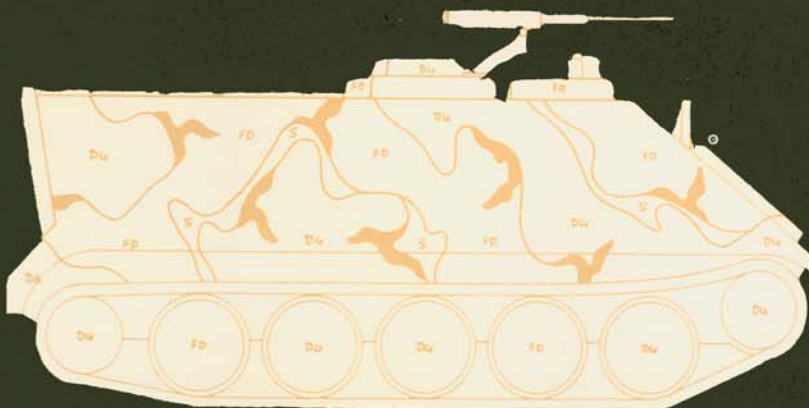
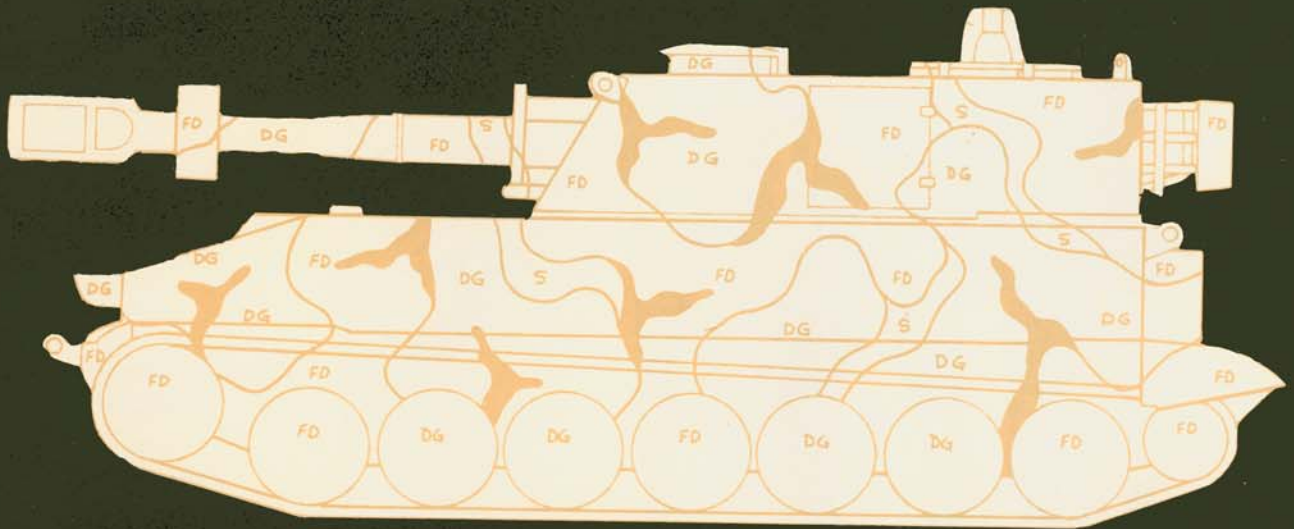
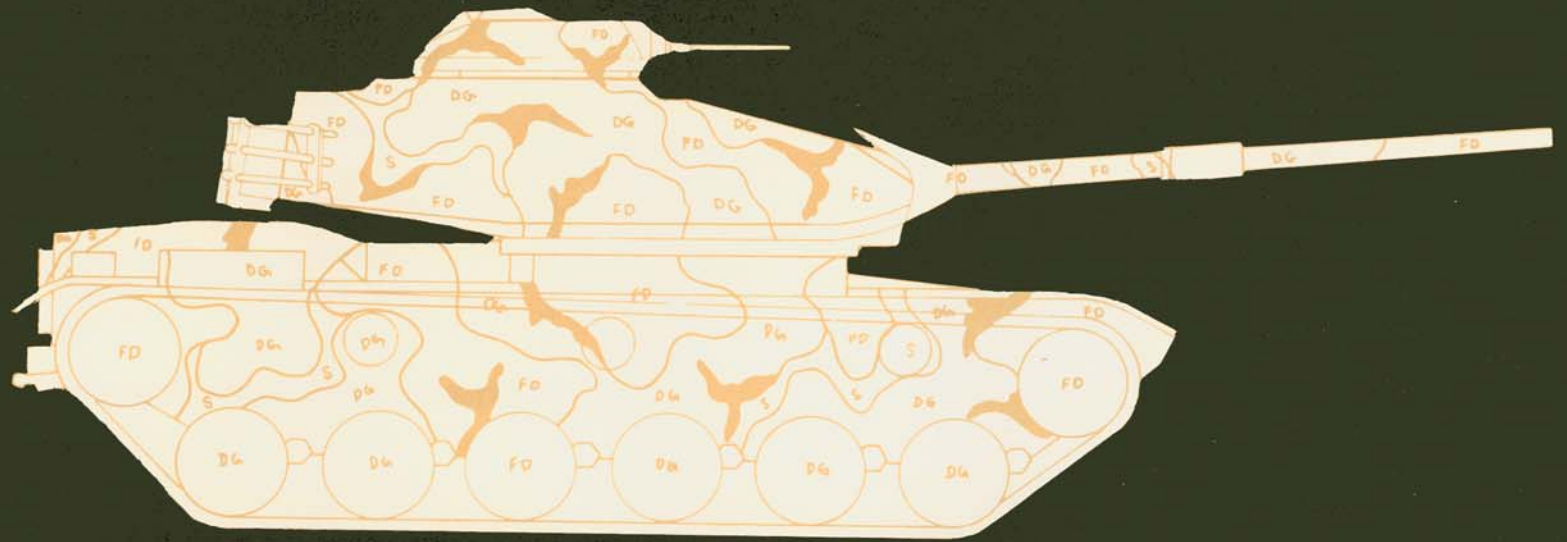


# ARMOR

The Magazine of Mobile Warfare



July - August 1984

# United States Army Armor School

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

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## **COVER**

Although battle-dress uniforms and camouflage-painted vehicles are still relatively new to the U.S. Army, camouflage paint schemes go back to the 1920s. In the article that begins on page 16, authors Paul J. Hoven and Joseph R. Burniece argue that camouflage has long been a silent indicator of an air-defense situation.

# LETTERS

## Maps Needed for Scouts

Dear Sir,

I would like to commend SFC Skiles for his outstanding article, "The Scout Platoon Revisited", that appeared in *Pro Thoughts* in the January-February 1984 issue of *ARMOR* Magazine. He was right on target.

However, let me add just one item to the sergeant's list of needed scout platoon equipment—and this item is so basic that one wonders why it isn't considered. I am referring to *maps*. Yes, maps! Believe it or not, many of our scout platoons do not have maps because of real or imagined shortages. If necessary, do without maps elsewhere, but give them to the scouts! They must have maps!

Also, on the subject of issuing reports, the armored cavalry Beale Wheel (GTA 17-3-7 of 30 April 1973) should be updated to reflect the excellent FM 17-98 and worn like ID tags by every scout. This plastic reports card, when used in conjunction with the map and FM 17-98, is all that is needed for success in being the eyes of the battalion — with, of course, good leadership!

BO BARBOUR  
Captain, Infantry  
4th Battalion, 16th Infantry

## Polish Cavalry Charges On

Dear Sir,

Many thanks for running my letter on the Polish cavalry matters in the March-April 1984 issue of *ARMOR* Magazine. A couple of old cavalry vets helped me out on the article and were a bit upset about the *taczanka* and *rittmeister* matters. Printing the letter got me off the hook!

I don't entirely agree with Richard Ogorkiewicz's letter concerning the article. I did not mean to suggest that my article was the sole English language account of the Polish cavalry in 1939. Besides Ogorkiewicz's articles, readers might also be interested in the section of Janusz Piekalkiewicz's book "The Cavalry in WW 2" which covers a number of Polish cavalry battles in 1939. While it is true that a number of cavalry regiments carried their lances with them during the mobilization of 1939, it was against earlier instructions and policy decisions. Old traditions die hard.

I perhaps would have been more precise to have said that the Polish Army fielded *the equivalent* of three light battalions with the 7TP tank in 1939. Two of these battalions, the 1st and 2d Light Tank Battalions, were fully formed and mobilized on 1 September. The 3d Light Tank Battalion, being formed in Warsaw

in the summer of 1939, was only partially formed and equipped. From the partial cadres of this unit and the troops of the Armored Force Training Center (CWPB), the Warsaw defense command formed two 7TP companies, one under Captain Stanislaw Grabczewski with 18 7TP tanks, the second under Captain Feliks Michalowski, with 11 7TP tanks. Both companies saw extensive fighting in the defense of Warsaw. The other battalion mentioned in Mr. Ogorkiewicz's letter, the 21st Light Tank Battalion, was not combat ready at the outbreak of the war as their French R-35 tanks had only arrived in Poland in July 1939. They were mobilized in the first week of the war, but the battalion never saw combat and was finally withdrawn into Romania at the end of the war rather than surrender the tanks to the Germans. Interestingly enough, these Renaults later served with the Romanian Army against the Soviet Army on the Eastern Front, and in 1945 against the Germans when the Romanians switched sides.

In regard to Captain Betson's excellent article on U.S. armor in the Oran landing, perhaps I can shed some light on the mystery of the French tanks that were encountered during the operations in North Africa. Recent French accounts of the fighting, notably Colonel E. Ramspacher's book, "Chars et Blindes francais," published in 1979, indicate that French armor and cavalry units in the Oran area at the time consisted of a number of sections of antiquated, WW I-vintage Renault FT-17 light tanks that came from a number of disbanded tank battalions. These were mostly parcelled out to various infantry units, or assigned to guard duty at the airfields in the area. Besides these, there were a number of companies of 1920-vintage Renault D1 medium tanks attached to Colonel Touzet de Vigier's "brigade mechanique" south of Oran, numbering about 45 tanks. Several years ago, I tried to sort out this mystery myself by consulting the after-action reports of the 1st Armored Regiment, but these accounts were equally ambiguous about the types of French tanks encountered. However, while looking through the Signal Corps and U.S. Navy photo records of the Oran landing, I found numerous photos of disabled FT-17s and none of the Renault D1. I strongly suspect that the tanks encountered on 9 November 1942 were these old Renault FT-17s. The confusion as to their type probably stems from the lack of information in U.S. Army tank identification manuals of the period, which did not list the French types in any kind of comprehensive fashion.

STEVEN ZALOGA  
Greenwich, CT

## Thoughts on "Thinking"

Dear Sir,

I enjoyed Lieutenant Davis's article "Toward An Old Way of Thinking" in the March-April issue of *ARMOR* Magazine. His grasp of the problem in balancing the demands of firepower and maneuver in order to effectively deal with an opponent is most evident. If possible, I would like to add to his argument.

While agreeing that maneuver and firepower are not separate entities but two facets of one effort — combat — I feel compelled to emphasize the lieutenant's charge that firepower is the *handmaiden* of maneuver. I feel certain he would agree that simply adding weapons to double or triple the measured firepower of a company, battalion or division is quite meaningless unless there is a practical method for employing that increased firepower. The Soviets today appear, through their ongoing debates on tactics, to recognize this problem more accurately than we *after* having recently increased, with numbers of new weapons, the relative firepower index of their units through the last decade. Once having the weapons — any weapon — it is then a matter of how to most effectively employ that weapon.

It is at this point that the lieutenant and I part ways. In following the Ressetta River engagement, it seemed to this writer that the Soviet intention — through hit and run tactics — was to wear down the opponent. An attrition engagement was dictated by the limited effectiveness of some of the on-hand equipment (tanks) and the training of the troops (the Soviets are rather timid about the prowess of their tankers in that period when discussing actions with the German tank troops). They successfully accomplished their attrition since the line at that point in Russia did not effectively move further to the east for the rest of the war. The Germans certainly might have wished to move the line further back, but as the flank guard to the operation toward the Caucasus, their goal was simply to tie down Soviet forces. In short, attrition. What this example does not indicate, however, is what might be presumed to be the case to be supported; i.e., that troops may fight to the death in spite of losses and certain defeat.

It is true that some units may take heavy losses and still remain a viable — though diminished — fighting force. Other units, just as large and well-equipped, may dissolve instantly under the least pressure. The difference is in what the individual fighting man, among his comrades and tempered by experience, believes to be the case. Thus in the above discussed actions, the see-saw engage-

ment would permit the individual troops of both sides to believe that they were winning. Further, given the apparently common consent attrition mindset of both senior commanders, as long as no *unforeseen* action occurs, all was going "according to plan" on both sides. At no time would we perceive that the forces of either side were pushed past their limit of endurance to fight a "hopeless" battle. In coming back to a common agreement with the lieutenant, this writer also arrived at the understanding from Colonel Boyd's forceful study, *Patterns of Conflict*, that disorientation leads to defeat. However, to this student, the salient feature of that study and one which may have been overlooked in the face of so much supporting evidence, is that the aim of warfare — battle, tactics, and strategy — is to *overwhelm the mind of the enemy commander*.

All of this is not to say that the lieutenant is incorrect. In a sense, fighting at the level of company and battalion will rarely lead to an opportunity to thoroughly numb the mind of the opposing battalion commander to such an extent that all of his troops, with weapons in hand, walk away. And more, veteran fighter pilot that Colonel Boyd is, one would expect that after all of the maneuver necessary to get the enemy plane in the sights, a fire-power point must come when the trigger is pulled to "hose'em." But there is significant value to be gained by continually disconcerting the enemy troops, per Boyd. Constantly catching your opponent's platoon, company, battalion, or army at the time and place least expected — standing when a retreat "should" be in progress, attacking when there are "insufficient forces" to do so, even denying the enemy a warm meal — all count to wear down the morale of the enemy troops. And it is the morale of the troops which weighs most heavily on the shoulders of the commander. If the troops are dejected, how can the commander count on them to attack? Will they stand on defense? How long will they remain a cohesive force?

