...was a famous company directly descended from a tank company in WW I. One of the members of old Co. H, during WW I, was a Corporal Roberts, who won the Medal of Honor when his tank rolled over into a shell hole full of water and he shoved his crew out before he drowned. Camp Roberts in California was named for him. We had one other Medal of Honor winner in Company H, after I was in it; Captain James Burt got it in Aachen, Germany... Company H was a great outfit. The 1st Sergeant was only the third 1st Sergeant since WW I, Sergeant Nethken. We had some very tough old professional sergeants, some of whom had reserve commissions. One of our maintenance sergeants became a colonel before I made captain..."

LIVING WITH TANKS

"...If it was cold and rainy, it was just miserable. You had to choose between sleeping on the ground in a bedroll to try to keep dry and warm or sleeping in the tank, draped over some of the equipment in great discomfort, often getting cold and chilled. In the Sherman tanks, it wasn't quite so bad for the first two hours of the night because the great final drive housing with the transmission housing gearbox had 50 gallons of oil in it. That oil stayed warm for a couple of hours, so you could at least sleep for a while without getting too cold...Those Sherman tanks cost $60,000 each. Compare that with $2,200,000 today..."

MOVING OUT

"...The last attack I was in was the biggest, the attack on Canicatti, Sicily. Perhaps a hundred of us tanks moved off some hills and woods down into a rolling valley. The ground was really shaking. The trees were vibrating. The leaves were trembling. And my heart was hammering my ribs..."

ON EARLY TANK DIESELS

"...For awhile in 1941 we had radial, 9-cylinder Guiberson diesel engines, the most powerful engine for its weight then in use. But they were very hard to start in very cold weather. They had a pipe that came into the crew compartment from the initial firing cylinder. You'd crank the engine just past the top of compression on that cylinder, put a blank shotgun shell in a chamber at the end of the pipe in the fighting compartment, close the chamber, pull the trigger, and the gun would fire and spin the engine. In cold weather, they wouldn't start very well..."

GETTING HIT AND GETTING OUT

"...We had an evacuate-tank drill and could evacuate an entire crew in five seconds. When my tank was knocked out, everybody came out through the turret. An armor-piercing projectile happened to get a freak hit on the muzzle of my cannon, which saved our lives, because it would have gone right through the tank if it hadn't hit the muzzle. It tore the whole gun loose from the gun mount, richocheted down, hit the hull, and turned the whole front slope plate of the tank red hot, so the driver and machinegunner were not about to get out through their own hatches..."

ders about 1000, 12 July:

- My company was to move out at 1230, as a covering detachment, leading the attack of CCA on Canicatti.
- Three rifle platoons of Co. G, 41st Armored Infantry, were to ride on my tanks.
- Our mission was to contact the enemy, develop the situation, and if possible, seize and hold the roads leading into the hills at the far side of Canicatti.
- I was to decide during the attack whether to go through or around the city.

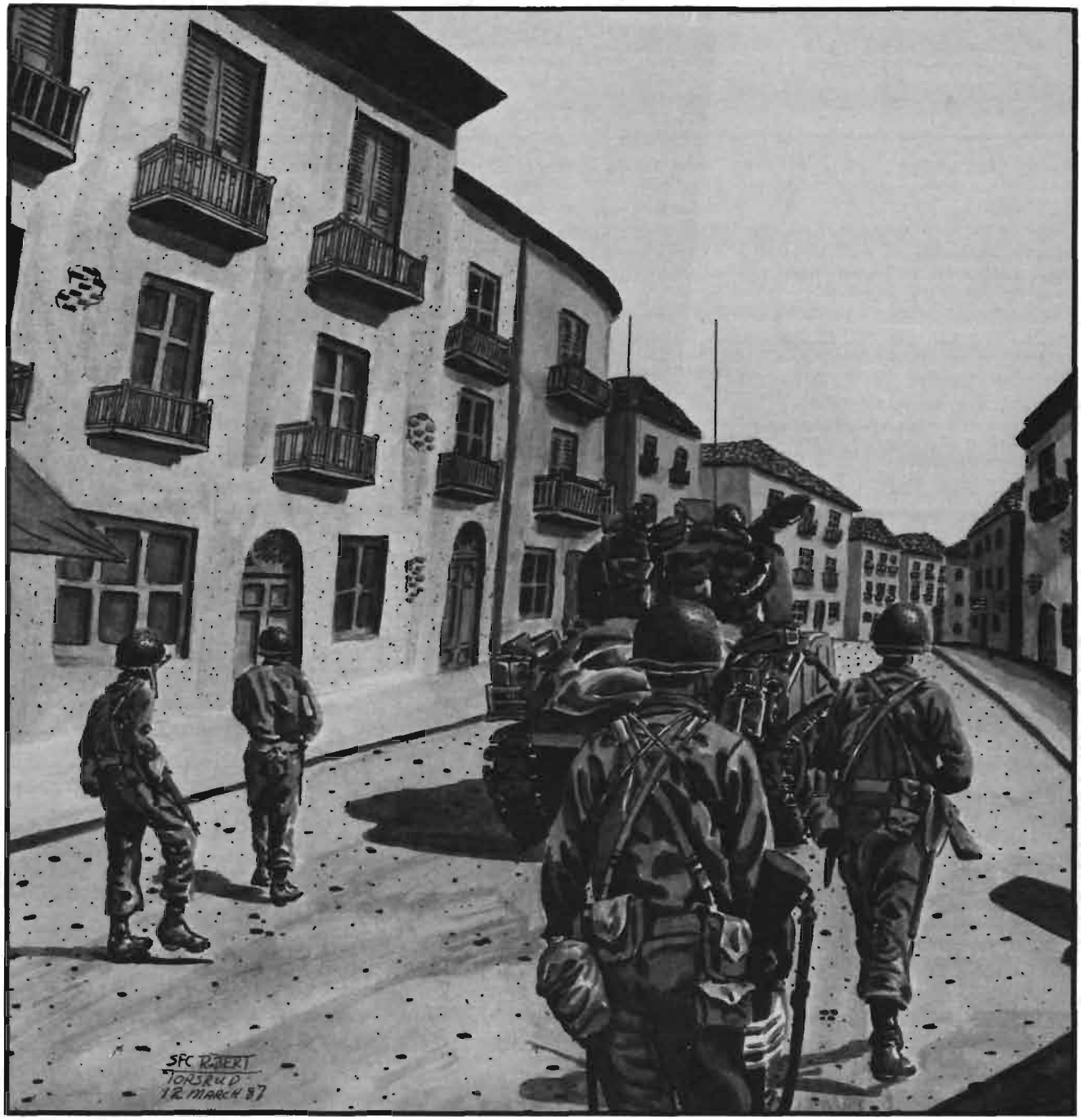
My tentative plan was to go through the city, as steep hills bordered the sides and rear of the city. The balance of the assault echelon, composed of 3rd Bn., 66th Armored Regiment, minus Co. H, and 3rd Bn., 41st Infantry, minus Co. G, was to follow my company by bounds, giving support as the situation developed. The infantry was mounted in halftracks. Two battalions of armored artillery were to give continuous support. The platoon leaders and I had radio communication with both the FO and FDC. An air bombardment of Canicatti preceded the attack. No detailed reconnaissance reports of the terrain or enemy were available.

In view of my mission and our heavy support, I decided to advance on a broad front to screen a mile-wide zone of advance. The platoons were to support each other when possible but were to rely upon fire and maneuver within platoons for security and continued advance if part of the company was held up by bad terrain or resistance. We agreed that the tank-mounted infantry would dismount when resistance was encountered and assist the advance of the tanks. For liaison, the infantry company and platoon leaders were to ride on the tank company and platoon leader's tanks. No other means of liaison or communication were arranged.

Orders were issued to the tank and infantry platoon leaders early enough to allow plenty of time for additional visual reconnaissance and assignment of the infantrymen to tanks.

The Action

This account of actions during the attack includes chiefly inci-



dents involving the infantry-tank coordination. Many other details are omitted:

The attack proceeded for two or three miles against very light resistance. Some enemy artillery then fell on elements of the support echelon of CCA which was just leaving Ridge A. When Company H had approached within three-quarters of a mile of Canicatti, reconnoitering by fire on a broad front, accurate enemy artillery fell on each platoon of tanks. None of the tanks was hit, but most of the infantry were forced to dismount and take cover.

I moved the tank platoon I was with to the right for better defilade, but the enemy artillery followed us. Some of the enemy artillery then shifted back to other attacking units. At this point, I was ordered to move on into the city. As it was impossible for me to regain contact with the dismounted infantry, and as it seemed necessary to evade the enemy artillery, I ordered the tank platoons to move at top speed to positions nearer the city without trying to pick up the infantry.

It was then seemingly apparent that infantry should not have been placed on the leading wave of tanks. If mounted on the following tanks, they probably would have ridden farther forward.

Company H reached the edge of the city without loss. Two of my platoons were out of my sight most of the time, but we had good radio contact. To achieve our mission, we had to go through the city without infantry support, so I ordered each platoon leader to take a separate street and move fast, in a staggered column formation, firing all weapons. Each platoon had previously been assigned roads to secure on the far (upper) side of the city. We knew that we decidedly needed in-

fantry support, but had no way of contacting the company that had been with us.

The lesson learned here was that several methods of infantry-tank liaison should have been established to meet varying situations.

As we entered the city, we were still hoping that the 3rd Battalion, 41st Infantry, would catch up with us in their halftracks. We were told later that they had dismounted when the first artillery fell near them and had walked one and one-half miles to reach the city. This greatly delayed the arrival of infantry in the city. I believe the unnecessary dismounting took place because they had been instructed to "Dismount at the first resistance."

It should have been specified what type of resistance would necessitate dismounting. As their halftracks had received no direct fire, they could have remained mounted.

An incident of minor importance occurred at this time. I read that Co. G, 66th Armored Regiment, following close behind us, had one tank hit by an artillery shell. As the tank burned, its crew, taking cover near the tank, received some fire from friendly infantry. The tank may have been difficult to identify in flames, but we wondered if our infantrymen either were not familiar enough with the distinguishing features of our tanks or were careless in identifying vehicles.

Although Canicatti was thought to be filled with snipers, there was no resistance to the first tanks to enter the city. We tried to follow the back streets and fired all our weapons at windows, balconies, roof parapets, and street intersections. When the platoon I was with reached the upper (northwest) edge of the city, my tank drew fire from some large-caliber antitank guns located 2,500 yards away on a ridge overlooking the city. The only protection available for my tank was the partial concealment of a bushy tree ahead of me. Several HE shells missed my tank before we reached concealment, but I happened to see the muzzle blasts of three of the enemy weapons. Only two or three other tanks were able to get into protected firing positions. When we all opened fire again, we may have put the guns I had spotted out of action, but other weapons outside our field of view kept firing and knocked out my tank, wounding two of us. As my crew and I ran 100 yards back to the edge of the city, we were fired upon with HE, and by machine gun fire from a short range.

Soon after this, I met an infantry officer and several men who had stayed on our tanks throughout the whole attack. I asked them to work forward and help us spot some more antitank guns, but they said the machine gun fire would prevent it. I suggested that they follow closely behind two of my tanks through an olive orchard, first to point out the machine gun positions to us, and then to help us locate the antitank guns. Their answer to this was that the tanks drew too much fire for them. My next thought was that they could follow at a distance, or off to one side, but this would not have been effective because the infantry had no tracers, radios or other means of designating targets to us.

The significant fact here was that in the middle of a battle we were arguing about points and techniques that should have been developed and practiced in training.

The enemy positions were eventually taken by coordinated tank-infantry-artillery attacks late 12 July and early 13 July. These attacks were well-coordinated on a big scale, but there was very poor liaison between small infantry and tank units. Thirteen tanks of Co. G, 66th Armored Regiment, had to hold the top of one hill all night without infantry support, partially surrounded by German infantry. A company of the 41st Infantry was ordered to find the tanks and join them after dark, but they failed in this, apparently because *there was no means of direct communication between the two units.* The infantry probably would have been subjected to some of the hand grenades and antitank mines rolled down the hill in the dark (detonated by offensive grenades in place of fuses), and small arms fire directed at the Germans by the tank crews anyway. *The reason for this is that the infantry would have had no means of telling the tankers where they were.*

The lessons learned above are self-evident. The points of view are those of a tank officer. The infantry, too, must have had many criticisms of the poor coordination and our lack of understanding of their difficulties. The fault was in our training. In many combined arms exercises and firing problems, the tanks and infantry had attacked a common objective, and our coordination was good in those planned exercises. The tanks and infantry each used their own methods of advance over the most suitable terrain for each.

But we had not developed a technique of working together in small infantry-tank teams for situations where the infantry and tanks would have to help each other to advance.

We did not know how to help each other overcome the unforeseeable difficulties in reaching intermediate objectives. The experiences in Sicily led to a greatly improved understanding between infantry and tanks in the division.

1943 Photo

NORRIS H. PERKINS, M.D., was a captain in command of Co. H, 66th Armored Regiment during the Canicatti action. He was awarded the Distinguished Service Cross and the Purple Heart. Prior to going overseas, he had attended the tank maintenance course at the Armored Force School, Ft. Knox, and from April 1944 to October 1945 was an instructor, Tactics Division, Armored School, Ft. Knox. He was promoted to the rank of major and left the Army after the war to attend medical school. He resides in Portland, Oregon.

On the Death of LTG Samuel Myers

Editor's Note: On 20 March, 1987, Armor and Cavalry lost a great soldier, an aggressive commander, and a friend: Lieutenant General Sam Myers. General Myers has written several articles for ARMOR, and in each case, the reader has learned valuable lessons about leadership, cavalry and armor tactics, and doctrine. We recently received this letter from General Sam Myers' son, Colonel Sam Myers, Jr., Armor (USA, Ret.). Even in General Myers' death, we can learn about living as soldiers and leading as commanders. We print this letter for that reason.

Lieutenant General Samuel L. Myers died on March 20 in Del Rio, Texas, finally succumbing to pulmonary fibrosis and other complications of —. in an old soldier's words — "not having lived a very sheltered life." A frequent contributor to *ARMOR* dating back to the January-February 1937 issue of *The Cavalry Journal,* he very much appreciated the interest which his "Random Recollections" generated and was working to provide some "for the bank."

The rapport which he developed with the editor, Major Pat Ritter, was a source of pleasure to him in the past few months as his physical — but not mental — world narrowed. The insight which the editor gave in his "SCHWERPUNKT" last issue was very keen — "and therein lies another story," as General Sam would say...in this case an excellent object lesson for all us who follow the profession of arms.

From his detailed obituary it is clear that when he was not serving as Armor commander he was a planner of considerable capability. He was also a thoughtful husband who followed the advice from the Army and Army Mutual Aid to ease the burden on your family by "getting your affairs in order." When his daughter, Anne, and I were with him for several days before his death, he showed me a packet, "For My Executors," which he had started four years ago and kept updated. It contained all relevant papers, notification lists, and the plans for his passing — to include an obituary, with the note "When this happens you will not want to be forced to go over all this for the papers...and besides they will probably screw it up." There are at least two lessons here: compassion for your family and "if you want it done right...". In a separate page to his "kids" he penned "a suggestion or two for my obit which I hope that you will write." Based on the content I can think of no better forum for them than *ARMOR*:

"Our father was a formidable man. Determined to speak his mind, equally determined to sway those who thought differently. Father hurled himself at life with his chin thrust forward, eyes blazing and with an energy that made him seem to be always on the run. Sammy often said, 'He has a rocket on his tail.'

To him, life was combat and victory was not for the lazy, the timid, the slugabed, the mushmouth afraid to tell people exactly what was on his mind whether people liked it or not. He often said he was not on earth to win a popularity contest. He never listened to advice to slow down and, when it became apparent that his end on earth was inevitable, he accepted the fact with grace and pushed for a rapid termination."

Thank God for such men of honor and dedication and that our country sees fit to elevate them to positions of authority.

The military interment took place at Fort Sam Houston, Texas, on March 24, 1987. It was a beautiful spring day, sunny, a breeze snapping the flags but not obscuring the fifteen gun honors and three round volley. The ceremony was flawlessly executed by the most professional detail I have ever seen. Nearly every living family member, West Point classmates, and many friends gathered to pay last respects. As the crowd drifted away, I saw a stooped figure gently comforting my mother. He was a lawyer from Chicago who had flown in for the few hours, retired Major General "Mac" McNally of "The Race Track Gang." Of such devotion is the brotherhood of soldiers.

SAMUEL L. MYERS, JR.
Colonel, Armor (USA, Ret.)
Scottsdale, AZ

DRIVER'S SEAT: A Progress Report

Continued from Page 7

tems to tank ranges. The use of M2/M3, mortars, artillery, and aviation at the company/team level identifies a need for realistic firing exercises that include all safety requirements needed to ensure a successful but safe training environment. The master gunner can be trained to provide that assistance.

Commanders and soldiers have been coming up to me during my visits to units and commenting on the technical and tactical capabilities of their NCOs.

Noncommissioned officers now in the school house are those that have successfully demonstrated recent platoon sergeant time. This is a very important assignment for those responsible for training platoon leaders, platoon sergeants, tank commanders, and scout section segeants.

All of the programs I have addressed are needed to develop the very competent cavalry and armor organizations that can effectively operate in today's Army and also during mobilization. These NCOs will be the technical and tactical experts that we need to rapidly expand the force.

The increase in NCO positions in TOE and TDA units has increased turnaround time between permanent changes of station for stateside and overseas assignments. This is a significant morale factor for family members, and we can never afford to overlook the families in our planning for the Armor Force.

The increased turnaround time has also enabled Forces Command to use the stabilization of its Armor NCO leadership for a longer period. Stabilization is a must because of the demands of the National Training Center, if the organization is to be considered combat ready.

Assignment procedures for noncommissioned officers are being monitored, with emphasis on assignments to leadership positions for promotion. Noncommissioned officers are reporting to units with the skills to be a platoon sergeant or a first sergeant, depending on the individual's grade.

The major concern for all of us is the need to be playing from the same sheet of music. The leadership of the Armor Force (officers and noncommissioned officers) need to know the initiatives available to help them play a role in ensuring that those initiatives have a chance to grow and develop.

The morale and esprit of the units I visited in Europe were the best I have ever seen. New equipment, better maintenance facilities, improved barracks, successful training challenges — all add up, but I can't help believe that the competence and leadership of our officers and noncommissioned officers is the real reason.

I'd like to reach out and tell everyone what a tremendous job they are doing for the Armor Force. That's hard to do, but with the use of *ARMOR Magazine,* we can reach a significant number of soldiers and civilians. You guys are doing a great job!

Strength Training For Tank Crewmen

by Ed Tarantino

Introduction

The job of loader in a tank crew requires upper body strength and endurance. The push-up event on the APFT is to some degree a measure of upper body strength. However, it primarily measures muscular endurance in the triceps and pectoral muscles. Meeting the minimum standard, or possibly even scoring well on this event, does not necessarily mean that a soldier has sufficient strength and endurance to effectively load a tank main gun.

Formerly, a tank loader was required to load rounds weighing about 35 pounds. With the introduction of the M1A1 tank and the new 120-mm HEAT and Sabot rounds, the loader must now load rounds weighing over 50 pounds. In a combat situation these rounds must be loaded repeatedly, in a moving tank, possibly as often as every 4-6 seconds. Most tank crewmen have experienced few problems in the past. However, the additional weight may reduce efficiency if special attention is not paid to muscular strength and endurance training.

The normal physical fitness training program followed by most units in the Army does not include progressive resistance training for all major muscle groups. This is primarily due to time constraints and lack of sufficient equipment to train large numbers of personnel. Tank crewmen, particularly loaders, should be given the time and resources necessary to ensure peak performance.

Depending on the size of the individual performing the loading, and the particular method that is used, most of the major muscle groups of the upper body and torso are employed. For this reason, a well-rounded strength program is important.

In order for the program to be effective, commanders must see to it that tank crewmen are given the time and the equipment to conduct muscular strength and endurance sessions 3 times a week for 45-60 minutes.

Tank crewmen must continue to participate in those parts of the unit's normal physical training program that develop or maintain flexibility, agility, cardiorespiratory endurance, and unit cohesion. If time permits, soldiers should run for 20 minutes following some of the strength training sessions. This will help to ensure that they get the recommended 3-4 aerobic sessions per week.

Strength Training Program

The program consists of two distinct exercise routines (see Figures 1 and 2). Each routine is to be followed for alternating periods of two months. For example, follow Routine #1 for two months then Routine #2 for two months, then revert to Routine #1.

Soldiers perform the exercises in both routines for three sets of 8-12 repetitions unless otherwise noted. The soldiers should be familiar with the guidance provided in FM 21-20 for selecting starting weights, warm-up, and cool-down. Illustra-

Figure 2
Routine 2

Warm-up (FM 21-20)

Exercise	Sets	Repetitions	Muscle Groups
Leg Extension	3	8-12	Quadriceps
Leg Curl	3	8-12	Hamstring
Inclined Bench Press (Barbell)	3	8-12	Upper Pectoral, Deltoid, Triceps
Alternate Bent-Over Rowing (Dumbell)	3	8-12	Lats, Rhomboids, Teres, Spinal erectors, unless you support yourself with one hand
Alternate Standing Press (Dumbell)	3	8-12	Deltoid, Triceps
Alternate Dumbell Curl	3	8-12	Biceps, forearm
Triceps Push-downs (Cable)	3	8-12	Triceps
Reverse Wrist Curls (Palms down)	3	8-12	Forearms
Rotary Torso Machine or	3	8-12	External/Internal Obliques Abdominals
*Side Bends (Dumbell)	3	12-20	External/Internal Obliques Abdominals
Cool-down (FM 21-20)			

*This exercise is to be used if a Rotary Torso Machine is not available.

tions of most of the exercises are in Chapter 3, of FM 21-20.