As Colonel Boyd's study serves to underline, we must keep in mind that the path of success is not necessarily the shortest or most rehearsed. The best battalion tactical maneuver in a situation may not be "round-the-flank" but "right-up-the-middle." It is indeed a matter of "mindset." It is the training to seek out the weak spot in the enemy defense whether it be lack of firepower, severely reduced density, the determined "do-or-die" attitude to hold a specific point/position, and the overriding concern not to expend lives under any circumstances.

Each such weak spot has an effective "strength" which we can employ to really "force multiply" our combat capability. The new version of FM 100-5 is a first step in implementing this new "thinking/seeking" approach to past U.S. Army doctrine. No doubt, as in all cases past, this manual will be superceded by new versions. Such is the value of a current training document in recognizing a

specific weakness in order to implement corrections to overcome then-current deficiencies.

As *Patterns of Conflict* and FM 100-5 both highlight, it is now time to learn how to "spot the weakness." My compliments to the lieutenant for his spotting ability.

JOSEPH R. BURNIECE  
Washington, D.C.

*A number of readers have queried the ARMOR staff about where they could find Colonel John Boyd's Patterns of Conflict, in which the Observation-Oriented-Decision-Action cycle (The "OODA Loop") is explained. According to Lieutenant Davis, author of the article, the title refers to a briefing. Although Boyd's work is now being widely quoted in articles and publications by others, Boyd's presentation is not available in written form.*

-Ed.

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### 63d Armor Motto Claimed as TD's Own

Dear Sir,

You highlighted the 63d Armor on the back cover of your March-April 1984 issue of *ARMOR* Magazine and gave as its motto: Seek, Strike, Destroy. Nowhere did you explain the derivation of that motto. I submit that it came from the Tank Destroyers of WW II.

As a former member of the 628th Tank Destroyer Battalion I can attest to seeing those words on walls, shoulder patches, anywhere one looked.

The Tank Destroyer Association recently erected and dedicated a monument to the TDs at Fort Hood, Texas, and those words are emblazoned around the crest of a tiger eating a tank.

ROBERT W. HERMAN  
Lieutenant Colonel, Armor (Ret.)  
Auburn, CA

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### More on Morality

Dear Sir,

I feel compelled to reply to 2d Lieutenant Weber's letter on the morality of U.S. armed forces which appeared in the March-April 1984 issue of *ARMOR* Magazine.

His letter was both thoughtful and important, for the moral application of force is an extremely relevant issue for a nation which considers itself in some respects above the swell of cynical power politics. . . Yet while I believe 2LT Weber raises an important issue, I also feel he is fundamentally wrong in his contention that the U.S. military is a moral one.

There is no disputing the fact that the U.S. military forces were initially constituted to support and defend the principles eventually codified in the Constitution.

But the U.S. military has had its share of less-than-high-minded moments. Our wars with Mexico and Spain were expansionist conflicts, unmotivated by appeals to any sort of higher morality. The myriad Indian wars of the 19th Century were essentially a naked competition over land and resources fought against a militarily weaker culture. And more recently we have the Vietnam conflict, an incident that stands on equally shaky moral ground.

All nations, governments, and institutions have their peculiar faults. Ours is to insist on viewing ourselves as somehow morally superior, both in the context of other contemporary nations, as well as that of history itself. There is nothing wrong with seeing ourselves as *special*. For the United States is, in some objective sense, a grand and noble experiment. For all its flaws, American democracy has brought an unprecedented amount of freedom to a vastly greater number of people than any previous political system. But seeing ourselves as *better*, not merely *different*, is a state of mind that leads to the sort of smug, "my country right or wrong" thinking that blinds us to where our true allegiance should lie: not to the institutions or political entities themselves, but to the principles that they embody.

Institutions are not moral or immoral. The people who create and control them and work for them are — or are not. Thus, the U.S. military cannot be more or less moral than the sum of the moralities of those who make it up. And to therefore claim for it a moral superiority is to argue that the people who make it up are somehow made of better moral stuff than those of other nations. I think this is erroneous. We have been fortunate enough to have had leaders with the wisdom to create and sustain a political system that puts controls on those aspects of human nature which are not conducive to the maintenance of human freedoms.

To see the morality of the U.S. military as a unique historic characteristic is to claim for ourselves a place in history only posterity can bestow. The United States is a great nation and probably represents the best-tasting compromise of political power and individual freedom one can create from the present socio-political soup. But we are not the culmination of human progress, the "last, best hope of mankind". We are just another rung — albeit an important one — on the ladder to the better world of the future.

Thinking about moral conduct is important; claiming moral superiority is not. Morality or immorality are not functions of abstract principle, but the judgement of day-to-day conduct. No matter how moral one's intentions may be ("keeping the world safe for democracy" for instance), true morality must be reflected in the methods by which one's goals are attained.

Rather than taking for granted that we are moral from the start, a premise that often seems to relieve us of the burden of



constantly reexamining our *conduct*, we should decide for ourselves — as individuals as well as a nation — just what exactly it is that we think is moral, and then proceed each day to put those principles into practice, aware that as men we are capable of and likely to fall far short of our stated goals. We should remember that just as we struggle with the problem of encouraging the good and taming the evil within ourselves, so do all men, even our stated enemies. The history of the U.S. armed forces bears out this same dichotomy. It is a condition unrestricted to a certain type of political system or military force, but common to mankind.

NEIL R. KINGSLEY  
1LT, MI  
Fort Knox, KY

### Carrying Out Orders

*(Ed. Note: The following letter to Major General Brown from General Bruce C. Clarke, USA (Ret.) and his "bit of history" are printed here for the edification of all armor leaders. The letter follows, then the main subject matter.)*

Dear Rick:

I used this bit of history at AWC, Naval War College, C/S College of USMC and at Benning, Belvoir and Knox. It was the most important thing I learned at C&SC. It carried me through a dozen commands in two wars and in peace in between. It brought me seven promotions.

I'd like to see every armor commander with Gen. McNair's concept. It is particularly applicable to mission-type orders and armor operations. . . .

BRUCE CLARKE

In 1939-40 I was a student at the Command & General Staff School. Our commandant was Brigadier General Leslie J. McNair. I felt that the best parts of the course were the times that General McNair talked to us from the stage on the basic factors of command.

One of these gems of wisdom was: "When you get an order you must interpret it. Do so by doing your best to help your commander to carry out his mission."

When I graduated on 1 February 1940 I was assigned to the 7th Mechanized Brigade at Fort Knox, to organize the 4th Engineer Troop (Mechanized) and to be Brigadier General Adna R. Chaffee's Brigade Engineer. Soon, I received two engineer lieutenants and 91 soldiers for my troop.

In April, the 7th Mechanized Brigade and the 1st Infantry Tank Brigade from Fort Benning were ordered to Louisiana to maneuver against each other; to determine whether an armored force should be established.

We arrived in the maneuver area and on Friday of the first week of April General Chaffee sent for me. He handed me an assembled map of the maneuver area and told me to bring it back by Monday noon, and indicate on it all bridges, culverts and other things that would prevent movement of his brigade over the roads in the area. He pointed out how serious it would be if one of his columns ran into a roadblock on the narrow roads.

On my way back to my troop, I gave thought to how to carry out my orders; and I also reflected on General McNair's advice to interpret orders in such a way as to best help your commander to carry out his mission. I then stopped at the 1st Cavalry Regiment and talked to Colonel Henry Baird. I requested that he assign to me three tanks with crews and rations and gasoline for three days. He sent them to my troop at once.

I assembled my two lieutenants, divided the troop into three parts of 30 men each; and further equipped them with bridge and culvert materials as well as a supply of rations and gasoline. I then assigned one-third of the maneuver area to each of my platoon leaders while I took the remaining third. I gave each a tank and a gasoline truck.

I instructed my platoon leaders to be back by noon Monday, after driving their tank over all the roads in their areas and fixing any bridges and culverts needed to support a tank column.

This was done in all three parts of the maneuver area. I took the map, with no marks on it, to General Chaffee. He said that I could not have understood what he wanted me to do. I told him what I had done and that his tanks could use any road in the area unless the "enemy" prevented it.

He broke down and shed a few tears. He said, "Clarke, we are going to win!" This he did, and on 1 July 1940, General George Marshall, the Army Chief of Staff, created "The Armored Force," with General Chaffee as its Chief, and activated the 1st and 2d Armored Divisions.

I became acting Armored Force Engineer, C.O., 16th Armored Engineer Battalion of the 1st Armored Division and its Division Engineer. Soon, senior engineer officers were sent in to take my jobs; but not until I had served on the board appointed by General Chaffee to come up with the first TO&E of an armored division. In his guidance to us he directed that the armored division be:

*A balanced team of combat arms and services. . . of equal importance and equal prestige."*

This concept made the Armored Force great! It is regrettable that General Chaffee did not live long enough to see his Armored Force perform in battle. If he had, I believe he would have been very proud of what he had accomplished for our army.

BRUCE C. CLARKE  
General, USA (Ret.)  
MacLean, VA

### "Russian Version" Useful

Dear Sir,

I was very disappointed with Dr. Thack's review of "The Russian Version of the Second World War" in the March-April 1984 issue of *ARMOR* Magazine. Dr. Thack is right — that if one is looking for information on the Russian Campaign, this is not a book to consult. That, however, is not the purpose of the book. The book's objective is to show how the military and political actions involving World War II are presented to the Soviet high school student. The book is a translation of various Soviet high school history texts.

Yes, the book is also propagandistic, but so are American high school history books. The reason for the publication of this book was to make available an English translation of Soviet high school history so that an English-speaking person might have an insight into how the Soviet people (are taught) to view World War II. From the Soviet perspective of having suffered 10 million battlefield casualties and another 10 million civilian casualties, the North African, Italian, and Western Europe campaigns of the Western Allies are insignificant. The only battlefield of significance for the Soviet citizen is the Eastern Front, for here the battle to save Mother Russia was fought.

Of major interest are the appendices, which present first the Western version and then the Soviet version of three different incidents, the 1939 Stalin-Hitler pact, the 1940-41 Soviet-Finnish war, and the 1944 Warsaw uprising. It is interesting to see how the substance of the story in each case is the same, but motives, objectives, and responses of the participants are presented so differently. It is no wonder that with such diverse understanding of history and the lessons to be learned from it, the US and the Soviets have such great difficulty in negotiating any type of agreement.

To dismiss the Soviet historical version of World War II as mere propaganda is a disservice to the Armor Association membership. The book presents not only the average Soviet citizen's understanding of "the Great Patriotic War" but also how the Soviet citizen — from the Politburo member on down — views the significance of World War II. It is fashionable for Westerners to dismiss Soviet historical and political writing as propaganda and to assert that the Soviet leadership doesn't mean or believe what it says. Anyone who holds this view lacks a fundamental understanding of Soviet culture and philosophy.

Those interested in the Soviet historical view of the causes and consequences of World War II will find this book well worth reading.

CHARLES H. BOGART  
Department of Military Affairs  
Frankfort, KY

# COMMANDER'S HATCH

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



## Training for the AirLand Battle

The Armor Force is preparing itself to fight with new equipment which has capabilities literally without precedent, particularly in terms of mobility and operations in limited visibility. To get the most out of this equipment, we must reexamine our tactics and methods of training soldiers.

This reexamination began with the FM 17-12 series gunnery manuals. Two fundamental questions had to be answered:

- (1) What engagements should be practiced?
- (2) What standards should apply to each engagement?

The first question was answered by analyzing the target arrays that an individual tank, tank with wingman, or platoon could expect in the defense or offense. From this analysis, the USAARMC determined that two classes of engagement exercises should be practiced. The first is the "classical" *gunnery table engagement*: targets appearing to the front of firing vehicles in engagements that can be practiced with live ammunition — exercises developing precision in "steel on target." The second type is the engagement that occurs in the other 300° of the battlefield: variable targets to the side and behind the firing vehicles, precipitating typical battlefield engagements that can be practiced only with laser equipment simulation in *tactical proficiency exercises*.

The second question — what standards should apply? — was answered by developing a methodology that considered the Threat vehicles' ability to engage us while we engage them. This forces us to time standards based on "hit exchange ratios" that account for the time to fire, single-shot probability of hit, and the projectile time of flight of Threat vehicles firing on our tanks during a target engagement exercise. The answers to these questions are incorporated in the new FM 17-12 series of *tank combat tables*. Scoring tables for gunnery proficiency exercises include a new scoring methodology. There is also a tactical proficiency engagement section in each manual to address the 360° battlefield.

Reexamination continued during the Army Tank Program Analysis (ATPA) Study. The study concluded that we need to review new, more effective and resource-conserving methods to train on armored vehicles. For example, under

certain circumstances it may be better to use fewer tanks for peacetime training, yet maximize their use by much more intensive use of devices. This concept was further explored during the Armor Functional Area Assessment (FAA) conducted in the spring for the Vice Chief of Staff, U.S. Army. Some of the potential cost benefits of device-based training were determined for peacetime, and the wartime need to use devices to train crews transitioning to different type tanks was introduced.

Our current combined arms training is *not* business as usual. Our training should be, *must be*, rooted in offensive AirLand Battle doctrine from our national command authority down to each soldier on the forward line. We must make sure each level of command has a shared understanding of the concept of the operation and a willingness and zeal to accomplish the mission.