The two routines can be accomplished using free weights, exercise machines, or a combination of both. Soldiers should train with a partner for safety, convenience, and motivational reasons.

Rest between sets should be limited to 60-90 seconds in order to finish the routine in 45-60 minutes.

A high quality Rotary Torso Machine is important in this program. The movement on this machine closely resembles the twisting motion a tank loader uses to place the round in the main gun. This movement is difficult to duplicate using free weights. The external and internal obliques can be exercised, however, using the abdominal twist on Page 3-9 of FM 21-20.

Another execise for the oblique muscles is the Side Bend. From a standing position, the soldier holds one dumbell in the right hand and bends to the right side. He then bends to the left side to achieve a full range of motion. This is considered one repetition. After completing 8-12 repetitions, place the dumbell in the left hand and repeat the exercise.

A review of Chapter 3 in FM 21-20 will provide a good background for soldiers beginning this program.

Figure 1
(Routine #1)

Warm-up (FM 21-20)

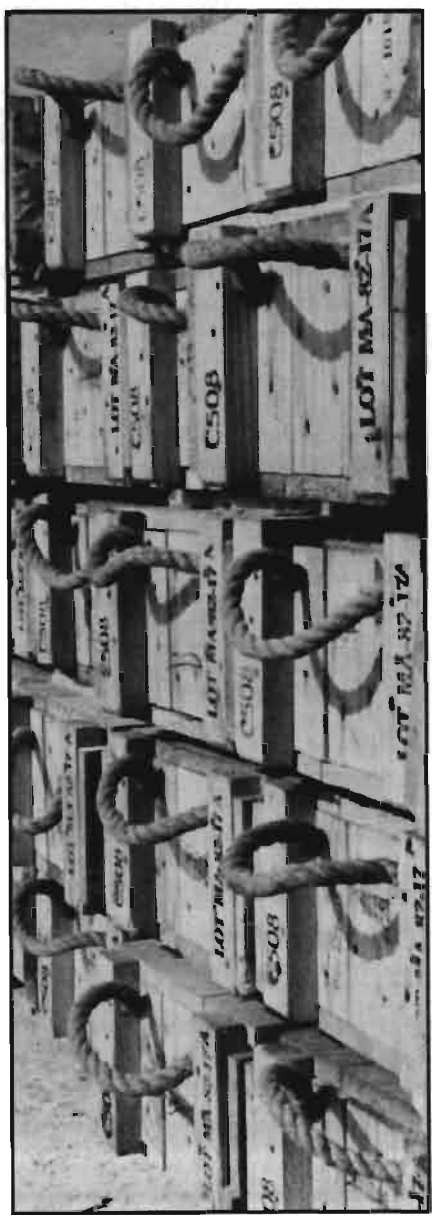
Exercise	Sets	Repetitions	Muscle Groups
Squat	3	8-12	Lower body and torso (especially quadriceps and gluteal muscles
Bench Press (Barbell)	3	8-12	Pectorals, Triceps, Front Deltoid
Bent-Over Rowing (Barbell)	3	8-12	Lats/Rhomboids, Teres, Spinal Erectors
Seated Press (Barbell)	3	8-12	Deltoids, Triceps, Trapezius
Biceps Curl (Barbell)	3	8-12	Biceps, forearms
Parallel Bar Dips	3	8-12	Triceps, Pectorals, Front Deltoids
Shoulder Shrug (Barbell)	3	8-12	Trapezius, forearms
Wrist Curl (Palms Up)	3	20	Forearms
Abdominal Twist	3	15-20	Abdominals, Obliques
Cool-down (FM 21-20)			

ED TARANTINO, Education Specialist at the Soldier Physical Fitness School, Ft. Benjamin Harrison, IN, holds a bachelor degree in physical education and health from Montclair State College, NJ, and a masters degree in physical education from Ball State University, IN. He served three years in the USMC as an engineering officer and later taught and coached at the high school level in Indiana. He has been at his present position four years and has contributed to FM 21-20 "Physical Fitness Training," DA Pamphlet 350-21, "Family Fitness Handbook," DA Pamphlet 350-15, "Commander's Handbook on Physical Fitness," and DA Pamphlet 350-18, "Individual Handbook on Physical Fitness."

Winning the Peacetime Battle

The Fundamentals of Training Tank Gunnery

by Captain Kris P. Thompson, Captain Charles R. Abbott, and Captain Walter F. Ulmer



"I switched to the intercom.

'Kilyon, you ready?'

'Yes, sir, but I can't see anything?'

'Don't fire till I tell you. It might be one of ours. Gideon, have you released the safety?'

'Yes, sir.'

'Boaz.'

'Sir.'

'Switch on.'

...gripping my glasses, I looked down Boaz' beam straight at a Syrian T-55 — 50 yards from me.

'Fire!'

With a boom the shell was gone, its flash dazzling my eyes. I strained to see if we had hit. Boaz switched off the beam. A flame climbed slowly by the suspect. A horrible thought that maybe I had been wrong was dispelled as I saw the flash eliminator on his gun. Only T-55s had those."[1]

Training tank gunnery comes down to teaching tank crews to hit a target with a projectile in a rapid manner. Successfully achieving this task has been the subject of a tremendous amount of thought, study, and literature over the years.[2] Although a multitude of methods, devices, and programs are currently in use, there are several fundamental components of a successful gunnery program. This article will discuss what the authors believe are the critical components based on experiences gained preparing for a recent successful gunnery density.

There are many parameters within which training takes place in today's Army, and thus certain assumptions must be made. First, training resources are limited — range availability, training ammunition, time, and now even vehicle mileage are precious commodities which must be micromanaged to ensure optimum use.[3] Each unit has its own mix of available training aids and devices. Some training devices, primarily UCOFT, are not available in some units. Innovation is critical in finding ways to train different gunnery skills with the aids on hand.

Second, training distractors peculiar to each unit are facts of life which must be foreseen and anticipated.

Third, throughout the training cycle, there will be personnel turnover. This, when taken together with a fourth assumption — that gunnery skills are perishable over a short period of time — means that basic gunnery training must be recurring and that skills must be drilled repetitively to retain proficiency.

Lastly, each unit will have a different style of training based on local conditions and the leadership environment (i.e., centralized vs. decentralized, event-oriented vs. sustainment-oriented), discussion of which is beyond the scope of this article, but the program components must be and can be executed through whatever style is present.

The Training Program

Component 1. Leadership and personnel management. The most important element of a gunnery program is leadership. Leadership here has a twofold impact on gun-

nery success. First, the leader must be technically proficient. Under current MTOEs, tanks commanded by leaders make up a high percentage of the crews and it is more critical than ever that the leader, whether he is a lieutenant colonel, captain, lieutenant, or sergeant first class, be a proficient crew member. The tradition-bound principles of "lead from the front" or "lead by example" are as applicable here as on the real battlefield — leaders should strive to be the most proficient tank commanders in their units.[4]

Second, it should be made clear from the beginning that the chain-of-command, not master gunners or committees, are *responsible* for gunnery training. All crew evaluations should be done by the platoon leader or platoon sergeant, and the commander. By involving platoon leaders and commanders in actual training and evaluation, not only does the quality of training increase but the proficiency of the leadership is greatly improved. Master gunners should be used to assist the chain-of-command in training in three primary areas: technical advice and expertise, training quality control, and periodic evaluation to check proficiency status.

Of course, leadership principles and techniques apply to gunnery training just as they do to all other activities in the Army. Leadership is put to the test when a new platoon leader encounters the "old tanker syndrome" — which is indicated when he hears such lines as "we've always done it this way" or, "I qualified last year — I don't need any more training."[5]

Management of soldiers is a critical part of leadership, and in the gunnery business, crew stability is essential. Crews must be stabilized as far in advance as possible, especially tank commanders and gunners. Battle rosters should be micromanaged year-round and unnecessary moves avoided. Items such as promotions and PCS or ETS orders must be forecast. Trust, teamwork, and cohesion are all important in gunnery and it is only built through working together over a period of time. Also, the turret is no place for so-called "personality conflicts," or forcing together soldiers who have had a history of not getting along. Personalities, capabilities, and existing proficiency all need to be evaluated when making crew rosters.

Component 2. Training Techniques, Philosophies and Environment. The entire gunner program must be focused on one mission — to win on the qualification runs by beating, and beating decisively, the training standard (i.e. the points needed to distinguish). From the beginning, the entire unit must be well aware of this objective.

There are several ways to implement this philosophy:

First, the chain-of-command must instill the will to win and a competitive spirit. With imagination, many competitions can be instituted, but as a minimum, all live-fire scores prior to qualification should be posted conspicuously to instill crew, platoon and troop/company competition. Incentives should be given and advertised for strong performance. A well-thought-out, objectively scored, competition process, and a responsive, impact-oriented, incentive program can mean the difference between mediocre and outstanding gunnery.

Next, the phrase "train and evaluate to standard" must be explained to, and understood by, all leaders and soldiers alike. The preparation training for qualification gunnery should be conducted on a pass/fail basis with 100 points — in other words a perfect engagement — as the standard, as opposed to the 70-point line or "mere" qualification standards. This means more than it might initially appear.

Written tests covering vehicle knowledge, tasks, conditions, standards and course knowledge (see below) should be given to all crewmen covering their particular areas. These tests can be instruments for developing "depth." For instance, a loader who will be a gunner at the next qualification gunnery will already know the tasks and manipulations to be encountered as a gunner. Preprinted DA Form 2404s can be used to record data from prepare-to-fire checks (i.e. battle-carry ranges, tube wear, etc.) and from the daily boresight. This not only allows one means of evaluation, but can be used to isolate accuracy or calibration problems later (i.e., a drastic change in boresight data after two months of readings close together would be suspect).

Prepare-to-fire checks should be checked by an evaluator prior to every run — whether dry or live fire, for practice or qualification. It must be stressed that these checks must be "by the book." A single oversight could mean death on the battlefield and, therefore, a single

mistake here should be graded as an automatic "no go." Further, on current tank gunnery tables, most engagements require the crew or unit to adjust their equipment based on the conditions of the particular task (i.e. NBC, LRF or thermal failure, etc.). Thus, "pre-engagement" crew station preparation is critical — for instance, ensuring that battle-carry is readjusted, or checking that the fire control mode switch is in normal mode, etc. These must be checked by the on-board evaluator and, again, all checks should be required to be completed properly to receive an overall rating of PASS.

Lastly, and perhaps most importantly, each run (including TCPC, preparatory live-fire tables, subcaliber or scaled) should be evaluated "full-up" by a tank crew evaluator and a complete after-action review given at the completion of each run. Evaluation aids, such as stop watches or timers and tape recorders, should be used as much as possible. Here it is critical that the leadership literally "get into the turret" to evaluate, coach, and train. Their evaluations must always be professional. To facilitate this activity by the leadership, ranges should be administered and run as much as possible by non-firing personnel.

Training must be imaginative; given the proper motivation and encouragement of innovation there are many facilities which can be used for tank gunnery training. The motor pool, wash racks, local training areas or maneuver rights areas can all be used for some phases of the training. In this area, it is important to note one truth. "Live" rounds and hands-on training on the soldier's own vehicle are *always* the best training tools. Any training conducted with a simulator or device should only occur when the "real thing" cannot be used and, when used, these training aids must recreate as closely as possible the environment under which the soldier is expected to perform (UCOFT is a fine example of this principle).

Finally, the "crawl, walk, run," or progressive training technique, must be used. This type of training is made necessary from assumptions three and four above and must be sequenced or cycled to mesh with the timing of the qualification exercise. Again, the merits of sequencing in an event-oriented or sustainment-oriented format are beyond the scope of this article.

The central theory of the foregoing techniques is to "practice like you intend to play." Whether the "game" is a qualification run on Tank Table VIII, X, or XII, or a run across a real-world battlefield, attention to detail, precision, and perfection must be demanded from each crew.

Component 3. The Training Sequence. The sequence of training the host of tasks necessary for proficient tank gunnery poses a complex problem — regardless of the event oriented/sustainment controversy. It is clear, however, that in view of assumptions 3 and 4, "basic" level gunnery training must take place periodically or the skill is lost. Because of this, the commander must plug-in the training of all gunnery tasks — individual or crew, basic or advanced — at an appropriate time to maximize training value year-round while accomplishing "the mission" on the qualification exercise.

Training should be organized into a logical and chronological progressive program as follows:

"Crawl" Phase — Basic Skills and Knowledge: (a) Sustainment training/retention, (b) Vehicle knowledge.

"Walk" Phase — Skill Development: (a) Individual manipulation, (b)Crew level applied skills.

"Run" Phase — Qualification: (a) Course preparation, (b) Qualification exercise.

Again, two points need to be emphasized. First, this is "progressive" training; therefore, skills learned in the "crawl" phase must be continually drilled and reinforced during subsequent phases. Loss or degradation of skills once learned can waste valuable training time and a special effort must be made to remedy the deficiency. Second, the actual timetable will vary from unit to unit based on local training conditions and commander's guidance.

"Crawl" Phase Basic Skills & Knowledge (See table 1-1)

Sustainment Training/Retention. During this subphase, the basis for the actual run to the finish line is formed. First, throughout the training cycle, new soldiers must be integrated into the unit. Depending on whether a soldier is coming from another unit or from a service school could mean a significant difference in the level of train-

ing achieved by the soldier previously and how much was retained. This should, of course, be evaluated closely by the gaining unit prior to slotting on a battle roster. Other important indicators would be: Excellence Track soldiers, GT scores, and education level.

Sustainment training should include certain basic skills (see vehicle knowledge, individual manipulation below), as a minimum, and obviously more sustainment training that is conducted for gunnery means the program will be farther along at the start. Other training, not usually considered to be sustainment, is available, such as SQT, turret PMCS, and prepare-to-fire checks.

What is probably the most important part of this initial phase is crew stabilization. As a milepost, all crews should be locked in not less than 120 days prior to the qualification exercise. Thereafter, all changes should be made only upon extreme circumstances (emergency leave, etc.).

Vehicle Knowledge. Too often this phase is forgotten or neglected — usually on the excuse that "I learned this at school" or "I remember all this from last year, we don't need to do it again." Leaders absolutely cannot be persuaded by this train of thought. The critical element to this subphase is a tank vehicle commander's course. This should be executed in a "train-the-trainer" format emphasizing leadership proficiency and also teaching training techniques which can be used. The exact POI for such a course must be locally tailored, but should include the tasks, conditions, and standards of the qualification exercise as well as the procedures used for scoring (which indicate what Fort Knox and the Army consider to be important for winning in combat). Training and briefing of the technical capability of the vehicle (i.e. field-of-view, laser dispersion, computer operation, etc.) can be best done in this course. Of course, units equipped with UCOFT have a "leg-up" as that system teaches vehicle capabilities and limitations. Employment of the vehicle — the mechanics of engaging targets — also should be taught. The most important area of the entire course is the hands-on portion, focusing on developing perfection in the technical proficiency of the leaders in the tasks noted in Table 1-1. This is where the leadership makes or breaks the proficiency barrier (How can a unit commander who does not know how to boresight correctly, according to the -10 manual or GTA, critique or even evaluate his subordinates?).

Also during this phase, the tank crew gunnery skills tests (TCGST) should be trained for and given to all crewmen in the unit. Not only is this worthwhile training, but most major training areas require suc-

TABLE 1-1

CRAWL PHASE
Basic Skills and Knowledge

Sustainment Training/Retention

- Incorporation of new soldiers
  - Evaluation of skill level
  - Integration
- Sustainment training (as a minimum)
  - UCOFT/or manipulation drills
  - Base knowledge
    - SQT
    - Crew-served weapons
  - Maintenance on fire control system (ongoing)
- Crew Stabilization
  - Evaluation
  - Battle roster

Vehicle Knowledge

- Tank Commanders Course
  - Technical capabilities of vehicle
  - Tasks, condition and standards of qualification exercise, scoring
  - Hands on
    - Power station up
    - Prep-to-fire
    - Boresight
    - Crew-served weapons
    - Immediate action
      - Misfire
      - Stoppage
  - Engagement techniques
    - Multiple targets
    - Crew-served weapons
    - Battle-carry/battlesight
    - Adjustment/reengagement
- TCGST
- UCOFT

TABLE 1-2

WALK PHASE
Skill Development

Individual Manipulation

- Power-up station/prep-to-fire
- Switchology
  - UCOFT
  - Drill
  - Basic TCPC course
- Tracking
  - UCOFT
  - Worm boards
  - Moving targets
- Night/NBC conditions
- Driver's course
- Loader training (concurrent)

Crew Level Applied Skills

- UCOFT (TC with gunner)
- Boresight drill
- TCPC/TCQC - dry fire rehearsal
- Advanced skill integration
  - Battlecarry
  - Immediate action
  - Adjustment/reengagement
- Subcaliber/scaled ranges (OP)
- Preparatory tables live fire
  - Table VI
  - Table VII

cessful negotiation of such a test prior to going down range.

"Walk" Phase Skill Development (See table 1-2)

Individual Manipulation. Engaging varying target arrays requires a great deal of dexterity, hand-eye coordination, and repetitive hands-on training. "Switchology" — individual manipulation of the operating and fire controls of the vehicle accurate and fast enough to beat the standard — is the most critical element here. An example of the skill being described here is a gunner on an M1 switching from three- to ten-power field of view or from main gun select to machine gun select — all without moving off the brow-pad and while laying on the target. Whatever "switchology" is necessary must be identified early on by examining closely the tasks, conditions, and standards of each engagement. These manipulations can be trained in at least three different ways, all being effective: UCOFT; drill (rehearsal of the engagements in the turret by the crew); and initial/basic TCPC stressing proper manipulation. Onboard drill is preferable as the sensitivity and peculiarities of each tank are special and unique, but UCOFT and TCPC are respectable/acceptable alternatives — the former having the advantage of presenting realistic targets and the latter having the advantage of crew interaction and vehicle movement. These skills, together with tracking exercises (using the lase-track-shoot technique), make the difference between a skilled, proficient crewman and a crewman who is "familiar" with how to engage targets.

Leaders must be careful to ensure that "switchology" training takes place in the conditions or environment under which the soldier must operate. The two notable conditions here are night/limited visibility and NBC conditions. Starting here and throughout the remainder of the training program, all NBC training should be conducted to the specifications in the conditions (i.e. masks donned, particulate system on, hatches closed, etc.). These conditions make a drastic difference in switchology and all other gunnery training as well, and soldiers must be drilled to accomplish the required manipulations under these varying conditions. Driver and loader training should not be left out. A driver's course which develops the "steady platform" and a "smooth, rolling stop" is a must. All crewmen should be made to feel an important part of the team (as they truly are) and included in all evaluations and AARs.

Evaluating station preparation and prepare-to-fire checks should be initiated here. To properly conduct switchology and tracking, etc., most checks must be completed anyway — the crewman must learn to conduct proper power-up and preparation every time they get into their vehicle.

Crew-Level Applied Skills. This is the "put it all together" stage where the individual skills and knowledge must be molded into a coordinated, instinctive, and organized effort in the turret. The boresight drill should be *trained* at this time. It is a fact that boresighting properly within the time standard takes practice. Proficiency courses and dry-fire qualification courses should be set-up and used with a view to rehearsing the skills necessary to score points on the qualification run. UCOFT can assist the effort here as concurrent or additional training. Again, all runs should be evaluated and detailed AARs given to each crew upon completion. All available assets should be used to practice, as much as possible, in a game-like environment.

At this point, "advanced" gunnery skills need to be added in — primarily — adjustment/reengagement techniques, immediate action (misfire, stoppage) procedures, and the battle carry technique. All three are critical to wartime gunnery as well as qualification exercises.

Special note needs to be made of calibration and accuracy screening. This is the first real test of prepare-to-fire checks, boresighting procedures, and maintenance status and should be very closely supervised. Adherence to standards while training these procedures will make problems on the actual range minimal.

When the steel starts going down range during the preparatory tables (i.e., Table VI and VII) the evaluation and AAR effort must be re-

TABLE 1-3

RUN PHASE
Qualification

Course Preparation	Qualification Exercise
• Tasks, conditions and standards review • Pre-occupation recon - Leaders - Soldiers • Local conditions - Actions on obscuration - Dust-down/blow-down - Range fans, limitations - Course layout - Course roads - Firing positions • Provide TCEs for other units • Range administration planning - Range layout - Commo/maint positions - AAR area - Staging area - Ammunition points - Maintenance contact teams coordinated - Time planning - Occupation - Boresighting - Re-fire procedures - Advance party operations	• WIN! • Leadership - On the firing line - Pep talk • Management - Firing order - Sleep plan - Ammunition - Refires - Quick and precise boresighting

doubled. At this point, it should be fine-tuning and refining of manipulations and techniques with the added variable of increased stress/competition. A final note is that there *will* be an increase, albeit in unknown quantity, in points scored on the qualification run when more live rounds are fired on preparatory tables.

"Run" Phase Qualification (See table 1-3)

Course Preparation. A fine line must be drawn here between preparing the crew and unit to execute a qualification exercise on the one hand, and "G-2ing" the course on the other (the commander must decide what is necessary). Preparing the unit to administer/occupy the qualification range and ensuring all crews are knowledgeable of range procedures will result in maximum use of range time and the greatest training benefit. Unnecessary loss of this valuable range time because of inadequate equipment in the tower, or crews being unfamiliar with range procedures, is costly, especially in today's resource-restricted environment.