The tenets of AirLand Battle doctrine are being integrated into institutional instruction and training support materials. With FM 100-5, *Operations*, as background, the USAARMC has fielded coordinating drafts of doctrinal manuals for the tank platoon (FM 17-15), the company team (FM 17-16), and the battalion task force (FM 17-17). The FM 71-series manuals are being rewritten in conjunction with the USAIC: the draft FM 17-16 will be incorporated in the coordinating of draft of FM 71-1J; similarly, FM 17-17 will become FM 71-2J.

All of these manuals are based on the J-series TOE and incorporated employment of the new equipment being issued to the close combat (heavy) force. This doesn't limit the use of the new FM series to *M1/M2/M3* forces, since we must also begin to employ AirLand Battle Doctrine in units with older equipment to increase the combat effectiveness of the entire Armor Force.

The key to ensuring this goal will be met is training — we must train as we will fight. Our peacetime training tasks must equal our wartime mission. We must attain and sustain high standards in peacetime so that we ensure ultimate success in combat.

At the USAARMC, three key elements are built into the courses for officers and NCOs: know the equipment, know

the tactics, and know how to train to standards with the ARTEP Mission Training Plan (AMTP). The AMTP describes a preferred method for conducting selected unit missions called the *situational training exercise (STX)* that trains the major missions a unit must be able to conduct in combat.

The platoon AMTP begins to build combined arms elements such as artillery and engineer support into tank platoon training events. Tank platoon training then leads into the company team level AMTP where infantry, ADA, ordnance, recovery, and resupply assets must be actively managed. This then builds into the battalion task force AMTP where all combat, combat support, and combat service support assets must be managed and employed to preserve the offensive nature of ground combat and to be able to exploit openings deep into the enemy's rear.

The AMTP STXs are designed to train critical tasks and to impart the knowledge needed to operate successfully on the combined arms battlefield, without tying up a unit's equipment or personnel. In many instances, the leaders should be the primary recipients of training. The soldiers are practicing repetitive drills. For example, during the AMTP tasks, tank crews can be practicing gunnery or tactical exercises either in conjunction with the AMTP STX, or apart from it. Ideally, during STX training, a well-trained OPFOR would also participate, and engagement simulation equipment could be used to identify "casualties." Results of good or bad decisions and actions would be more readily apparent. Each repeat of an STX should be accompanied by a detailed after-action review, and no further STXs attempted until the unit can do each STX correctly. In other words, train basic exercises again, again and again — until they have been *mastered* to a standard of excellence.

When multiple STXs are performed together, an entire *field training exercise (FTX)* has been defined. Once a unit has successfully mastered the AMTP exercises, it can select any of the additional missions in the ARTEP for a full-scale field training exercise in which everyone participates. The primary training devices for AMTP field training have been the tactical engagement simulation devices of MILES.

Incorporated into the AMTPs are alternative means of training leaders; for example, the coordination exercises: the *fire coordination exercise (FCX)*, the *logistical coordination exercise (LCX)*, and the *movement coordination exercise (MCX)*.

The final element supporting unit training is the company team *combined arms live-fire exercise (CALFEX)* to be defined this summer as FC 71-4. CALFEX provides an exercise for the unit commander to orchestrate the dynamics of battle — maneuver, firepower, protection, and leadership. This exercise forces all the communication/coordination links for all weapon systems to function simultaneously, and requires the chain of command to demonstrate the ability to place direct and indirect "steel on target" under battle conditions. This is a vital complement to the tank combat tables — a necessary annual proficiency exercise, particularly for forward-deployed units.

Two areas remain for further work:

(1) The future certification of tank commanders of all grades and,

(2) The efficiency with which we train the Armor Force.

The contribution of the Armor Force on the modern battlefield depends upon the competency of tank commanders. We must have the most highly qualified personnel we can find at these positions. We need men who know the tactics, know the equipment, and know how to lead during combat. We are developing a tank commander certification process. The unit conduct-of-fire trainer (U-COFT) can present a large number of different engagements, replicable

worldwide, and record a TC's decision-making process as well as his manipulation of the tank's fire control system. The U-COFT and other realistic training devices will enable potential TCs to be evaluated objectively on identical engagements, anywhere in the Armor Force.

The M1/M2/M3 will force us to conduct more frequent training than we have been accustomed to with the older generation of equipment. Their new capabilities mean there are more ways to use the equipment and more elements on which training must be conducted. If we continue "business as usual," the rising operation and support (O&S) costs associated with our old training methods will either reduce training of the current force or serve to constrain the size of the Armor Force in order to live within our budgetary constraints. Neither is acceptable. Therefore, we are forced to explore ways to increase training without spending more money. The increased use of simulation devices for training, the use of heavy equipment transporters (HETs) to move tanks to and from motor pools and training areas, and a less tank-intensive training program appear to offer the best opportunities for achieving more training for the same resources. We are seeking actively other innovative yet practical, effective solutions.

The USAARMC has developed a notional descriptive battalion yearly training program showing the types of events and the repeats of each type of event, with approximate readiness objectives, that we think units should execute. This comprehensive training program can be executed within the current organizational structure and available resources of our units.

Note that when we tie training to readiness and specify numbers of repeats, we have forged a two-edged sword. By justifying the resources needed in terms of readiness, we can establish a justifiable requirement to provide to the unit commander sufficient Class III, V and IX funds to accomplish these training events the required number of times. Given the resources, the unit must manage them wisely, execute the training in accordance with the factors of METT-T applied by that unit's chain of command and thereby achieve increased readiness.

Some would argue for a less ambitious program with a reduced number of event repeats. That must be a decision at the chain of command considering mission readiness requirements. USAARMS is describing *a way* to train to mission proficiency on the new (and old) equipment. This training program is the basis for all officer and NCO training in the School. The specific training program at the unit must remain the decision of the chain of command responsible for mission readiness.

In summary, the challenge to the Army is to organize, equip, and train the force to win the AirLand Battle. The USAARMC shares in that effort by supporting Armor units and by training Armor leaders and soldiers who will carry out the shared concept of the operation with success and excellence: success gained through tough, rigorous, training in the institution; success gained through constant, well thought out, well-executed combined arms unit training; and by excellence of leadership and soldiers to do difficult things under great stress — to win the AirLand Battle.





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



## A Message for the NCO

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*In this issue, I'm turning my column over to the very appropriate remarks of the Sergeant Major of the Army, Glen E. Morrell. During their recent visit to Fort Knox, Sergeant Major and Mrs. Morrell were the guests of the commanding general at the Fort Knox Noncommissioned Officer's Birthday Ball, attended by approximately 900 noncommissioned officers and their guests. The ball, established by Sergeant Major John W. Gillis in 1982, has become an annual tradition.*

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"It is indeed a pleasure for me to be here this evening. From the very beginning of my Army career, some 29 years ago, I have been constantly taught to soldier, to lead, to teach — to dedicate myself to those principles which continue to make our great nation the "land of the free and the home of the brave."

"As history will show, the most impressive thing about any army is the individual soldier. Even with the most sophisticated equipment, the most modern technology, the most expensive and advanced fighting vehicles, an army cannot fight, sustain, and win a war without quality soldiers.

"And of utmost importance is the positive leadership which begins with the noncommissioned officer. We have indeed produced a corps of NCOs in the U.S. Army unsurpassed in ability — and ready to go.

"When I assumed my position as Sergeant Major of the Army in July of last year, I reflected upon my experiences in Europe, in the U.S. Army Recruiting Command and — most recently — U.S. Army Forces Command. That reflection clearly indicated to me the requirement for excellence in leadership and technical ability.

"We have done tremendously well in training our own through the Noncommissioned Officer Education System and the Noncommissioned Officer Development Program. However, I firmly believe that we must work even harder in order to produce quality soldiers.

"Noncommissioned officers make noncommissioned officers. We are the keepers of the keys which unlock the door to professionalism and technical competence.

"The training and development of excellence in the Noncommissioned Officer Corps begins with the identification and selection of the right soldiers to be trained, and then by ensuring that the training and ultimate use of those noncommissioned officers are maximized. This is the very foundation of our leadership development program. We do have some problems. I am concerned about how we train soldiers.

"All too often, we select those soldiers for NCO training who are available and who are most easily released from units for weeks at a time. We should be sending the "Soldier of the Month" type soldier, those on the promotion list, or those slotted in leadership positions on the unit manning report. I firmly believe we are not being selective enough on which NCOs we send to school.

"From my travels thus far, I find today's soldiers are well-educated, motivated, and eager to learn. They are the base from which we drive our army. Their training is of the utmost importance. Their ability to sustain themselves and their fellow soldiers during periods of high stress is built upon rock-hard confidence in themselves and their leadership chain, beginning with fire team leaders or the noncommissioned officers of their sections. These young NCOs are the ones who call the shots. It is on their knowledge, initiative, and courage that our success in battle rests.

"Whatever we do in the Army today, we must first ensure that our army is prepared for war should our deterrence fail. We must be more flexible and deployable, more powerful,

better resourced, better balanced between light and heavy forces, better trained, and better led.

"Let me take a minute to talk about the mission and responsibilities of noncommissioned officers. As General Wickham indicated in his remarks during our annual AUSA Sergeants Major Luncheon in Washington this past October, our mission, and that of the NCO Corps worldwide — is to be concerned with the quality of our force and how well it is led and taught. He was speaking in particular of its human dimension, our soldiers. They are the prime factor in how flexible, how deployable, how powerful, and how well the equipment is used.

"How well are we accomplishing our mission? From my observations thus far, I can tell you that the attitudes and morale of our young soldiers are superb. They are quite capable, concerned, and feel that what they are doing is important. That is convincing evidence of a positive reflection on the quality of the NCO corps and our dedication to producing good soldiers and units.

"When I speak to the NCOs in the field, or anywhere, I tell them they must train, maintain, and care. Our young soldiers are so good today that if our leadership doesn't challenge them and fulfill their expectations, we are going to lose the good people we lead.

"*There is some fine-tuning which requires our attention.* We all need to stress the importance of professional excellence. In all we do, we must project competence and professionalism. It is the perception that our soldiers, our nation, and our potential adversaries must have of us. It is the reason for our wearing the uniform and our mission as soldiers.

"We must demonstrate to the nation and the public that we are an army of knowledge, wisdom, technical competence, and values. Noncommissioned officers cannot ignore the historical importance of their profession — the society from which it comes, and why it is worth preserving. We owe our nation, our children and grandchildren the debt of ensuring that each of our soldiers knows what it is they are protecting and guarding, and why. For not to do so, we certainly run the risk of the guardians not knowing or valuing what they guard; and we run an even greater risk of losing the values and the freedoms we so highly cherish and preserve.

"The noncommissioned officer who does not read about and impart his knowledge of military history is shortchanging our soldiers and our army. We need to focus some of our training into the basic question of why we serve. We all need

to understand our heritage as soldiers in order that we may be better protectors of our nation's sacred trust.

"As I see it, every soldier must possess professional competence through knowledge of his military occupational specialty, basic common soldiers' tasks, the history of the NCO Corps, and why we serve.

"I would like to see every soldier possess integrity — in order to build trust and confidence in ourselves, our leadership, and the American public. I would like to see every soldier possess strength — in our physical abilities to perform our mission; in our determination to excel as a total force. Every soldier must portray an image that is immaculate and impeccable in every way to the American public, our allies, and our potential adversaries.

"More importantly, every single leader must possess intestinal fortitude. It takes guts for a leader to use inherent authority and responsibility in training, maintaining, leading and caring for soldiers and their equipment.

"Our leadership must recommend the promotion of good soldiers, weed out the poor performers, train the right soldiers and teach them the right things. They must comply with HQDA policies; they must lead by example, and they must promote discipline and good order. Those are by no means all of my concerns and observations, but they are some of the most important.

"We are indeed doing some great things in the Army today. Our Chief of Staff has pledged to us the best possible leadership, fiscal policy, and representation to Congressional and civilian authorities. We, in turn, must pledge to him our total support and confidence.

"The Army is what it is today because of its excellent soldiers, noncommissioned officers, and officers who serve with pride, dedication, and a sense of national spirit.

"The Secretary of the Army and our Chief of Staff have proclaimed this year as the "Year of the Army Family:" a family of components, of units, and of people. Their support and concern show how important a role the family plays in our overall success. We reenlist a soldier, but we retain a family. We all need support. Children must morally support their parents; family members must support the service member; the soldier must support the leadership in the Army.

"When we successfully meet the challengers of our leadership, we not only assure professionalism, but we help create an army of soldiers and units committed to excellence.

"For those who have fought for it, freedom has a taste the protected will never know."

## "The Centennial of Armor"

Shown at right is the 30 x 48-inch oil painting commissioned by the U.S. Armor Association to commemorate the Association's upcoming 100th anniversary. The "Centennial of Armor" was created by Mark Irwin, an illustrator at the Training and Audiovisual Support Center, Fort Knox, KY.

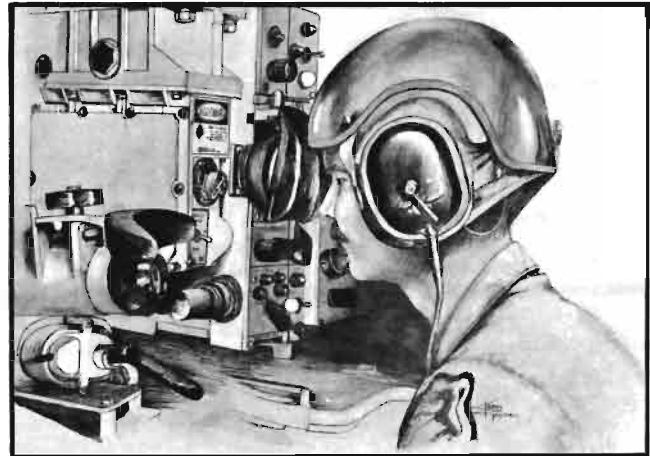
The full-color oil depicts the evolution of today's armor force from the horse cavalry days of 1885, when the Association was established as the U.S. Cavalry Association, through World Wars I and II, Korea and Vietnam to the present day AH-64 attack helicopter, and the M1 Abrams main battle tank and the M2 Bradley fighting vehicle. The painting graphically portrays the direct connection between the old fighting arm and the new combined arms team that is the spirit of armor. The Armor Association will complete a century of services to cavalry and armor on 9 November 1985. A 24 x 36-inch full color collector quality reproduction of the painting is now available from the Association. Flyers have been mailed to all members announcing the sale of the prints.



# MASTER GUNNER'S CORNER

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*Lieutenant Colonel Robert N. Enyart  
and Major George R. Shelton  
Training Devices Division  
USAARMS, Fort Knox, KY*



## ***Simulation Devices: Where We Stand***

Manning the armor force with adequate numbers of well-trained and qualified soldiers, organized into efficient and continuously combat-ready units, is one of the major goals of the Chief of Armor. The methodology necessary to achieve this goal requires identification of needed improvements in individual and collective training of the armor force to overcome long-standing training detractors.

It has long been recognized that the initial armor training at the institution does not produce combat-ready individuals or crews. The unit must complete the individual's training and mold him into an effective member of the combat team. This applies equally to Active and Reserve units; therefore, the logical training sequence is to first ensure that the individual is qualified on the tank system before moving to section, platoon and higher training. Additionally, the individual's skill proficiency must be sustained, which breaks the cyclic training problem.

Training devices will be met first at the institution where they are used to introduce and to teach many basic skills. The unit will follow-up this introduction using primarily the same devices to teach the same and more advanced tasks, leading to significantly higher level of proficiency.

The unit will have several devices available. Initial training for armor crewmen will be done with the Videodisc Gunnery Simulator (VIGS), a tabletop trainer. One unit would be found in each company. An individual soldier can train alone on the VIGS; the microprocessor and videodisc medium provide him with correct standardized fire commands. This

feature can be suppressed, if desired, to allow training of gunners with their tank commanders (TCs). This device can be used to train individuals who have missed their scheduled training. The platoon leader or platoon sergeant can schedule and program the VIGS to provide the same training to everybody or to provide individual skill training.

Following achievement of a specified level of proficiency on the VIGS, gunners and TCs would be scheduled for bi-monthly training on the unit conduct of fire trainer (U-COFT). Currently, the U-COFT is to be fielded on the basis of one per battalion or squadron. Those Reserve units designated as roundout battalions will also have the U-COFT. With the U-COFT, gunner and TC teams would continue their proficiency training to levels that are not possible today, even on a real tank. The device will keep track of each team's proficiency and will move the team through progressively more difficult exercises.

Those Reserve units not scheduled for the U-COFT in the near future may have the Tank Gunnery and Missile Tracking System (TGMTS). This tank-appended device can be used to train TCs and gunners in sustainment exercises prior to firing live rounds. Although the device is tank-appended, the tank is in a controlled environment and remains stationary throughout the training period. Both *M60A1* and *M60A3* versions of TGMTS are now used in USAREUR units.

When the crew reaches a specified level of proficiency on the U-COFT, they will be ready for the next training level

which involves integration of their skills on the Full Crew Interactive Simulator (FCIS). This device also provides the capability for a complete after-action critique. The initial versions of the FCIS will use the Multiple Integrated Laser Engagement System (MILES) for force-on-force engagements and for gunnery exercises against laser-responsive targets.

Future developments will allow replacement of the main gun portion of MILES with the Tank Weapons Gunnery Simulation System (TWGSS). The TWGSS will be designed to allow the crew to conduct the main gun precision gunnery.

The loader trainer device, also under development, would provide a means for the loader to actually load main gun training rounds with subsequent ejection of the empty cases after the trigger is pulled.

The next step would be the gunnery proficiency exercise, currently identified as the Tank Gunnery Table VIII Crew Qualification Exercise. This exercise would include the only live firing in the gunnery training cycle. However, the proficiency exercise would not end with the engagement of targets on the live-fire range. A possible added step would be the engagement of real maneuvering targets with the FCIS system. This would test the crew's real target acquisition ability and their ability to engage "smart" targets.

Gunnery training, however important, is not complete training for the armor force. Equally important is tactical training. An important first element of this program will be a Platoon Combat Mission Trainer (PCMT). This device would allow platoons to practice combat skills, leadership, and logistic skills in tactical situations by emphasizing human interaction and stress on a simulation system. The system will train and reinforce those skills needed for tactical application, to include command and control tasks at individual tank and platoon level. The platoon will be able to achieve tactical proficiency through use of totally simulated exercises. The PCMT will be able to keep track of the proficiency level achieved by each crew and platoon. The devices and simulators used in gunnery training would still be used to sustain and increase gunnery proficiency. The FCIS is also

a tactical trainer with the capability for training in tactical engagement exercises to include force-on-force training. Use of the FCIS for tactical training allows a higher level of proficiency than the PCMT and represents the second step in tactical training. However, crews would not train with the FCIS tactically until a specified proficiency level on the PCMT has been reached. The FCIS would also be used to confirm the level of proficiency attained on the PCMT. The test of tactical proficiency occurs during the annual platoon ARTEP which could be a partial live-fire exercise for the unit.

The next step in tactical training would be with the Company Team Combat Mission Trainer (C/TCMT). This device, similar to the PCMT, would encompass the simulation exercises for company/team-size engagements and the necessary combat skills to successfully compete at this tactical level.

The PCMT and the C/TCMT are tactical simulators that are not currently available but are under development.

Several other devices will soon be in the inventory, including the Eye-Safe System Laser Rangefinder (ESSLR) that will allow the use of laser rangefinders in all training situations, including gunnery exercises on ranges, without regard to laser safety, and force-on-force tactical training exercises. This device will be available for the entire M60A3 fleet within the next year and the M1 fleet shortly thereafter.

To assist the unit in its driver training program, a Tank Driver Trainer (TDT) simulator may soon be available. The soldier will receive initial driver training on a simulator at his unit. The TDT devices will be used to ensure driver proficiency and to allow a smooth integration of the entire crew in the next step of gunnery training. Again, the philosophy remains that armor crews will have attained a specified level of proficiency on simulators and devices before training on their tanks.

Quality military training is a necessary but difficult objective to achieve. The act of bringing together all the necessary ingredients — people, devices and equipment — will not ensure effective training. Effective training is the result of careful planning and proper execution.

# ARMOR

## SUBSCRIPTION APPLICATION

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RENEWAL

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ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

UNIT \_\_\_\_\_ RANK \_\_\_\_\_ BRANCH \_\_\_\_\_

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U.S. ARMOR ASSOCIATION  
Post Office Box 607  
Fort Knox, KY 40121-5000

### RATES

	1 Year	2 Year	3 Year
Domestic	\$15	\$26	\$37
Foreign	\$22	\$35	

### METHOD OF PAYMENT

Check or Money Order Enclosed

Master Card  Acct. No. \_\_\_\_\_ Expiration Date \_\_\_\_\_  
VISA  Acct. No. \_\_\_\_\_ Expiration Date \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE (Master Card and VISA orders must be signed.)

### STATUS

- Active Duty\*     USMA\*     Defense Industry  
 Retired\*     ROTC\*     Business  
 Veteran\*     ARNG\*     Library  
 Civilian     USAR\*     Unit Fund

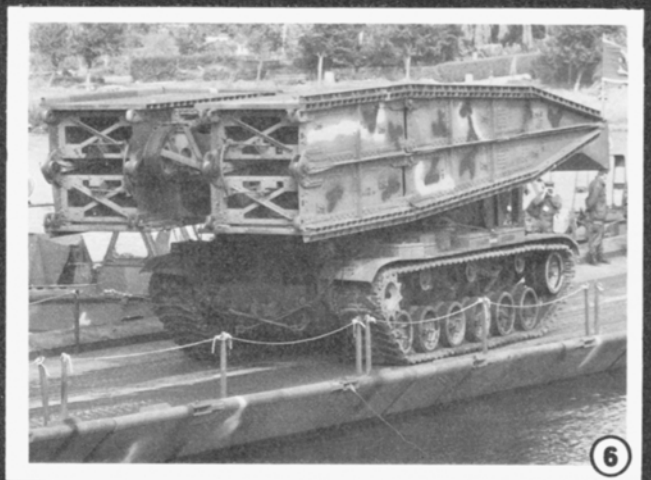
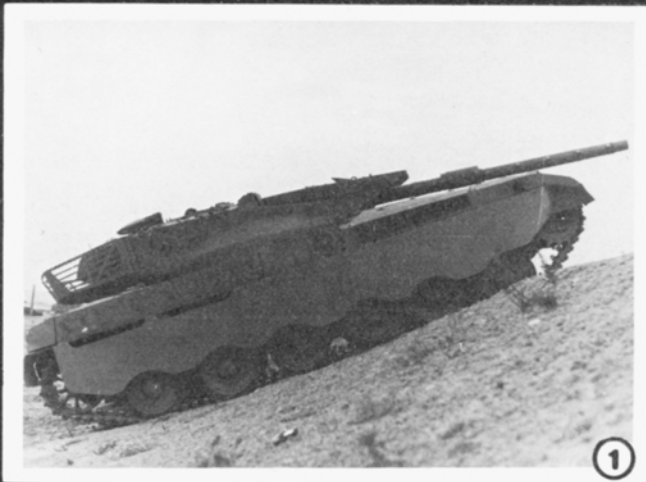
\*(Includes membership in the US Armor Association)

# 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 49)





# Resupplying Armor the FASTARM Way

by Lieutenant Colonel (Ret.) David C. Holliday

The problem of resupplying armored units is not new. The problem of resupply has magnified while U.S. efforts to solve it have crawled along at a snail's pace.

Looking at the overall problem of resupplying combat units, we see that today, as in WWI, WWII and Korea, we rely on trucks to haul fuel and ammunition to combat units. Trucks have improved over those of earlier wars. They are bigger, faster (at least on roads and firm ground), and more reliable. Even so, they still lack the mobility to move with tracked vehicles over soft soils and sand. In Europe, where the soil is predominantly soft most of the year, the newest tactical trucks will face obstacles and experience extremely slow going to get to armored units. They will not be able to keep up with tanks. General George S. Patton remarked in early 1945 — when he tried to visit Third Army units by jeep — that he had spent the day looking for roads but all he saw was deep mud. Where tanks went, roads became mud. Mud was only one of the problems. Tracked vehicles dig up the soft earth and leave behind deep ruts. A truck does well to crawl over these. Often when a truck is sent to resupply a tank unit, it becomes mired in the tank's path long before it reaches its destination.

Even if we could develop a truck with the mobility and agility required, it would not solve the small unit resupply dilemma. Present-generation fighting vehicles, like their predecessors, represent a series of compromises. To achieve the required firepower, armor



protection, and mobility, we made concessions in operating range between refuelings and in the number of main gun rounds that could be stowed on board the vehicle. Large weapons require larger and heavier ammunition. More powerful engines consume more fuel per mile. What this means is that units must be resupplied more frequently than in the past, in a shorter period of time, and in closer proximity to the battle position. Given their vulnerability, particularly when carrying cargoes of fuel and ammunition, trucks simply cannot enter the battle area without suffering a high percentage of losses from enemy fires. As long as we rely on wheeled resupply vehicles, we will be forced to conduct refueling and rearming well behind the battle position. This

could lead to significant losses if the enemy were able to counterattack while resupply was in progress.

Solutions to the resupply problem have been proposed which are reasonable and can be effected in a comparatively short time. Obtaining funds for these solutions, however, has been difficult. Further, it is extremely rare for the resupply of ammunition to be played realistically in tactical training exercises. Very few individuals fully appreciate just how serious the problem is in resupplying armored units with ammunition simply because the only time that problem is faced is in an actual battle.

## The Rearm System Solution

Proposed as a first step in solving armor resupply problems is a system





that makes maximum use of existing technology and has growth potential to keep it viable for years to come. Called the Rearm System, it has four major components: the Heavy Expanded Mobility Tactical Truck (HEMTT) M977 with an onboard crane; and Armored Forward Area Rearm Vehicle (AFARV) built on a tracked chassis (for which there are several candidates); onboard Material Handling Equipment (MHE); and modern ammunition packing that provides quick access to a clean round. All require sound resupply doctrine for their employment. This is known as the FASTARM Doctrine.

The FASTARM Doctrine calls for M977 trucks to pick up ammunition at the ammunition supply point (ASP) or

ammunition transfer point (ATP) to the rear of a battle area and move it forward to the combat trains unit. There, the ammunition will be transferred to the AFARV or put on the ground. The combat trains will be located in a concealed location close to a road or trail and will be positioned as far forward as the battle situation permits. Since the position will not be occupied by more than a few vehicles at a time, and then only for short periods, it will not become a lucrative target for enemy indirect-fire weapons such as artillery and mortars. Transloading from the M977 truck into an AFARV is accomplished by an onboard MHE which lifts pallet-sized loads. Once loaded, the AFARV moves to the vicinity of the supported unit, ready to

dash forward to the battle position and "top off" fighting vehicles with ammunition during any lull in the battle. Two tanks at a time can pull alongside each AFARV. Transfer of ammunition is effected one round at a time using a transfer chute to each tank loader through his hatch, ready for stowing inside the tank. No crew member needs to dismount, and only the loader's hatch needs to be opened. The tank engine is kept running to allow the tank to stop reloading and return to its firing position in seconds, if required. The M977, meanwhile, loaded with empty ammunition containers, has returned to field train units located well to the rear of the battle area.

Compared to the equipment and packaging now in use, whereby rearming must take place well to the rear with the tank engine shut down and crew members out of their vehicles, the new procedure will be a major improvement.