For the crews, preparation should begin with a detailed review of tasks, conditions, standards and the scoring process. All last minute questions should be resolved at this time. Constant, ongoing interaction between commanders and master gunners (periodic meetings of all master gunners and commanders is one method) is crucial to ensure proper understanding of engagement and scoring techniques. Both leaders and crews should visit the range prior to the qualification day and observe the occupying unit's layout and vehicles. All personnel must be briefed on local conditions and range procedures peculiar to the particular ranges. Further, at some point (in the "walk" phase preferably), opportunity must be given to practice with range conditions using TCPC or preparatory tables. Exactly when this training is initiated — "walk" or "run" phase — and how much practice is conducted, is up to the commander.

A wealth of knowledge can be derived from master gunners or other vehicle commanders who assist other units by performing duties as a TCE on the qualification range. This facilitates cross-fertilization of gunnery techniques between units and is a great training experience for the personnel involved. The unit should initiate planning for the qualification day and all live-fire ranges a minimum of 60 days out and complete this process at least 30 days out. The planning should be detailed and all units briefed ahead of time.

An advance party should recon the range lay-out prior to the day of occupation — regardless of whether it is for a qualification range or a preparatory table. This will help the unit avoid unpleasant surprises.

Qualification Exercise. Executing the qualification should be done using the same philosophies as had been relied upon throughout the training. First, the occupation must be pre-planned. A crew rest and sleep plan is essential — waiting in a firing line until 0400 can hurt performance. The "batting order" should be well-known ahead of time, and the commander will have to weigh and consider what his priorities are (i.e. leaders first, platoon by platoon, etc.).

Maintenance contact team representatives for automotive, fire control, and communications should not only be positioned in the staying or holding area but also adjacent to the actual firing line. Many problems can be avoided by on-the-spot repair behind the firing positions instead of moving and clearing the vehicle off the range for repair.

This is the point where leadership makes the difference. Pep talks and spending time with the soldiers prior to going down range is an effective technique. The leadership, at least at the troop/company level, belongs on the firing line — reassuring and answering last minute questions.

Component 4. Material Readiness. Material readiness is perhaps more important to gunnery than any other aspect of military train-

ing. All maintenance activities and support should be preplanned in detail. The supporting personnel are also "on the team" and their contributions should be recognized.[6]

At the crew level, accurate PMCS reporting and complete checks and services are a must. The crews must be able to recognize which faults impact upon their ability to accurately engage targets (even when the item is not included in the NMC category). Special gunnery checks should be done periodically or when any signs of trouble arise. Crew-served weapons and communications equipment PMCS are as important as any other checks. Communications problems are devastating to range use and any fault no matter how small, should be diagnosed and repaired immediately. Regular PMCS and quality scheduled services should keep the crew-served weapons in top shape.

The organizational maintenance element at squadron/battalion level should be the driving force — planning and scheduling all maintenance activity. Deferred maintenance should be prioritized at all levels to ensure that gunnery-related faults are repaired first. The response by maintenance personnel and crews must be rapid for both diagnosis and repair. The conditions in qualification tables call for a fully operational vehicle and if the crew holds up their end of the bargain at the PMCS level, the unit has an obligation to each soldier to ensure he is tested on a completely operational vehicle.

Conclusion

The Army owes a duty to the soldier to explain to him what he is being tested on, train him for it, then test him under the specified conditions — this is, training to standard. A successful Table VIII, when built upon and when wrapped together with quality section/platoon gunnery and tactical tables, will produce real battlefield gunnery proficiency. A well-run program will not only bring high qualification rates, but cohesion, esprit, and tradition that will stay with the unit far longer than the soldiers or the tanks.

When the qualification day or the real battle comes and all is said and done — its "game-time." Do your crews have what it takes to put cold steel down the throat of an enemy tank?

Footnotes

[1]Avigdor Kahalani, *The Heights of Courage*, Westport, Connecticut: Greenwood Press, 1984, p. 52.

[2]See LTC Jerry D. Malcolm, "An M1 Unit Uses Back-to-Basics Gunnery," *ARMOR Magazine*, March-April 1984, p. 32; BG James H. Polk, "Preparing For the Payoff at Bergen Hohne," *ARMOR Magazine*, May-June 1985, p. 41 (reprinting a previous article); Donald M. Kristiansen, "Factors in Gunnery Success," *ARMOR Magazine*, July-August 1985, p. 9.

[3]See Armor Conference White Paper, "Reducing Training Costs," *ARMOR Magazine*, July-August 1984, p. 28.

[4]LTG Arthur S. Collins, Jr., (Ret.), *Common Sense Training*, Presidio Press, Novato, CA, 1978, pp. 157-158.

[5]FM 100-5 *Operations*, 1982, p. 2-5, where it is emphasized that "the primary function of leadership is to inspire and to motivate soldiers to do difficult things in trying circumstances."

[6]SSG Frank Cox, "We Make It Happen," *EURARMY Magazine*, August 1985, pp. 22-24.

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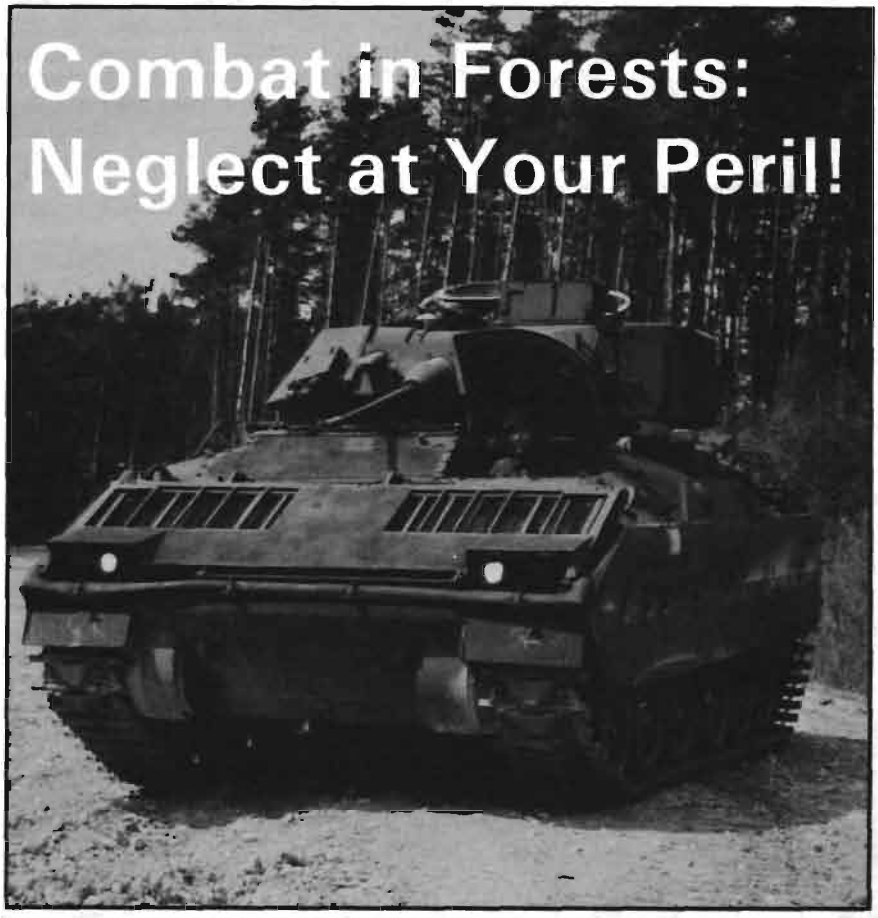
Combat in Forests: Neglect at Your Peril!



"A general should say to himself many times a day: If the hostile army were to make its appearance in front, on my right, or on my left, what should I do? And if he is embarrassed, his arrangements are bad; there is something wrong; he must rectify his mistake."

— Napoleon

The question whether a position is safe from armored attack requires careful examination. This can never be determined on the basis of map information alone, but must be thoroughly checked by ground reconnaissance. The Russian proved to be a past master of infiltration over the most difficult type of terrain and was capable of stubbornly pursuing his objective under almost incredibly adverse conditions.

DA PAM No. 20-231
Combat in Russian Forests and Swamps

Every commander of modern mechanized forces recognizes the need for open, unrestricted, high-speed avenues of approach if a "blitzkrieg"-style of warfare is to be truly effective. Also, every modern commander knows that a defending enemy will position his forces so as to cover those avenues of approach, bringing concentrated fires to bear on closing enemy forces that, ideally, have been stopped or slowed down by obstacles.

So, what will an attacking enemy do in the face of a strongly prepared defense? Will he not bypass such resistance and use a more devious route to reach his objective? Would he not, perhaps, use a more covered and concealed route to begin with? Would not such a route be safer and include an element of surprise over an antagonist trained to expect an approach along an obvious route, to the neglect of secondary approaches to his sector? Would not an approach through a seemingly-impassable forest be the perfect way to gain surprise and overwhelm a negligent enemy?

It is an all too prevalent and dangerous habit of U.S. tacticians to ignore so called "slow-go" and "no-go" terrain (typically forested and/or urbanized areas), and concentrate an entire defense along a high-speed avenue of approach that will, through the use of barriers, become canalized into a trap known as an "engagement area." There, direct and indirect fires will be concentrated in an effort to destroy an immobilized and surprised enemy. Horseshoe battle positions are emplaced around the killing zone and commanders then sit with crossed fingers hoping that the enemy will be "suckered" into the trap.

Can we really believe that the enemy will be inept? Will he not plan his approach carefully so as to avoid such occurrences? Do we feel that the enemy reconnaissance will be blind, and dumb as well?

Mind you, if an enemy force does move into an engagement area such as described above, chances are he will be destroyed. The effectiveness of such a defense cannot be denied. The problem is that too many U.S. tacticians put excessive faith in the enemy being so rash as to oblige him and enter the trap every time. So much faith is put into the idea that Russians will always bypass difficult terrain such as forests that inevitably those areas are lightly covered by a screen of cavalry or, at most, a sprinkling of infantry with no plan at all to defend against a strong enemy.

Ignoring difficult terrain can be a grave mistake. Believing that an enemy will not use covered and concealed routes such as forest trails can be fatal.

The Germans in WW II found Russians to be masters of woodland warfare. Here are some quotations from German soldiers who met those Russians in combat:

...Another specifically Russian battle technique was infiltration. It was a practice which especially suited the Russian, and of which he was a master. Despite closest observation of the avenues of approach, the Russian was suddenly there; no one knew where he had come from, nor how long he had already been there. Wherever the terrain was considered impassable, but was still kept under close observation to be doubly safe — just there the Russian infiltrated. He was suddenly there in substantial numbers and had already vanished into the earth...

...The Russians used their heavy KV1

and KV2 tanks as battering rams to crush the medium growth of timber...