#### Ammunition Packaging

Presently the tank crew must open each wooden ammunition box, remove a round from its fiber tube, and pass it up to the tank by hand, usually by means of a human chain. It takes several minutes to break off reloading and reorganize to return to the fighting if required. Modern ammunition packaging is essential to the new Rearm system. It allows quick access to a clean round without reducing safety precautions. In the past, tank ammunition packaging was designed to meet the logistician's need to deliver a clean, ready-to-fire round. This had provided some problems for the fighter since he has been required to go through numerous steps such as those described above to get to the round of ammunition. A recent development that promises to meet both the logistician and fighting man's needs is the metal canister for tank ammunition. Its end

Above, the Armored Forward Area Rearm Vehicle (AFARV) is seen in traveling mode and with its boom deployed. The HEMTT family of tactical trucks includes tanker, at left, and a cargo version, right, with stabilized lifting boom.





The PLS system is demonstrated at the 1984 Armor Conference.

## PLS: Another Forward Resupply Option

Subsequent to the preparation of this article a new vehicle concept has emerged called the Palletized Load System (PLS) which is now on a fast track development program as the Army's tactical truck of the future.

What is unique about this British-developed system is that it has no cargo bed as such, but uses *flat racks* which are pulled from the ground up and onto the truck frame by an on-board mechanical arm and, at destination, are offloaded in a reverse action. Thus, the truck need linger at turnaround points only minutes to offload a preloaded flat rack and pick-up an empty one, even if no personnel are present to help the driver.

In those rapid maneuver situations, where POL is the most critical supply item, unit ammo trucks may be diverted to carrying flat racks on which POL pods are mounted,



increasing the volume of POL the unit can carry. Conversely, in a relatively static situation where heavy contact requires higher than normal levels of ammo resupply, the majority of unit trucks could carry flat racks loaded with ammo.

In a test at Yakima Firing Center, WA, by the 9th Infantry Division

(Motorized) last year, the PLS drew rave reviews. An evaluation of its application in armor units is planned for fall, 1984, at Fort Hood, TX, where it will be tested in a combat service support concept evaluation program that will also include evaluation of the HEMTT trucks and a prototype AFARV.

opening is designed to provide rapid access to a clean round. By mounting a number of these canisters on a metal pallet, a reusable, long-life packaging system that can be decontaminated easily is provided. There remains the very significant problem of how to use the war reserve stockpiles of ammunition already stored in wooden boxes. The Army's Human Engineering Laboratory, in its BRASS 2000 study, is studying how and where to transfer

ammunition from wooden boxes to more compatible packaging and how to apply robotics and automation to that task.

### AFARV and HEMTT Vehicles

The HEMTT family of vehicles is in production and should prove to be an excellent transporter of cargo and fuel over roads and firm ground. On soft terrain, however, it suffers from limitations in mobility similar to other tactical trucks.

The AFARV is a concept proved by user testing. Its requirement document, now in the final phases of staffing, calls for a full-tracked vehicle with armor protection against small arms fire and artillery fragments and for mobility compatible with the fighting vehicles it supports. Current plans call for open competition for the vehicle chassis and for the cargo compartment module and MHE.



Artist's conception shows how AFARV would resupply forward armor units.

#### FASTARM Refueling Doctrine

Difficulties with refueling armored vehicles are similar to those for ammunition resupply. Although we must still rely too much on trucks, there have been some important advances in refueling. Foremost of these was the change from fuel packaged in 5-gallon cans to bulk tankers with fuel pumping systems. Tankers provide faster fuel transfer to the fighting vehicles. The switch from gasoline to diesel fuel has reduced the explosive potential of the fuel. Even so, our reliance on trucks to haul bulk fuel continues to severely limit our capability to refuel rapidly when and where we need to.

The FASTARM procedure for refueling is similar to that for ammunition resupply in that it uses the HEMTT M978 POL tanker to transport bulk fuel forward to a transload point where an armored tracked refueller (ATR) vehicle is loaded. The ATR then moves close to the battle position where it waits ready to supply tanks with fuel. Concurrent with the development of the ATR, our fighting vehicles will undergo modifications to allow them to be rapidly refueled without requiring the crew to dismount and preferably without the engine having to be shut down. A remote coupling system

will be used to mate the ATR with the fighting vehicle. The fuel flow rate, as well as the fuel acceptance rate of the fighting vehicle, will need to be increased over present rates.

#### Future FASTARM Improvements

Although the AFARV will be developed for resupply of existing fighting vehicles, projected improvements will also be considered. For example, our next generation of tanks will probably incorporate an autoloader. They will be reloaded by inserting a magazine. Only minor changes would be needed to make the AFARV compatible to that approach. Even simpler would be the adjustments needed if the autoloader were to use a carousel-type magazine into which single rounds of ammunition could be fed through a port in the side of the turret. Whatever direction new fighting vehicles take, the AFARV, with minor changes, will be able to efficiently resupply them.

Additionally, new packaging for ammunition canisters will be lighter and compatible with the FASTARM system.

FASTARM is more than just a vehicle or family of vehicles. It is a complete, integrated system of vehicles, material handling equipment, packaging, and doctrine designed to enable our armored maneuver units to

achieve full combat readiness around the clock with a minimum reduction of readiness while undergoing resupply. FASTARM improves the capability of armored units in the roles and missions called for in the AirLand Battle 2000.

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#### LIEUTENANT COLONEL (RET.) DAVID C. HOLLIDAY

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## Camouflage—Air Superiority Indicator?

by Paul J. Hoven and Joseph R. Burniece

Camouflage has been a necessary element, indeed in many cases, a weapon, of warfare for thousands of years. Used for the purpose of entrapping an enemy force by ambush or simply for the purpose of remaining unseen, camouflage has proven the critical tool in many great battles. But camouflage as a function of combat forces seems, as is the case many times with most weapons, to wield the apparent double-edged sword of an indicator of otherwise unapparent strengths and weaknesses. One such indicator, we believe, may be found in the relationship between air superiority and combat vehicle camouflage.

### World War I—1917-1918

Armored fighting vehicles, as originally employed for the "trench busting" actions of WWI, were meant to advance, destroy enemy machine gun positions, penetrate the line, and capture or destroy the enemy main artillery (and command centers and communications lines as well when possible). Naturally, to do so entailed the exposure of the tanks and the acceptance of a given level of hostile fire. In 1917, aircraft were only just entering the field of tactical bombing for practical results, as opposed to harassment, and posed little if any threat to the then current armored fighting vehicles. In this regard, since the tanks were not expected to hide from their ground opponents no camouflage for any purpose short of avoiding air spotting was required or used.



Even WWI-vintage tanks were camouflaged in the 1930s.

### Interwar Years—1920-1938

Between the war years, the various armies developed the tank as a weapon either for the decisive breakthrough, as in the case of the Germans and the British desert force, or for the support of the infantry forces as was the case with most armies. However, regardless of the type, quality, or combat capability of the armor, the various armies tended to "protect" their armor through the medium of camouflage, generally not when they had little armor available, but when they had little in the way of air assets.

### Poland—1939

In Poland in 1939, the Poles, lacking a realistic armor complement, nevertheless considered that the Polish air force was at least capable of holding its own in air combat and their armor was painted in only one color. Although they understood that they were outnumbered, the concept of the

"Blitzkrieg" had yet to be demonstrated. In days, however, the German air force pounced on the Polish air force to the extent that the Germans obtained total air supremacy and caught and destroyed the Poles on the ground. And in a few short weeks only the *panzer gray* painted tanks of the victorious German army remained.

### France—1940

Turning to France in the west in 1940, the Germans again committed their armor under their air umbrella. The *Luftwaffe* was superior to the allied combined air forces by a factor of 3:2 in total aircraft (and qualitatively, was far superior) and could achieve local superiority over virtually any point of the line. The French army, the main allied ground forces, well understood their lack of air power both in terms of number of aircraft and when comparing modern types. Their armor forces, apparently as a measure of their under-



standing of their situation, were painted in a three-color scheme, the most elaborate to that point and especially significant since the entire French armored fighting force of some 3,500 tanks, was so camouflaged. The armor of the British forces committed to Europe at that time were, however, supported by a higher proportion of aircraft than were the French and in addition could rely on the superior performance of those aircraft in relation to the French and in some cases, German aircraft. Their tanks indicated this aspect as they were painted in a standard solid dark green. The Germans advancing with precision under their *Luftwaffe* were again in the *panzer gray* color with large white crosses painted on as the decks and turret identification marks, which were hardly conducive for ground combat survivability, but were of value for air identification.

#### North Africa—1940

In North Africa, in the same time frame as the battle for France, the Italians had a sizable, but technologically inferior, air force and advanced across the border into Egypt against the British. Their vehicles were for the most part painted in an overall *desert sand* while their light scouting forces, noting that they would seldom obtain close air support, tended to employ two-color camouflage. The British, on the other hand, short of virtually every type of equipment, painted their fighting vehicles in a strange, three-color *splinter* pattern apparently because paint stocks were short as well. They achieved a surprising and stunning victory over the Italians at the border and chased them back to Tunisia. In both cases it will be noted that neither side expected great problems from the opponent's air forces, and this seemed to have promoted an attitude that a solid base color matching the predominant terrain color was acceptable for purposes of ground-view camouflage.

#### Greece—1940

In Greece, the Italians were finding the going very difficult and called for assistance from the Germans. Once again the German tanks in *gray* advanced under the *Luftwaffe* through Yugoslavia and into Greece, where they managed to drive the majority of the British forces into a precipitate retreat to the islands of the Mediterranean. On Crete and Malta, virtually lacking any air support of any kind, the British employed a unique *brickwork* paint pattern on their tanks which could ostensibly allow them to blend into the background of walls on the islands.



A British Crusader II in typical desert camouflage pattern.

#### North Africa—1941

Upon the successful conclusion of the battles for Greece and Crete, the Germans prepared for the invasion of Russia while sending a force of armor with *Luftwaffe* air support under General Rommel to assist the Italians in North Africa. Under the leadership of Rommel, the Germans and Italians attacked and drove the British all the way from the Tunisian border to the major port of Tobruk. Their air forces, again superior to the British, provided the apparent edge in confidence as the German and Italian armor attacked in either plain *desert sand* color or the same *panzer gray* with which the German tanks had been painted before unloading in Tunis. The British forces continued to employ the same three-color splinter pattern as they fell back from the Tunisian border and prepared for combat around Tobruk.

#### Russia—1941

Entering Russia in 1941, the Germans again were preceded by their *Luftwaffe* and their armor was seen again in the standard *panzer gray*. The Russians, with the largest tank and air forces in the world, in terms of numbers, were found to have painted their armor and air equipment in a single color. Although they enjoyed a great numerical advantage, the Russians were unable to meet the coordinated assaults of the German forces and suffered huge losses in planes and tanks. By the latter stages of the summer battles, lacking the air power to provide cover, the Russian tanks were covered with mud in an attempt to provide protection against observation and destruction by enemy aircraft. By late 1941, in front of Moscow, the Russians had prepared for and assumed the offensive. Both sides in an attempt to camouflage their vehicles adopted *whitewash* which would be very effective

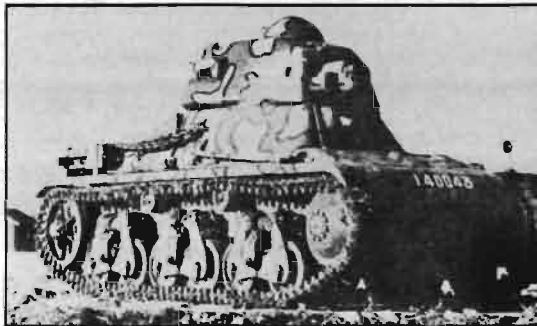
in providing camouflage from ground and air forces.

#### North Africa—1942

In the meantime, the war in Africa continued to seesaw back and forth with the German/Italian forces more often than not at least slightly superior in air strength to the British. Thus, by 1942, both sides had settled for a solid color, in this case *desert sand*, and little changed but the battle lines on the maps. This dual choice of solid color seemed to prove an indicator of air parity. However, at the furthest extent of the Axis drive for Egypt the Germans and Italians were halted at El Alamein where the sweeping desert battles were reduced to a set-piece infantry battle. At the limit of their air support range, the Germans and Italians started to paint their vehicles in a variety of camouflage schemes while the British, closer to their base support than ever before, now applied only two colors in some instances but remained mostly with solid *sand color*. Successful at El Alamein, the British pushed the Axis forces back to Tunisia.

#### Tunisia—1943

With the Axis hemmed in by two allied armies in Tunisia, both sides committed additional air forces which led the ground forces to the use of better camouflage techniques. Since both air forces were well skilled in the art of ground attack, the survival of the vehicles might well rest in the ability to remain undetected. The Americans had now entered the war. Their equipment, sporting large white or yellow stars on solid *olive drab* colored vehicles, seems indicative of the attitude that they had air superiority, which was certainly the case upon their arrival. It was only after their first major confrontation with the German forces at Kasserine and after a taste of German/



Italian air power that the vehicles were rapidly covered with extemporized *mud camouflage* and later with various painted patterns in accordance with U.S. Army Engineer patterns. Because the *Luftwaffe* ruled the air for a short period, German armor was painted in a variety of colors, but generally in a single solid color. As the final days of the battle approached, the German tanks appeared in two-color camouflage apparently in direct proportion to the rising air superiority of the Allies.

#### Russia—1942-43

Throughout 1942 and 1943 both sides committed heavy air forces along the lengthy fronts. In those sectors where the one air force gained superiority, the vehicles were camouflaged using a number of interim measures, while in areas of little air activity the tanks continued to be painted generally with only a single basic color, *panzer gray* or *dark green* for the Germans and Russians respectively. However, even in early 1943, the Germans had recognized the growing strength of the Red Air Force and had prepared special paints in three basic colors to be used on all vehicles. After the disastrous

battle of Kursk in the summer of 1943, virtually all German tanks received a two-color paint scheme and many adopted the three-color scheme as the Russian air force continued to grow in strength and the German armored and air forces weakened.