...Shortly before the Russian operation, the commanders of the German panzer divisions had come to the conclusion that the forest was impenetrable...

...In an attack across open terrain with only occasional patches of forest, the Russians endeavored to reach those patches in the shortest possible time. The Germans found that forests had the same magnetic attraction for the Russians as inhabited places. Whenever the Russians planned a river crossing, one could safely assume that it would take place where woods or inhabited localities reached down to the banks of the river...

...Only a small patch of woodland, close behind the main line of resistance, was still occupied by Red motorized infantry supported by a few tanks and antitank guns. All attempts to retake this patch of woods had failed with heavy German losses. Even heavy, concerted, fires of strong artillery units could not force the Russians to yield.

The tenacious resistance was ended only by an attack of flame-throwing tanks, which burned the entire strip of woods to the ground....

DA Pam No. 20-230
Russian Combat Methods in WW2.

Can we expect any less of Russians today? I doubt it. The lessons they learned during their "great patriotic war" still form the basis for their strategy and tactics today.

What is the role of a tank in woodland warfare? One must remember that tanks can and have fought in every type of terrain. However, in forests, tank warfare will chiefly consist of desperate, close-in combat by infantry tank-killer teams in a series of ambushes in depth throughout the forest. A defense can consist of a roadblock covered by a dug-in tank that is, in turn, defended by dug-in infantry and a web of minefields. Tank units will become extremely decentralized with individual tanks operating under the control of an infantry squad or platoon. The preponderance of armor must be held in reserve to effect counterattack if and when the enemy breaks out of the forest back into open country. A tank in the forest is like a blind, work elephant that, without the sure, guiding hand of of a trained handler, will be ineffective in all endeavors. The sure, guiding hand of tanks in a woodland is the infantry. Tanks and infantry must be a team in every sense of the word, each team member knowing the other's strengths and weaknesses, and alert to compensate for those weaknesses while undergoing every conceivable stress and strain of combat. Now, in peacetime, is the time to forge those teams.

With the outbreak of war, it will be too late.

The Abrams tank and the Bradley fighting vehicle are marvels of American technology. Each vehicle can fight as well at night as in day, can fire accurately while on the move, shoot the periscopes off T-72s and BMPs at over two miles distance, and move about the battlefield with the speed and grace of polo ponies. These are marvelous things. But, in a forest, they are as naught. If we believe we will not fight in forests, we are naive. We must train to fight while under disadvantaged circumstances, as in forests, or risk certain destruction in the next war.

A forest can be both a friend and an enemy to a soldier. A well-planned defense may include forcing the enemy by fire into wooded areas where, thinking he is now safe from fire, he suddenly finds himself in a minefield, beset by close-range AT weapons, and caught in column on a forest road which becomes deluged with indirect fire and air-strikes — with no hope of maneuver out of the area.

Ground that is salted with woods and open areas throughout its depth (such as is commonly found in Germany) must be vigorously and tenaciously defended. Defensive positions must be mutually supporting — if only by indirect fire — and cause the enemy to be driven from the woodlands to an open area and back again into the forests, until he is bled white and can no longer move.

To neglect or weakly defend forested areas, especially if a friendly flank is anchored on one, is to invite disaster. The current USAREUR force structure is, in my opinion, entirely too tank-heavy to properly defend or attack in the type of terrain that covers our assigned sectors. More infantry is urgently needed. The Soviet force structure is correct. They will assault with hordes of motorized infantry that will open the door through inadequate defenses and allow follow-on tank armies to exploit to our rear. If we do not stem the original onslaught, using fortified and mutually-supporting towns in strategic valleys, and with determined infantry behind roadblocks on every trail and road that goes through a forest on the flanks of the towns, the Russians will move thorugh us like water through a sieve.

Combat in forests is an art that has been severely neglected. U.S. forces tend to concentrate defenses along woodlines to fire into open areas between, and make no plan to fight in the depths of the forest surrounding them. Study of past wars shows that an advancing enemy will inevitably treat woodlines as targets and saturate them with indirect fire and air strikes before approaching.

The most effective defense was established in the depths of the woods in the form of roadblocks and antiarmor ambushes by expert teams, with all approaches liberally salted with mines. If the enemy found the woodlands too strongly defended, they would attempt to bypass through the opening between woods on the flanks. There, they were met by more minefields covered by devastating direct and indirect fire that would force them back into the seemingly safer forest. The cycle would be repeated until the enemy had been bled to death.

In summary, as any tactician or strategist knows, it is better to attack across difficult, well-nigh impassable terrain that is lightly held than across open ground which is strongly defended and where such an attack is expected. This fact cannot be lost on our potential antagonists. We cannot expect our enemies to mindlessly expend themselves against our inevitable traps along high-speed avenues of approach. We must expect, rather, to be attacked from unexpected routes, where we least anticipate action and at the most inconvenient time.

We must structure our force and train our soldiers to fight in every sort of terrain under every type of circumstance, with special consideration given to the cold reality of forest fighting where our technological advantages will be greatly diminished.

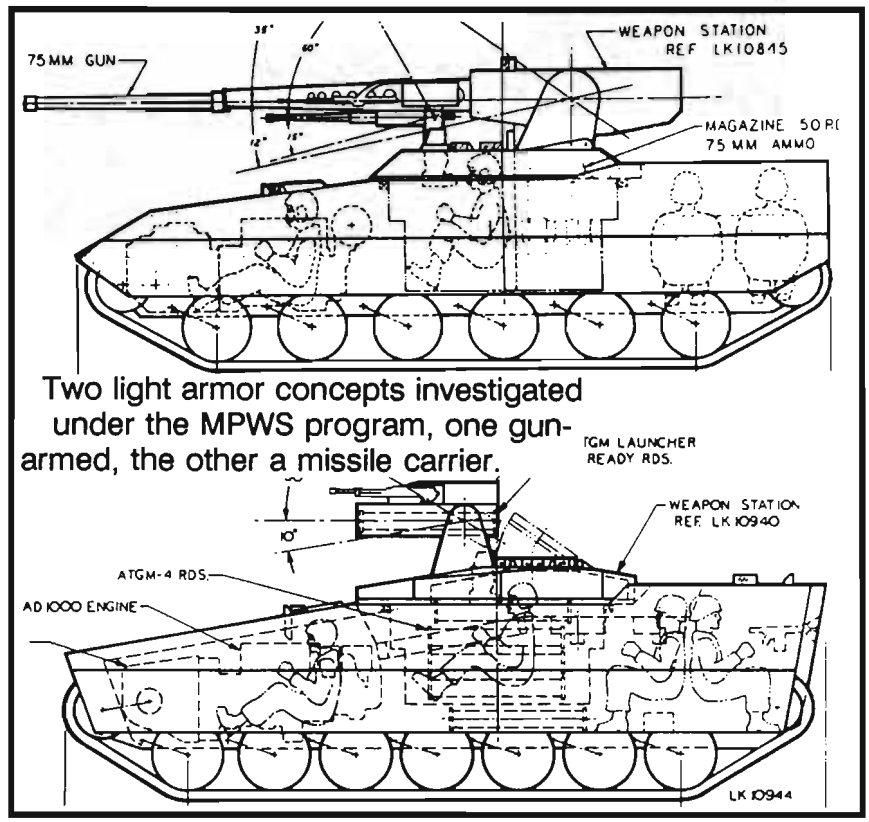
ANDREW F. DEMARIO
CPT, ARMOR
FRG

A Kingdom for a Tank

As I read R&D articles in today's journals, I am becoming increasingly concerned about the development and potential of smart antitank missiles in regard to their effect on armored warfare.

I recall that back in 1965, when the US Army was working hard on fielding "line of sight" antitank missiles, there was a lieutenant colonel in Combat Development who was advocating an operational concept using a laser illuminator. Cavalry scouts would operate its device well forward in the battlefield and direct missiles launched as far as 12 kilometers from the scouts' targets.

Many people in the armor community did not like the concept because they believed that a light (recon) armor unit should not have an antitank capability. Tanks should engage tanks. The artillery did not believe that armor units should have an indirect fire antitank capability, and the Threat people stated that a light armor unit could not survive enemy artillery fire concentrations.



Two light armor concepts investigated under the MPWS program, one gun-armed, the other a missile carrier.

Well, concepts and technology moved on, and in 1987 target-illuminated or target-designated missiles are now a reality and can be launched from a variety of air, ground, and sea platforms. In armor, we have not gone all the way to indirect engagement, but we have put an antitank guided missile capability into the cavalry unit.

The tank has changed also; it has more protection against a variety of projectiles, can shoot at longer ranges with greater penetration, and is highly mobile. The combined arms force is an awesome threat on the battlefield. A large NATO and Soviet effort is being put forth to effectively decimate and degrade the combat power of such a force with long range antiarmor artillery, heliborne weapons, indirect ATGMs, smart mines, etc. Many people believe that in the future tank-versus-tank engagements, forces should avoid contact as long as possible.

Over the long range of doctrinal and technological development, I suggest that the US should not ignore the concept of bringing less expensive manned — and possibly robotic — armored vehicles into the force structure with a capability we can learn to exploit: smart weapon technology. These ATGMs with a fire and forget mode and programmed differentiation between targets will change the rules of the game in the future, especially in manpower and weapons cost.

I am reminded of the "airplane-versus-battleship" arguments back in the 1920s. Would anyone like to speculate which way the Pacific War could have gone and how much longer it could have lasted if the puny airplane had not taken on mighty naval sea power? Maybe the "missile-versus-tank" argument has come to reality.

Today, the MBT moves more into the "Tiger tank" or "Battlestar" class of system. This movement continues to denigrate the light armor arena where a strategic deployment requirement for light armored vehicles has existed for years.

I am not an advocate of the light division, *per se*, because of the question of combat sustainability, but I also question the heavy division because of procurement, training, and maintenance costs and deployment limitations in many parts of the world. We are overlooking the middle of the two extremes.

As the other fellow's combined arms forces get better, US technology can provide killing power in smaller, smarter direct and indirect ATGMs and hypervelocity projectiles along with small bore automatic cannons mounted on lighter, less expensive configurations. We are reaching the point now where the cost differential between the MBT and the like and the ATGM's accuracy and lethality is very wide indeed.

and tests going on in this area of interest. I would hope our kingdom would not be put in jeopardy some day because of a "Tanks Forever" syndrome.

BURTON S. BOUDINOT
LTC (USA, Ret.), Armor
Radcliff, KY

What is armor's role in low-intensity conflict? Above, the 82d Abn. Div. in Grenada.

Pertinent Questions, Where Are the Answers?

The armored forces of the United States Army have arrived at a relatively significant crossroads in their development as the combat arm of decision. One road leads to a specialized, central role as the close combat heavy striking force in AirLand Battle 2000. The other road leads to a more diffuse role for armor across the full spectrum of warfare. In many ways, and for many reasons, the scouts and advance guard have already taken the close combat heavy road. Before the main body joins them on this azimuth, let's trade thoughts on this course of action.

First, Armor has much to be proud of. After decades of neglect, the tank force is being modernized with the revolutionary Abrams series of tanks. This modernization program continued a long-term trend of mechanization of forces that began before WW II. Criticism of the controversial M1 has been overwhelmed by the successful fielding and acceptance of the tank by the armored force. It has earned its place with the Bradley Fighting Vehicle and the Apache helicopter as the premier weapons systems of AirLand Battle doctrine.

These successes, however, have been achieved only on a narrow front. The cost and modernization problems have resulted in a very unbalanced force. Improvements in logistical vehicles (recovery, fuel, ammunition, etc.) air defense, artillery, signal, engineer, and surveillance equipment have been slow, even with historically unprecedented budgets. Like sophisticated planes and ships, armored vehicle costs have increased so much that the total force cannot be modernized. Mixed forces will be the rule.

Other narrowing influences have been the requirements-based acquisition system, and the close combat heavy functional area management device. Both ideas have focused activity and thought into relatively well-defined areas just as they were designed to do. As a result, many coordination problems have been overcome. The other side of this doctrinal coin has not been beneficial, however. What is the role of armor in limited war? Who defines armor's role in light divisions? Light can't be close combat heavy, can it? Is armor a concept, or a 65-ton tank? These questions are not being answered because they are not being asked.

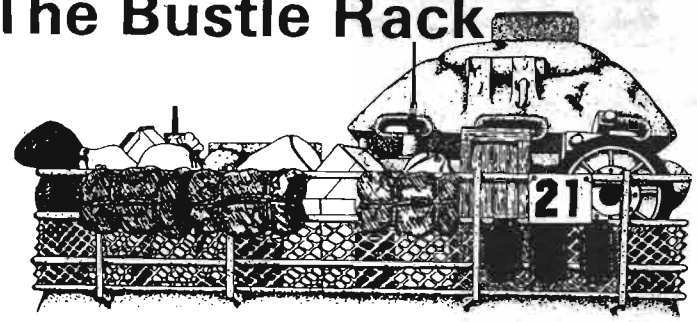
Armor's narrowing focus has also been caused by organizational changes. The creation of light divisions and the Army of Excellence changes that pay the force structure bill have greatly reduced armor's scope. Light divisions were designed to overcome the lack of airlift and militarily capable sealift in the U.S. defense establishment. This was the only way to overcome this glaring limited war deficiency within Army resources. Armor, however, did not participate in these changes for the reasons mentioned above. Also, it should be said, many armor professionals folded their arms and turned away, believing the concept to be unsound. "Getting there quickly and losing" was the sentiment most expressed. Armored gun system programs and high tech test bed experiments were not actively supported and a curious demechanization process took place. Instead of developing weapons systems and doctrine for this end of the spectrum of warfare (as French armor forces did, for example), the U.S. armored force has concentrated on general/nuclear warfare. As the charts we show each other in the Pentagon illustrate, however, this is the least likely type of conflict to occur.

The unfortunate outcome of all these factors is that there will probably be no armor brass on America's battlefields in the foreseeable future. There is little armor participation in forces designed for the most likely form of conflict. The establishment of aviation as a branch and the emasculation of the cavalry squadron contributed to, and are symptoms of, this outcome. Worse, the forces that will be deployed will fight without the mobility, firepower, and shock effect of the combat arm of decision.

The choice of which road to take is difficult, but should not be made by default. A valid argument can be made that pursuing a broadfront armor strategy will slow the modernization of heavy forces unacceptably, create additional force integration problems, and risk constrained resources in uncharted areas. Perhaps the need to specialize outweighs the retention of armor in the combined arms of low intensity warfare. What do you think?

FRANKLIN Y. HARTLINE
LTC, Armor
3-73 Armor
Fort Bragg, NC

The Bustle Rack



Army Takes a Role in Space

In 1986, the Army established the U.S. Army Space Institute (USASI) at Fort Leavewnworth, KS, as the TRADOC focal point for space (systems) training and doctrine development. During that same year, the U.S. Army Space Agency (USASA) was provisionally activated at the U.S. Space Command (USSPACECOM) in Colorado Springs, CO, to provide the Army's perspective on planning for DOD space systems support to land forces and strategic defense.

In view of the growing importance that space systems (satellites, etc.) will have on Army ground combat operations, MILPERCEN has assigned additional skill identifier (ASI) 3Y to 511 officers. To date, 500 3Y positions have been identified in the lieutenant and captain ranks. A number of civilian and military schools are now preparing Army officers for space system assignments. They are: Stanford University, Texas A&M, Georgia Tech, the Naval Postgraduate School and the Air Force Institute of Technology.

The Army envisions having an operational detachment of eight captains and lieutenants at the Consolidated Space Operations Center (CSOC) at Falcon AFB near Colorado Springs that controls and manages satellite systems, plus a detachment at Johnson Space Center, TX, to work in day-to-day operations at NASA. The USASA is also preparing to assume responsibility for DSCS III satellite control, tasked to the Army via CINCSPACE, and for the control of operations of selected space surveillance radars at Kwajalein Missile Range in the Pacific.

Pocket-Size Supply Manual Available

As part of the command supply discipline program initiated by the Deputy Chief of Staff for Logistics, the Army Logistics Evaluation Agency at New Cumberland Army Depot, PA, has developed a pocket-sized handbook for unit-level commanders to use in managing their supply responsibilities.

DA Pamphlet 710-5, "Unit Commander's Supply Handbook" is a 5- by 7-½-inch pocket book that outlines the commanders' regulatory responsibilities in two ways, what the commander must do on a periodic basis, and what he must do in unit functional areas, such as the supply room, arms room, or motor pool. It provides guidance on such important items as change of command inventories, relief from responsibility actions, and unit supply personnel and training.

Yet Another 1,000 Point Club Member

Firing their something-less-than-brand-new M48A5 MBTs, a crew from 3d Platoon, Troop C, 1st Squadron, 194th Cavalry, blasted out a perfect 1,000 score on Range 37, Camp Grayling, MI, on June 8, 1986. The hot shot crew was: SSG Dan E. Patton, TC; SP4 Richard D. Bailey, gunner; SP4 Randall S. Freel, loader; and SGT Raymond D. Shelly, driver. Troop C, an Iowa National Guard outfit, turned in an excellent record at the Table VIII ranges with an average of 886 points and 3 distinguished crews, 6 superior and 1 qualified of the 10 crews competing.

3 ACR Runs Army's First M1A1 Qualification Gunnery

Tankers of 2d Squadron, 3d ACR, ran the Army's first M1A1 qualification gunnery in January and 33 of 41 crews qualified on TT VIII on their first run. Top Gun crew was TC'd by SSG Gary Adkins and shot a 996 out of 1,000 possible.

H Company won the squadron gunner trophy with a first run average score of 846. The runs were made at Dona Ana's P.F. Smith Range, recently renovated by the 3d ACR's 43d Combat Engineer Company and named for the regiment's first colonel.

Recognition Quiz Answers

1. **M109A1 155-MM SP HOWITZER (US).** Crew 6; combat weight, 24,070 kg (26 tons); firing range (HE), 18,100 meters, (RAP), 24,000 meters; welded aluminum armor turret w/360° traverse; armament, 1 x 155-mm main gun, 1 x 12.7-mm AA machine gun; maximum main gun elevation, 75 degrees, depression, -5 degrees; nuclear capability.

2. **MARDER MICV (FRG).** Crew 4 + 6 infantry; combat weight, 28,000 kg (30 tons); maximum road speed, 75 km/hr; maximum road range, 520 km; fording, (normal) 1.5 m; engine, MTU MB 833 Ea-500 6-cylinder, liquid-cooled 600-hp diesel; armament, 1 x 20-mm main gun, 1 x 7.62-mm coaxial machine gun, 1 x 7.62-mm machine gun.

3. **DAF YP-408 APC (Neth).** Crew, 2 + 10 infantry; 8 x 6 wheel drive; combat weight, 12,000 kg (13 tons); maximum road speed, 80 km/hr; maximum road range, 500 km; cross-country range, 400 km; engine, DAF 6-cylinder, water-cooled, turbo-charged 165-hp diesel; armament, 1 x 12.7-mm machine gun; armor, 8 to 15 mm.

4. **M728 CEV (US).** Crew, 4; combat weight, 53,200 kg (59 tons); maximum road speed, 48 km/hr; maximum road range, 450 km; engine, Continental AVDS-1790-2A or 2D 12-cylinder 750-hp diesel; armament, 1 x 165-mm demolition gun, 1 x 7.62-mm coaxial machine gun, 1 x .50 caliber AA machine gun; armor, 120 mm front.

5. **M578 LAR (US).** Crew, 3; combat weight, 24,470 kg (27 tons); maximum road speed, 59.5 km/hr; maximum road range, 725 km; engine, GM 8V71T 8-cylinder, liquid-cooled, turbo charged 425-hp diesel; armament, 1 x .50-caliber machine gun; armor, aluminum, tow winch and hoist winch w/crane; hoisting capacity, 13,620 kg (15 tons).

6. **STORMER APC (UK).** Crew, 3 + 8; combat weight, 11,600 kg (13 tons); maximum road speed, 72 km/hr, (water) 6.5 km/hr w/tracks, 9.6 km/hr w/propellor; maximum road range, 644 km; engine, Perkins T6/35444 water-cooled, 6-cylinder, turbo-charged 250-hp diesel; armament, (APC) 1 x 7.62-mm machine gun; different armament depending upon hull configuration.

BOOKS

Learning From Failure

EAST OF CHOSIN: Entrapment and Breakout in Korea, 1950, by Roy E. Appleman, LTC, AUS, Ret. College Station, Texas: Texas A&M University Press, 1987. 400 pages. $22.50.

Reading about failure — especially the failure of U.S. comanders that costs the lives of American soldiers — isn't enjoyable. However, reading such a work is important and necessary if we want to protect ourselves from these same failures. Roy Appleman, in his latest book, gives the military professional a graphic view of such failures. Writing about the encircled 31st Regimental Combat Team at the Chosin Reservoir, LTC Appleman pulls no punches and relies on documented evidence and detailed interviews to prove his points.

Over the past few years, we have spoken and written a lot about "fighting outnumbered and winning." This book is about a unit that tried to fight outnumbered, but lost.

We experience the sense of helplessness in the soldiers as they live and die with -50 degree weather, their dwindling ammunition, and never-ending fierce attacks of the encircling, Communist Chinese 80th Division. We witness incredible feats of heroism and stamina as men with multiple wounds rise up to lead fellow soldiers in a defense that is doomed to failure unless it gets help. In the end, we feel the failure of the commissioned and noncommissioned officers as they lose command and control of their units and soldiers during the ill-planned and self-destructive breakout attempt. But there are lessons here, too.