#### Italy—1943-44

In Italy in late 1943, the Allied forces found that the Germans, far from withdrawing precipitously, were fighting for every foot they yielded. Faced with the situation that the German ground forces had immediate air support while the allies had to rely on air cover from Sicily, the allied armor was soon found in a variety of camouflage colors more often than not composed of up to three colors in irregular patterns. As the allies became firmly established ashore and transferred more aircraft to Italy fewer and fewer allied vehicles were found camouflaged. The case was reversed for the Germans who reverted to three-color schemes in early 1944.

#### Europe—1944-45

By 1944, the allies in Normandy and the Soviets on the eastern front were able to maintain almost total air superi-

Complex French paint scheme, at far left, was instituted in the 1930s. A German "Puma" armored car, above, in sand with sprayed splotches of red and green, is typical of German paint schemes. Shermans, in photos at right, relied on branches, whitewash, rather than paint.

ority and their vehicles, painted in either an *olive drab* or *dark green*, testified to the situation. On the German side, with the *Luftwaffe* committed to halting the allied strategic bombing offensive over Germany, the German armor was generally found in at least two- and many times three-color camouflage. This period also produced the initial versions of the very intricate *ambush splinter camouflage* patterns. These patterns were usually of the standard three-color mottled design, but displayed a unique overpainting of small triangles and squares of opposite color shades (light over dark, green over mustard, etc.) which realistically simulate the effect of sunlight striking the ground after passing through foliage. Of course, such patterns could only be effective if the vehicles were generally free of mud, but with the continuous infantry retreats, the German armored forces could often find the time to locate and prepare both a fighting position and the vehicle. To a great degree then, we can summarize the intricate camouflage pattern of this period as one that optimized a situation under an overwhelming air threat in which the designed protection could only be achieved by a defensive camouflage scheme.

#### Ardennes—1944

In the Ardennes offensive of late 1944 (Battle of the Bulge) the Germans once again enjoyed local air superiority and appeared in the old solid *panzer gray*, in many cases even without the application of whitewash for the purpose of winter/ground camouflage. The hoped for air cover failed, the German



A brush-covered Sherman fires on German positions in France in 1944.



attack was broken and proved to be far less effective than had been hoped. And, perhaps, in confirmation of the overall air situation, the last German attack in April 1945 in the east was carried out by the *Grossdeutschland Panzer* division, whose tanks had received the best possible camouflage paint job of any tanks during the war. Undoubtedly, this was done because the Germans knew that the Red air force would make every effort to destroy the German armor.

#### Korean War—1950-54

Five years after WWII, the West found itself engaged in a police action in Korea. Although the United Nations forces were to advance and retreat under the fortunes of war, they held virtual total air superiority. Under their air umbrella, U.N. forces appear not only did not use any special camouflage but many went so far as to paint unit insignias and provocative designs on their vehicles. This anti-camouflage could have only been used by a force that well knew that their opponent had nothing on the ground or in the air which could seriously contest their strength.

#### India-Pakistan Conflict—1965

In this conflict, both sides possessed air forces but neither could claim a numerical superiority. The Indians, although granted by most observing militaries prior to the opening of hostilities to hold the best chance for victory due to a long and generally successful military history, failed to obtain any edge in the air. However, neither did the Pakistanis. Both sides' forces went into combat with vehicles painted in a single solid color and maintained their vehicles in those colors for the duration of the conflict, apparently as a recognition of the general equality in air forces.

#### Vietnam War—1968-73

In Vietnam, the American forces were never seriously contested by major air actions and little in the way of North Vietnamese ground-support air activity was experienced. The mechanized units again provided a recognition factor of this "security" from both the

air and ground by adopting the various unit designators as vehicle emblems while seldom if ever applying any camouflage.

#### Arab-Israeli "Six Day War"—1967

In 1967, both the Arab and Israeli

armored forces were painted in solid colors. The Israeli vehicles were painted in a *sand color* with a *blue* air identification stripe. While the Arabs, in the case of the older equipment, had painted their *sand*, but in the case of the massive arms build-up from the Soviet Union had left their new vehicles in the



An M8 Howitzer carried a light screen of branches in this 1944 photo.



This painted camouflage was typical of Japanese vehicles during all of WW II.



Facing no air opposition, some U.S. armor in Vietnam carried a sort of anti-camouflage, including drawings and slogans.

same standard Soviet factory *green*. The air forces, although everyone granted the Israelis' professionalism, were counted as relatively equal due to the numerical superiority of the Arabs. As events were to prove, the 1967 war was concluded in the incredibly short span of only six days which obviously did not provide any opportunity for the Arabs to adjust their vehicles in terms of camouflage, but the results may be seen in the later war of 1973.

#### Yom Kippur War—1973

Faced with what was immediately understood to be a technologically advanced and considerably better trained Israeli air force, the Arabs adopted various camouflage patterns: The Syrians—*sand* over *Soviet green*; the Egyptians—*sand*, with *green* and *red brown*; the Jordanians—*earth brown* with *sand*. For their part, the Israelis removed the air identification stripe and fielded their new U.S.-supplied equipment in *green*, an apparent reversal of ground forces' thinking in terms of air superiority. This thinking seems to remain the case today.

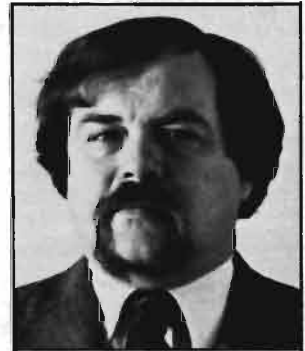
#### Europe Today—Some Thoughts

To gather these observations together we have only to look at the various forces in Europe today to make at least a general comment concerning their

attitude about air superiority. The Soviets maintain a large air force that is largely committed to ground attack and support. Their vehicles, in a single solid *factory green*, appear to tell the tale when matched against the various allied forces in their vari-colored camouflage schemes: Netherlands—three-color; BAOR—three-color; and Belgian Army—three-color. Of all the NATO allies, only West Germany has maintained tanks in a solid color of *Bundeswehr gray*. The U.S. Army has for the past decade carried four colors. Now, however, with the apparently successful conclusions of discussions between West German officials and the U.S. Army, both countries (and it is expected the forces of all other NATO members) will apply a new broad patch, three-color scheme. Naturally, these new patterns should be helpful in reducing the identification of NATO forces vehicles by country of origin. The abandonment of a camouflage system that was more meticulous in scientific detail than the ambush pattern of the long-ago heavily outnumbered German *Wehrmacht* is seen as a step forward in practical coloration. However, paint may only be an identifier of current attitudes concerning air superiority, and color schemes can change as rapidly as did the attitudes of the combatants in the Arab-Israeli wars.



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## “Taking Stock and Directions for Excellence”

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### Commander's Report

by Major General Frederic J. Brown

Let me comment on some significant events of this past year and where we are moving in support of the force. I'll end up with several potentially troublesome areas on which I need your counsel as we move ahead.

First, I think it has been an extraordinarily positive year in our Army of Excellence. I'll highlight several significant events, but these are just several of many. . .

In the Canadian Army Trophy competition, if you take company averages across the board, the American tank crewmen did masterfully.

I was down at Fort Hood several weeks ago, observing an operation by the 2d Armored Division and had the opportunity to observe a very fine cavalry squadron — J-series basically — in an advanced guard mission, developing contact and passing two brigades through. What was truly significant was not only that this was a fairly complex operation, but that it was done absolutely and entirely at night and represents the performance we have in the combination of the *Abrams* and *Bradley* vehicles fighting literally as you would in the day although there was limited visibility.

The 108th Armor, Georgia National Guard has gone to the NTC, a most significant training challenge for what, 2 years from now, will comprise over 50 percent of our armor force, the National Guard and the U.S. Army Reserve.

A superb initiative has begun at Gowen Field, Idaho, in terms of really working the problem of tank gunnery competency for the active and reserve. This year they have a reserve component tank commander course. I think it has great potential for the future in the development of this capability on a regional basis with quality control that we can provide from here. . .

The 194th Armored Brigade, here at Fort Knox, basically went out to the NTC and validated the training packages that we are going to be talking about at the conference.

We've also had a significant validation of our tank combat tables at Grafenwohr. It is a truly useful validation of our gunnery tables by responsible commanders in USAREUR, and I think it was most significant that there was representation from FORSCOM, specifically, III Corps. It really represents the entire active armor force getting together in a collective sense for the validation of one of our most important training procedures.

The *M1 Abrams* continues to excel. We had a highly successful OT of the *M1E1*. It appears to be on track due to the dedicated work of a fair number of people here in the audience. And with the capability it has to provide us with enhanced firepower and NBC protection, we have another winner.

We are working the mobilization issues with our training divisions. As I had breakfast this morning, we were discussing this. Looking across the force, we have the challenge of insuring readiness across the force, not just for the first day of war, but for the 30th, or 60th, or 90th day, and I can assure you that there is a most positive attitude across our

three training divisions that are associated with the armor force.

We also validated the training programs — the ARTEP Mission Training Program and its applicability to tank combat training — with the new tables which we discussed this past year. I think we have some very important initiatives that we will be talking about later, not just in training to fight our equipment, but in training to maintain our equipment. That also appears to be well on track.

We were challenged about this time last year in terms of where do we go after *Abrams*? How do we lead the close combat heavy force into the next century? The Future Armor Combat Systems study, lead by Colonel Dick Coffman, is through its first phase now and Brigadier General John Sherman Crow, in from Europe, is taking it the next step. I can assure you that we are looking for a jump ahead — that was the challenge we were provided — and I can report that I am confident in a combination of capabilities that we will, in fact, be able to provide this.

We have some important work going which we need to share with you in terms of concept evaluation programs, particularly in the area of command and control and combat service support. And it is simply inconsistent that we stress the essentiality of commanders leading forward and not providing to the commanders adequate vehicles from which they can both fight and command and control their force, and we're going to talk about that more during the course of the conference, and I seek your counsel in some initiatives.

On support to light forces, we have moved aggressively into this area as I think we should. There's a serious problem of dependence on chemical energy killing. We have a real challenge in terms of the ability to penetrate advanced armors, a tremendous requirement to provide kinetic energy support to our light infantry as it deploys worldwide.

As I mentioned yesterday, we now have an organization that we're working very hard on in terms of operational and organizational concepts. It's basically a cavalry regiment light, in support of XVIII Airborne Corps. We're working very hard on an armored gun system, *XM4*.

I hope you sense that across the Armor Center we are listening very carefully to the field, — and by the field we mean, not just the field in the green suit — whether its active or reserve, deployed overseas or here in the U.S. — but it's also the field as represented by industry which has got to provide us the edge that we need.

I feel very strongly that we at the Home of Armor owe you what I have described as “a way to do things that will work.” We assume the responsibility to ensure that the product does in fact achieve the goals desired. But it's *a way*. *The way* must be that which you — as a commander within your chain of command, responding to mission, enemy, troops, terrain, and time — find appropriate to your particular situation. But we believe very deeply — and I hope you sense during the conference — the criticality of our standing up to be count-



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# The 1984 Armor Conference

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ed, this is a way to do it *which we stand behind*.

When we moved into the J-series organization — in which we will all, active and reserve, be organized in the next year or two — a rather significant change occurred as we enriched the leader ratio. Nothing really new. It just returns us to leadership and mounted warfare as it was in the past. And that is . . . about 33 percent of our tank force is commanded by an officer. He leads his unit but he himself is commanding a vehicle that contributes to the capability of the organization.

Officers — and this is a precept of the mounted arm over the years — must lead by example. It is a *particularly* serious obligation that we have, to not just make the statement, but in the case of many of our Guard and Reserve units, where the young person we want as an NCO or as an officer, moves from place to place following their civilian occupation, to ensure that they are in fact competent in what we expect them to do.

I must say that I think we are working in total unison, and I applaud the support we are receiving from the Guard and the U.S. Army Reserve in executing this, but we have a long way to go. . .

I think we need to make much better use of our capabilities. You'll sense this, I hope, in the demonstration this afternoon. If you just think through what we have in the thermal sights, what we have in guns as we improve the 105 and go to the 120, what we have in the PLRS, the position locating reporting system, what we have in TADS, in the attack helicopter, in data bussing. . . that we have some remarkable advances that have been made and they're in each of our weapon systems. We should be prepared to develop better, more intelligent, more synergistic payoffs from these investments and I hope that you sense the movement in this direction.

For example, as you see the *M3* in the display this afternoon, think of it as an *M3* that doesn't have TOW. It's an *M3* with *Stingers* that look like TOW so that the enemy wouldn't know the difference if he wanted to suppress your air defense. We're talking mobile protected space, a concept that we're working on. There are a range of things we are working on and you'll see this with the CDTV, the Commanders Independent Thermal Viewer. The tank may look the same, but the interior can vary significantly to give us additional combat capability, at as low an echelon as possible. . .

Now these are all areas that we're working and I think that that across the force, increasingly, we are in sync. But again, I think we need to fine tune, and that's the purpose of this conference. We've got some serious shortfalls.

First and foremost, we really need to scrub cavalry. And by that, it's the entire regimental organization; it's the divi-

sion organization for the heavy division, and it's the reconnaissance organization for the light division. And we want to start that with a discussion tomorrow.

We have problems in the viability of the 19 Delta MOS. It is a time of great, great promise as we think RPV remotely piloted vehicles and the ETAS, Elevated Target Acquisition System and elevated platforms and that which we can do to reinforce the conventional reconnaissance capabilities of our cavalry. There are great vistas, but there are great challenges that we need to work. I don't think that we have done enough over the years from the Armor Center to lay out the issues for the force.