We learn valuable lessons of security, logistics, intelligence, and tactical planning. Whether from the platoon level or from the level of the regimental commander, these lessons are as timeless as warfare. Violations of the tactical principles lead to failure and, most significantly, to the deaths of your soldiers. We relearn those principles as we observe the destruction of Task Force Faith.

You will not enjoy reading this book because it describes nearly unbearable negligence on the part of leaders and commanders under incredible pressure. At the same time, you shouldn't miss reading this book. What you will learn from it is truly important.

G. PATRICK RITTER
Major, Armor
Editor-in-Chief, *ARMOR*

MODERN AMERICAN ARMOR, by Steven J. Zaloga and Lt. Col. James W. Loop. Arms and Armour Press, London, England. 1982, reprinted 1985. 88 pages. Hardcover, $12.95.

This book would more properly be titled a concise history of modern American armor, since the book covers in brief the history of American armor from World War II to the date of the original publication — 1982. It does so in an effective and readable manner, and should be recommended reading for anyone seeking such a history in short form. In fact, it is the only source of such coverage in a single, inexpensive volume. Within its 88 pages, by well-selected photographs, drawings, and text, it covers primarily vehicles which were produced for service use. However, developmental efforts and export vehicles are sketched in sufficiently to carry the story line through the period of the 1940s to the 1980s. Tables of vehicle characteristics are particularly well-chosen and informative. The 1985 reprint is just that, with no change in content. Even the cover is the same.

Vehicles are placed in five general groupings for ease of logical discussion — battle tanks, light armored vehicles, infantry combat vehicles, mechanized artillery, and mechanized air defense. Some readers will be surprised to find tank destroyers carried under light armored vehicles, but these are the light antiarmor vehicles developed after World War II days. The typesetter seems to have slipped one paragraph on page 77, and has placed the text on the Divisional Support Weapon System program under missile launchers. The mechanized artillery and mechanized air defense sections are actually devoted to self-propelled artillery and self-propelled air defense vehicles.

The only place the world "armor" appears is in the title of the book. After that, the word becomes "armour". This results from American subject and British publishers, but the results are the same. A previously published companion volume, *Modern Soviet Armor,* contains more on tactical aspects and technical comparisons which would have added to this book, but the limitations on space and the large amount of material available likely precluded inclusion of such discussions.

Recommended reading and consideration for addition to the personal library of armor buffs, historians, and modelers alike.

LEO D. JOHNS
COL, USA (Retired)
Newport News, VA

CLAUSEWITZ AND MODERN STRATEGY, Michael I. Handel (editor). Frank Cass and Co., Ltd., Totowa, NJ. 1986. 324 pages. $14.95 paper; $30.00 cloth.

In April 1985 the Army War College sponsored a conference "On CLausewitz." *Clausewitz and Modern Strategy* is a collection of fourteen of the papers presented at that conference. The historians represented various countries, Britain, Israel, and Germany to name a few. The tone of the book and the introduction to the various papers is made in Handel's thirty-one page introduction.

The book is divided into three parts: Clausewitz' relevance to our time (two papers), the principal theoretical concepts (six papers), and the interpretations and misinterpretations in different periods in Germany, France, and Italy (six papers). There is no real examination of the present day or the recent past.

If there is a central theme, it is the problem people have faced in reading and understanding Clausewitz. The tendency of most people to seek "rules" or "guidelines" rather than to understand the real nature of Clausewitz' writing probably has something to do with this. Clausewitz is difficult. Often his explanation of the complexity of war, the political nature of war and the uncertainty of it all appears confusing. People fail to completely read his work. Clausewitz does not make easy reading and some of the papers are difficult to read when they explain Clausewitz and attempt to put explanations to his writings. A prior knowledge of Clausewitz, or plenty of time and patience to read the papers is a prerequisite.

Handel provides an excellent schema for examining Clausewitz and others in the past. First, understand the time and problems that the author directs him/herself. Next, what theory is being advanced, and does it have use today? Several of Clausewitz theories are strictly early 19th century. How was the work interpreted at different points of time? These points are exactly how Handel organized the book.

Overall, *Clausewitz and Modern Strategy* is well put together and informative. On the negative side, it isn't something you want to attempt to ready casually. In places the going is tough.

PETER C. UNSINGER
San Jose State Univ.

Award Criteria for the Medallions of the Order of St. George

Ed. Note: In 1986 the United States Armor Association began an awards program to honor the very best of America's tankers and troopers. The Association reports that over 150 awards have gone out to deserving members of the army's close combat heavy forces.

Nominations should take the form of a non-military letter addressed to: National Executive Director, U.S. Armor Association, P.O. Box 607, Fort Knox, KY 40121-0494. The letter of nomination should include a military biography of the nominee and a check for $20.00 to pay for the award packet, which includes the medallion, ribbon, and certificate.

Any Armor Colonel (O-6) in a position to evalute the fitness of the nominee for the award may approve a nomination for the Bronze Medallion. The Chief of Armor is the approving authority for the Silver and Gold Medallions. Below are the criteria for each of the three awards of the St. George medallion.

The Bronze Medallion

The award of the Bronze Medallion of the Order of St. George is the United States Armor Association's recognition of the awardee as the very best of tankers or armored cavalrymen. It is the award for which most members of the active and reserve components are eligible. Specific award criteria are as follows:

a. Be a member of the United States Armor Association at the time of award approval.

b. For officers, demonstrate successful *command* of an armored or mechanized unit.

c. For enlisted soldiers, demonstrate successful leadership as a platoon sergeant, first sergeant, or command sergeant major.

d. For warrant officers, demonstrate superb tactical and technical competence in support of, or in leadership of, armored or mechanized units.

e. For all nominees, demonstrate tactical and technical competence at both their current levels of service and at those of their subordinates.

f. Be nominated for the award by an officer or enlisted man who is a qualified member of the armor branch or armor career field and who is a member of the Armor Association.

g. Be approved for the award by the first armor colonel (O-6) in the awardee's chain of command.

The Silver Medallion

The award of the Silver Medallion of the Order of St. George is the United States Armor Association's recognition of the awardee upon his completion of long and distinguished service to armor or armored cavalry. The Association will present this award to those men who are retiring from the active or reserve component or are leaving armor permanently for another career field under honorable conditions (e.g. an armor officer of senior rank who is selected for *permanent* assignment to USMA as a faculty/staff member). Specific award criteria are as follows:

a. Meet the appropriate criteria for the Bronze Medallion as stated above (a-f).

b. Have an approved retirement date or reassignment date that will take the awardee away from armor or armored cavalry duties permanently.

c. Be nominated by a qualified member of the armor branch or armor career field who is a member of the Armor Association and have a recommendation for approval from the first colonel (O-6) in the armor chain of command. (Additional endorsements, while not required, are encouraged).

d. Be approved for the award by the currently serving Chief of Armor.

The Gold Medallion

The award of the Gold Medallion of the Order of St. George is the United States Armor Association's recognition of those few, select men who, even after leaving their long and distinguished careers of service to armor or armored cavalry, continue to be active supporters of the arm through various activities such as those listed below. There is no requirement for the nominee to have accomplished all of these activities; this list is a representive list of some activities that may qualify the individual for the award. This award will be presented only at the annual Armor Association Banquet held during the United States Army Armor Conference at Fort Knox, Kentucky.

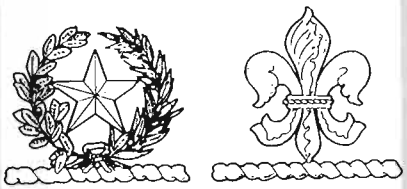
a. Meet the criteria indicated above for both the Bronze and the Silver Medallions. (This is a requirement for the award).

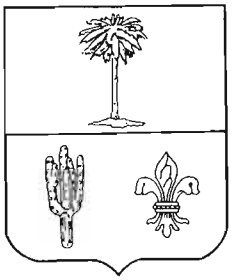
b. Continue to support armor and armored cavalry, even after leaving service through such activities as:

- Professional writing in branch journals or other professionally oriented publications.
- Professional speaking in support of armor or armored cavalry in the development of the members of the armored forces of the United States.
- Serving as an Honorary Colonel or Honorary Command Sergeant Major of a regiment.
- Actively serving the United States Armor Association as an officer or member of the Executive Council and in support of association activities or projects.

163d Armored Cavalry

(First Montana)
Men, Do Your Duty





Symbolism

The palm tree represents Philippine service, the giant cactus Mexican border duty and the fleur-de-lis service in France during World War I. Blue and white are the colors associated with infantry and refer to the organization's combat service as the 163d Infantry during World War II.

Distinctive Insignia

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

Lineage and Honors

Organized during 1884-1887 in the Montana National Guard as the 1st Regiment of Infantry. Mustered into Federal service 5-10 May 1898 at Helena as the 1st Montana Volunteer Infantry; mustered out 17 October 1899 at San Francisco, California.

Reorganized 30 May 1901 - 1 December 1903 in the Montana National Guard as the 2d Infantry Regiment. Mustered into Federal service 27 June 1916 at Fort William H. Harrison, Montana, for service on the Mexican border; mustered out 3 November 1916 at Fort William H. Harrison, Montana. Called into Federal service 25 March 1917 and mustered in 7 April 1917 at Fort William H. Harrison, Montana; drafted into Federal service 5 August 1917. Consolidated 19 September 1917 with the 3d Battalion, 3d Infantry Regiment (District of Columbia National Guard); consolidated unit reorganized and redesignated as the 163d Infantry, an element of the 41st Division. Demobilized 21 February 1919 at Camp Dix, New Jersey.

Former Montana elements of the 163d Infantry reorganized during 1921-1922 in the Montana National Guard as the 2d Infantry. Redesignated 1 May 1922 as the 163d Infantry, an element of the 41st Division, subsequently the 41st Infantry Division; Headquarters Federally recognized 30 January 1924 at Helena. Location of Headquarters changed 29 December 1939 to Billings. Inducted into Federal Service 16 September 1940 at Billings. Inactivated 31 December 1945 in Japan. Relieved 17 June 1946 from assignment to the 41st Infantry Division. Reorganized June 1946 from assignment to the 41st Infantry Division. Reorganized and Federally recognized 21 April 1947 with Headquarters at Bozeman.

Converted and redesignated 1 March 1953 as the 163d Armored Cavalry. (3d Squadron allotted 1 March 1968 to the Oregon Army National Guard — separate lineage.)

Home Area: Statewide (less 3d Squadron in Oregon).

Campaign Participation Credit

Philippine Insurrection
Manila
Malolos

World War I
Streamer without inscription

World War II
Papua
New Guinea (with arrowhead)
Luzon
Southern Philippines (with arrowhead)

Decorations

Decorations

Presidential Unit Citation (Army), Streamer embroidered PAPUA (U.S. Army Forces in the Far East cited; WD GO 21, 1943)

Philippine Presidential Unit Citation, Streamer embroidered 17 OCTOBER 1944 TO 4 JULY 1945 (163d Infantry cited; DA GO 47, 1950)