Officer Proficiency. It's a very tough problem given what I have just described to you in terms of officers leading by example, when there is a general expectation that as soon as you complete the advanced course — if you had been so fortunate as to have commanded a troop or a company — that you're off then in some additional speciality and, basically, you're gone from the force. I, needless to say, would like a structure such that we could ensure two company command experiences to each of our officers, either a TO&E company and headquarters company, a TO&E, or TDA armor training brigade and TO&E. . . We'll talk about it a little bit, but right now, we simply are not providing sufficient time in organizations for our young leaders.

NETT. We're "netting" around the world! More kinds of tanks than I would like to talk about. We have a fixed size to the Armor force and we have almost three divisions of NCOs NETTING the rest of the Army. If you wonder why you don't have NCOs, its because they're all TDY from Fort Knox out NETTING. . .

We are paying an inordinately high price to have the absolutely first rate NETTs that every commander wants.

And last — I think really most significant — is the challenge that we have to revisit — really, to redevelop — the spirit of the offensive, or as we describe it, *auftragstaktik*, the sense of the mission-type order. The tremendous capabilities that are implicit in our force are more effective not in the defensive environment, but in the offensive application: to get into the enemy's backfield and exploit. The challenge starts right here and we're working on it. You'll notice it in the emphasis on the restoration of the offensive. (see, Commander's Hatch, p.5) In the development of the commander's concept, there's entirely too much paper in orders and not enough work here in the school in terms of each commander understanding the intent of his superior so that, in the absence of orders, he moves aggressively to accomplish the mission. . .

We have developed the capability. Now it's the time, as an arm, to get back to the bread and butter of the offensive orientation of Armor.

## A Look at Our World

by The Honorable John O. Marsh, Secretary of the Army

What I would like to do today is to make a presentation that focuses on the world in which we live. Let me tell you the genesis of it. If you looked at the Congress of the United States, you would see that in each succeeding class that is elected there are fewer members of the Congress who've

had any military service. The number of veterans is declining very drastically in the Congress, and the number of WW II veterans is really becoming quite small. . . We are dealing with a body of very influential people that is having to pass judgements on matters that relate to military policy, but they

## “Taking Stock and Directions for Excellence”

do not have a frame of reference. They may be friendly but, nevertheless, they don't relate to battalions and brigades, and a lot of the things that you take for granted.

That became apparent as we began to meet with some of the members. We started a program in which we have have them over for breakfast in groups of two, usually, maybe three, sometimes just one member of Congress, and we give them an overview. . . I'm going to give you the same briefing that we give them because it's very important that we always continue to look at the big picture as we approach our task.

The world is actually changing and it is dangerous and it is very complex. But it was very changing and complex for those Americans who made the initial assault on Normandy. It's very important that we remember that. As we focus on the Normandy Invasion, let's always remember that less than a year after that event came the rebuilding of Europe and the NATO alliance, the Marshall Plan, the European Recovery Plan. And we'll also note that out of that, two of our former adversaries would today become our staunchest allies.

The policy that we are following in the Army is to build the conventional warfare capability. We hope by doing that we will be able to do three things: One, we give the President additional options that he needs to stay off the nuclear battlefield. Two, we'll be able to handle, muffle, or contain conflicts in the low end of the spectrum. And, three, through a strong conventional force we will be able to achieve national policy, which is to deter war and maintain the peace through strength.

You always look at the world through different perspectives, through different dimensions. This is a world of violence and the areas which you would call the flash points are areas where we could have a superpower confrontation, although they are not necessarily in their origin or genesis of superpower nature. For example, the Falkland Islands was not, but it could have become one.

We have a rather significant, serious border between Ecuador and Peru. The Soviets have a very substantial presence in Peru, in fact they have more advisors in Peru than we have in El Salvador. . . You have another border dispute between Morocco and Algeria with the Polisario guerillas causing problems in Morocco and being supported in part, possibly, out of Libya. In Libya we have Khadafy, a leader who has bought more military equipment from the Soviet Union than any other client, some \$38 billion has been sold in the Middle East and Africa and also the Sahara. Of the \$38 billion, \$14 billion has been acquired by Libya. Khadafy is the exponent of a Pan-African policy. Under this policy, Khadafy has taken some actions, for example, his thrust into Chad. Once into Chad you could move into the Sudan. As you know, he had an air strike there directed against Khar-toum not long ago. That puts you into a flanking position for Egypt.

In Angola and Ethiopia, on the horn of Africa, you also have a combat situation where the Soviets are using proxy troops. The proxy troops are Cubans, about 40,000 of them. They're not divided equally between the two countries. There are some indications that they may be pulling some of those people out, but that remains to be identified.

We have a tendency in our focus on Europe to look at Central Europe, whereas we must never forget that Berlin continues to be a major tripwire. The solidarity movement in Poland is of much consequence, particularly with the unrest

that occurred around May Day. Because of the ensuing unrest that might occur arising out of that, we should never neglect it.

Now, when we move into the Mideast, Americans would naturally focus on Beirut and the very tragic terrorist attack there last fall and the death of the Marines. . . But the extraordinary concern right now is in the war between Iran and Iraq. If Iran emerges a clear winner, then you're going to change the balance of power on the Arabian peninsula. The Soviets have so far successfully been able to manage the fact that they really support both sides. The support of Iraq is greater than it is in Iran, but they do have significant interest in Iran. They are gambling, on a long range basis, that Iran will be the winner with the Ayatollah passing from the scene. This gives them opportunities, with this long continuous border, to have access to and be more significant on the Arabian peninsula.

With about 110,000 combat troops in Afghanistan, the Soviets have now started their move up the Panshir Valley in the central portion of Afghanistan, to seal off that area. They are having problems there. The Soviet soldier is not doing all that well in Afghanistan.

There are continuing problems, as we know, in Southeast Asia. A recent border clash erupted, involving the Chinese and the Vietnamese. In Cambodia, there's a continuing problem along the border between the Soviet Union and China, where it's sufficiently tense that the Soviets maintain 30 percent of their force along that border. And in the country of Korea, it is continually dangerous. In North Korea, 24 percent of the gross national product goes into defense and they draft the youngsters for 7 years.

Next what we ask the member to do is forget that it is a world of violence and look at the world from the standpoint of economic geography, geopolitics, and in a geostrategic view. When you do that, you begin to see a world that has many different dimensions.

There are probably 12 to 15 major international choke points in the world. A choke point is a very precise geographic location that enables you to control maritime and naval commerce, air traffic, and also because of the location, influence substantial adjacent land masses. There are only two in our hemisphere, one of them is the Panama Canal. . . the other choke point is the Straits of Florida and by that I'm including the Yucatan Channel and the Windward Passage. These are of great importance because about 47 percent of all U.S. commerce generally moves out of the Gulf ports and pretty close to 60 percent of all our petroleum commerce, raw and refined, moves through there. In the event of a general conflict, better than 50 percent of our commerce to support our forces in Western Europe must transit those Florida Straits.

So you see, with Cuba sitting here astride the Florida Straits, it could cause some real problems.

The Greenland-Iceland-UK Gap in the North Atlantic is of far greater interest and concern to the Navy and the Air Force than it is to the Army. The Soviets maintain four major fleets. One fleet is kept at Murmansk that exits down through the gap. A second Soviet fleet is based on the Baltic Sea and comes out through the Danish Straits. A third Soviet fleet is based in the Black Sea and comes down through the Dardenelles or Turkish Straits into the Med out through the classic choke point of all time, Gibraltar. Of course, other

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commerce can flow down through the Suez Canal and come out at another choke point, the Straits of Bab el Mandeb on the horn of Africa. But the Soviet presence in Ethiopia and their strong influence in South Yemen on the tip of the Arabian peninsula, gives them a very commanding position in the Indian Ocean and over the straits.

The Cape of Good Hope has always been a place where we watch maritime traffic, particularly tanker traffic coming up the Mozambique Channel into the "energy" straits of the world, the Straits of Hormuz. The Hormuz Straits are very narrow, only 5-8 nautical miles wide — and are of extraordinary importance because two-thirds of Japanese oil comes out of those straits along with about 20 to 30 percent of Western Europe's oil and about 10-12 percent of our oil.

In the Indian Ocean, we have to have access from that ocean to the South China Sea through straits that were very well known during the Vietnam War, the Straits of Molucca. This area has been called the Arc of Crisis. In that Arc of Crisis we have designated the missions now of the rapid deployment force that focuses its center on the whole situation involving the Arabian Peninsula and the oil resources of the Middle East.

The Kurile Islands are actually Japanese. The Soviets control them because they procured them during the last week of the Second World War. They are of great strategic importance to them because the fourth Soviet fleet, and the largest, is maintained here. The Pacific Fleet, or Eastern Fleet, transits these straits into the Pacific Ocean or into the South China Sea or the Indian Ocean.

When we're talking about Soviet aggressiveness, we see recently they held the largest naval exercise that they have ever conducted in their history, and the largest naval exercise in peacetime history, in the Norwegian Sea and in that area of the North Atlantic. There were two hundred ships and subs that participated in that exercise. A very troublesome thing.

Now, in the area of economic geography. We're talking really in terms of 40 strategic minerals and metals for our modern economy, and without seven of those you're not going to produce anything. You're not going to have any assembly lines in Detroit. They're absolutely essential to a modern society. We try to bring this to the attention of the members of Congress, to relate U.S. assembly lines to areas overseas. But, of the 40 minerals and metals that I mentioned, we're better than 50 percent dependent on 22 of them beyond our own borders. Whereas the Soviet Union is a relative position of self-sufficiency. They are totally self-sufficient for 35 of the 40.

If you want to bring that home, look at some of the products. You can take the jet engine: One, the jet engine is in an area where we have a clear technological lead. Two, we dominate the markets of the world. Three, it's a great contributor to our exports and sales. The family of metals that we're talking about are lightweight, heat resistant and extremely strong and we've got to have them. The least that we import into the U.S. to manufacture that engine is tungsten. And we must import 59 percent of that.

Now let's take into account another American product, the automobile or truck. There are four basic families of metals there. The cobalt group, the chrome group, the manganese group and the platinum group. The platinum is used, for example, on the catalytic converter in the exhaust system. Then regarding the areas of the world from whence we

import those necessary metals, principally they come from the southern hemisphere of the world. Notice they come from Latin America, Africa, Southwest and Southeast Asia. You're beginning to see the overlaying now of the flash points. You can begin to see very clearly the need and necessity of ingress and egress to these areas as far as we're concerned. One, is that they are sources of the raw materials; two, they are potential future markets, and, three, very importantly, it's essential to us that they emerge in some governmental entity that reflects western values in order that we have a dialogue in the international community. You can not do that with Libya, nor North Korea. You can not do that with Cuba. Yet we know, as we look at those areas of the world, we see certain commonalities. One, they have immature governments, emerging economies, exploding populations, problems that relate to health and disease, and in some instances illiteracy. Everyone of them is susceptible to infiltration and insurgency, and when that happens they run the risk of destabilization where that destabilization and insurgency moves you into a defense problem because of the violence that escalates.

Let's look at the Soviet Union. There are several things that we must always remember about the Soviet Union, and that is that first they use military power as an instrument of diplomacy. That is a very basic given, because other nations use trade or commerce; the Swiss use finance, but the Soviets use military power. Now, 25 years ago, the Soviets made a decision to build a blue water navy for the projection of power and they have done that very successfully.

In the field of technology — for example, in metallurgy — the Soviets are about 10 years ahead of us in titanium casting which has given them the capability of producing a submarine that has the diving depth that is significantly deeper than conventional sub operation. They have a very fine air force, the largest military air force in the world, with a broad range of capabilities both in fixed and rotary wing and the most heavily armed helicopter in the world, the Hind.

We see a country that has an enormous military capability both in the air and on the sea, but still the basis of the Soviet threat is in the Soviet Army. And it's land-based, and that land base is the Eurasian land mass. One of the things I think we have a problem with in dealing with the Congress and the Army budget is that there is not in the Congress a subcommittee that relates to land warfare. The Soviets are a land-based power and in that army you're going to find 194 divisions. They're not the same size as ours, because the Soviet division runs from 10- to 12,000. . . . But when you take 194 divisions at 10- to 12,000 and then take in the U.S. force 24 divisions, 8 in the National Guard, 16 in the active force, at 18- to 20,000, you still see enormous discrepancies in manpower.

Now, I don't want to leave you with the impression that all Soviet divisions are of equal capability. They are not. They categorize their divisions and they divide their force, as a general rule, into three types. A category 1 division is fully ready in manning and equipment. They have the best equipment. You will find most of them right here on the NATO front, but they take some of those divisions and put them on the China border. They are the elite, the 40 to 50 that I mentioned.

The Cat 2 division of the Soviet Union has less of this equipment and less manpower, but it can be mobilized in 72 hours. Cat 3 can be mobilized in one week. We saw them hit

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these mobilization deadlines and we know that they can do it.

On the Cat 2 and Cat 3 levels they have been observed to do that and they did it in the Afghanistan invasion in 1979. If you look at that situation and say, “Well, how can you maintain that kind of manpower for that kind of mobilization response?” The reason that they can do it is that they have 8 million men in the Soviet Union that have completed military training within the last 5 years. And they’re required to maintain that military affiliation until they are 50 years old.

I’ve looked at the Soviet Reserve program. I don’t think their reserve program and their method of organization is as good as the reserve program that we have, but nevertheless, they have this enormous capability to flush out these divisions very rapidly.

Several things are important for us to remember as we look at that and one of these is a significant shortfall that we have in the Army. It is that we are dependent upon our sister services to deploy us, either by sea or by air. Consequently, the inability to complete the deployment requirements that we might be faced with is one of the most major problems that we have in the Army. . .

To give you some idea of what kind of logistics we’re talking about, take the 82d Airborne Division at Ft. Bragg — and we use that example because it’s a parachute or light division — but to move that light division into the Persian Gulf today would require about 2 weeks’ time and it would take all of the dedicated assets of the Military Airlift Command to do it.

I used that example because we have a requirement that as a part of our foreign policy and defense policy involving Western Europe, that in the event of crisis we will have 10 divisions in Europe in 10 days. I’m sure you have heard of that commitment, it’s called the “10 and 10 Commitment.”

As you know, we cannot maintain 10 active divisions in Europe. So what we’re seeking to do is have four divisions there, and we’re seeking to build division sets of equipment called POMCUS which is the grandfather of all Army acronyms: Positioned Overseas Material Configured in Unit Sets. We have filled four sets, but not the other two sets. But I can tell you that you cannot hit that deployment requirement because of the shortage of air and sealift. Part of this ties into the idea of the development of the light division. To use the divisions like the 7th, the 101st, 2d, and 9th, you’re talking in terms of lift that will run you from 1,100 sorties of C-141s to about 1,500, depending on which of those divisions you’re lifting.

It will take you about 12 days to move those divisions with those 141s to some point in the world. With the light division of slightly over 10,000 people, you will be able to move that division in 478 sorties anywhere in the world in less than 5 days.

This doesn’t do away with the continuing requirement that we have for the heavy division. Indeed, your heavy division is the basic cornerstone of that defense in Europe. . .

One of the things that we are constantly encountering, anytime you’re talking to members of Congress, is the importance of the NATO alliance. We have people that say, “Why don’t we draw down our forces in Europe? It costs a lot of money; we’re putting a lot of people there; we have a lot of equipment why not just pull our forces out?”

I can only answer that with this reason: the NATO alliance, with all of its faults, has preserved the peace in western

Europe longer than at any period of time since the Roman Empire.

There is something else very troublesome that we point out to members of Congress, and that is the growing presence of Soviet military personnel out beyond the boundaries of the Soviet Union. They have always had civilians overseas. They now have one brigade of organized forces in Cuba. Cuba is of enormous importance to them. The second largest intelligence station that is operated in the world by the Soviets is operated at Nubres, Cuba, by Soviet personnel. The largest is in the Soviet Union. But what we’re seeing in Africa and in the Middle East, are representatives that are following the Soviet foreign military sales program, which is the largest. People say the U.S. program is the largest. No, the Soviet Union has more foreign military sales than we do.

The Soviets have a military sales program going on in about 30 countries in the world and they have about 20,000 military personnel involved with it. They divided it into two types, those that go in and teach you how, technically, to operate the equipment, and those who then teach you how to tactically employ it.

As we look at the threat that we face and the things that we have to do in the U.S. Army to counter that threat, it’s very important, I think, to look at the American heritage, and the roles the Army has played in our national lives, and continues to play today. What is it we are really seeking to establish our force to do? What are the long-range goals? It is less than 16 years, actually slightly more than 15 years to the year 2000. As I ask you to focus on the year 2000, what will be the image of American society? What will be the image of world society as we move into the year 2000? Will that society reflect values of the last two centuries that are reflected in the American Republic, whose bicentennial of its Constitution will occur in just a few years. . .?

I know a lot of people wonder why we are focusing on the 200th anniversary of the Treaty of Paris. I can explain it right here. . .

The chief negotiator for the American team in 1783 was Ben Franklin. He got a treaty that is considered to be the third most important document in American history, ranking behind the Constitution and the Declaration of Independence. Why was it so important? One, because it established the independence of the United States. Two, it defined its boundaries with certainty. And, three, it ushered in the constitutional era that would lead to the establishment of the American Republic. Let’s remember one thing. This was September of 1783. Behind these negotiations there were years and years of bitter conflict, a great deal of suffering, a lot of sacrifices, and many mistakes in order to win that freedom.

But they could sign a good treaty because they had victory on the battlefield and a strong army at their back. . .

You see on that Army flag 168 streamers, from the first campaign at Boston to the campaign in Grenada, that bear new testimony to the Army’s dedication to the principle that this nation will survive, that the blessings of this republic shall be the hope not just of our own children and their children, but really the legacy of all mankind. And so that is why it is so vitally important what you do in your units where you serve. And so I thank you, not for serving in the Army, but I thank you for what you do for our country through your service in the Army.

Thank you very much.

# The Manpower Situation

by General Maxwell R. Thurman  
Vice Chief of Staff of the Army

I've got a few items of information that I think are useful to you as you continue your debates on the Armor Force. . .

There's some things going on in your Army that need some explaining. We need to make sure you understand what's cooking out there. . .

You know an organization is built around its people, not systems, and I want to delve into that for just a moment because I think it's germane to some of the work you will be doing tomorrow. . . It was only five years ago when we were in deep stress in the personnel business and it required attention. You must not be frivolous about the people working for you. They're very high quality youngsters and we should expect to see the attrition rates go down instead of up. . . You know, about one-third of the people in the manpower pool do not even qualify for service in the armed forces. This leaves about 900,000 in the male bracket every year that are qualified. We've had a dramatic turnabout now in the quality of people saying, "Yes, we'd like to serve in your Army. . ." you have an enormous contribution to make in the way you treat people in our Army, because 160,000 youngsters that are here leave our service and go back to mainstream USA and tell the kids back there what's going on. If you treat them right, they carry the right story. If you treat them ill, they'll say we're a bunch of rag bags in the Army! So you have a vested interest in that.

The Air Force is still the number one preference in the hearts and minds of the 18 to 23 year-olds, but the Army, since 1981, has moved into the number two position in a dramatic shift over the Navy, which has been historically number two. Today, the Navy is number three, and the Marine Corps is number four. In 1976, we brought in about 105,000 high school graduates, about 58 percent of our total intake. . . In 1979, we brought in about 84,000, about 64 percent high school graduates. Last year, we were at 115,000 high school graduates, or 87 percent. This year, we're running close to 90 percent. . . So, by that standard, we're doing very well in terms of the raw material presenting itself for service. If you look at the national sample, 53 percent of the kids in 1980 scored 50 or better on our qualifications test. That's the upper half cut line. And 24 percent are in category 4. Seventy-five percent of the kids in America are high school grads.

This year, the Army is up there, with only 10 percent category four, so you have a dramatic change in the youth of America coming to work in your unit.

The question is: Are you treating them any differently than four years ago? Because if you're not, they'll walk off the job on you. This is true across all the services. There is a very extraordinary quality of kids coming in.

One of the questions you might ask yourself is why the stress on the subject of quality? Isn't everybody as good as everybody else? The answer, of course, is no. . . The high quality youngster, the upper middle category 1 kid scoring his SQT, does dramatically better than the lesser noble in the crowd. It's just a simple fact. So let's translate that into an

experiment we had at Fort Ord. We took a bunch of infantrymen out and wired them up with MILES. We found out that if we use mental category 1 to 3, upper half kids, you get a higher kill ratio as opposed to lesser nobles getting a lesser kill ratio, and getting shot faster. So the point I want to make to you is, *you must go after quality*. You must assert that you need it, because if you don't assert that you need it, then I'll be unable to persuade the Congress to give us the resources to get it.

There's another good deal going on in your Army, and that is the work that is going on in COHORT. We expected stability and we're getting it. The one thing you can understand, given the fact that we just started this program, is that the horizontal blending is very strong between the group, they're wiping out the peers that don't qualify; but the vertical blending between entry-level soldiers and the NCOs needs more work. And we look forward to it.

Now we've been talking a little about the functional area analysis, the FAA, we just completed; I'll give just a few insights about it that says great work has been done at the Armor Center. Let's look at a few of these things you will be interested in. One of the things you have to understand is the amount of change. There is a dramatic shift in the emphasis on support. In fielding equipment, that support is of tremendous importance. On our training devices, we fielded the *MI* in 1982 but all the training devices came along later. And notice the Unit Conduct Of Fire Trainer is still not up and operating. It should have been up when we fielded the *MI*, and I just tell you that we're trying to get our arms around it. We're trying to recapture the things we can, to try to field, or field the systems better, than we have in the past. That's the nature of the game.

O.K., what's the status of the *MI* tank? Well, the status of the *MI* tank is that it's operating at a 94 percent OR rate in Germany. That means it's doing damn good. DAMN GOOD! It's doing better than the *M60A3*, as a matter of fact. So the status is very good, but we've got some problems with it and we're trying to work it, and I just ask your forbearance. We know the process now of getting it all together in order to grind it out and that's the purpose of what the FAA is all about. That's also what I call a mark of excellence when we're able to sit down in a conference run by a four-star general in order to get at some of those answers.

There is also some good stuff going on out in industry as well. When General Dynamics took over the tank plant they brought in an engineer whose name is Ewing. Ewing is an F-16 fighter engineer who doesn't know anything about manufacturing a tank, but he's had a 47 percent downslope on manufacturing defects in the plant in a period of less than a year. So you're getting a very high quality product coming out as he is getting better in his stewardship. At the same time, he's reduced the direct labor man-hours by 40 percent. So what I'm telling you is that in industry there is the same striving for excellence.

Okay, what I'm trying to suggest to you is that on all the good work all of you are doing, one of the things you should



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remember is that the American people, in 1982, thought you were in about 6th place in their hearts and minds. And this is the National Research center Gallup Poll, that the University of Chicago runs in October of each year. In 1983 this inquiry of the American public was taken at the height of most of Beirut and the Grenada operations and now you're number three in the hearts and minds of the people! You have everything to do with staying there and I just say to you that when you walk through the downtown Atlanta Airport and you see a soldier who doesn't represent being number three in America it's up to you—part of your duty—to fix it up because all of us, both the Guard, the Reserve, the Active, as well as our civilian colleagues that help work in this industry, contribute to that notion.

Let me give you a couple of other notions here, that track what I have begun to talk to you about. The first thing I leave you as a notion, is that of setting standards. For example it is clearly up to the officer corps in our great Army to set the standard. And so one of the questions you have to ask yourself is: What set of standards have we imposed upon ourselves? One of the questions you have to ask yourself is: Shouldn't an officer who is going to be in command of tankers qualify himself? So, maybe as a precondition to a commander taking command of his unit, he should be qualified here at the Home of the Armor before he goes out and inflicts his standards on his unit. On the master gunner question. “Can you be a master gunner without being a distinguished gunner?” Have we got a contradiction in terms? Does the master gunner have to take a requalification test every year if he's going to retain the title? I think you ought to take a hard look at that.

Regarding the Reserve Component, I've issued an order and I intend for you to carry it out, that all Reserve lieutenants will come to the resident school in order to go through the resident course. I don't believe that you can learn how to fire a Table VIII on paper with a correspondence course. So we have to send all Reserve officers through the school just as we do the active officers. Meanwhile, I ask you where you've been, because many of you have influence over the training that we provide for the Reserve components. So, I ask you to do that.

A refresher course then would seem to be in order for those who haven't been through the correspondence course or the resident course here who are now commanding armor companies of armor battalions to make sure the reserves are trained right.

Further, I ask you to just give a little thought to how you are imposing your standards on your subordinates. One of the things we want you to do as the commander, for example, is to take an affirmative action on promoting a guy, for example, from 2d lieutenant to 1st lieutenant. No Armor lieutenant who can't qualify by taking his tank downrange on Table VIII should be promoted to 1st lieutenant until he can do so. So start writing it up that way. You'll find a hell of a lot of people will start studying their manuals if you do that.

I would assert to you that if you do not speak about excellence, and if you do not demand excellence, that you will not get it. So you must state it.

I'll just give you my own illustration about it. I don't know how many of you saw the Seattle Seahawks and Raiders game on the AFC conference final. But at the end of the game when the Raiders left the field, they ran back down

into the tunnel and in the tunnel going back into their dressing room, on a wall placard as high as this ceiling right here, is a big sign with silver letters on black that says “Dedicated to Excellence.”

They're paying those guys 200, 300 or 500 thousand dollars a year to go out and play football but they also talk, speak and act excellence to their people and the Redskins got the message two weeks later in the Super Bowl in *big* detail, because they were too busy worrying about whether they were going to sign next year's contract.

So I suggest to you in ways in which you know best, that you must work on those things that we talked about here tonight, in excellence of people, standard setting, and the like.

Now, just to give you insight into the caliber of young men and women that are presenting themselves for service in our Army today, I had the pleasure of going over to Walter Reed Army Medical Center after the Grenada deal to pin Purple Hearts on the group that came into that hospital.

The first lad that I came across was a Blackhawk crew chief who had been shot in the leg with an AK47 round. He was lying on the bed, about ten o'clock at night after an arduous trip. This big 24-year old kid grabs me and pulls me right down on his chest. . . and I have not been hugged by a 24-year old Blackhawk crew chief in some time. . . so I paid attention. . . and he said, “General, I want to tell you that my buddy saved my life.” And I said, “Tell me about it,” and he said, “Well, you see, sir, my buddy and I went to Blackhawk Crew Chief School together at Fort Eustis, Virginia, and then we were assigned to Fort Campbell, Kentucky. He was killed a month ago and when I got into trouble in Grenada, he interceded with God and saved my life.”

Here is a kid, 24 years old, who's telling us what cohesion is all about. The next fella was a Ranger from 2/75 Infantry, who had been wounded in the leg and he said, “Well, General, I came around this corner and there were three Cubans there and they had AK47s and I had my M16. I shot three of them and they shot me, and 3 to I ain't bad.” I said, “Right on, troop. That's exactly what you're supposed to be doing! Now listen, you're a Ranger there, right? Now is it really true that you went in there at 500 feet without a reserve chute? How many jumps have you got?” He said, “Forty-five,” and I said, “Well, tell me about that one at 500 feet without a reserve chute.” He said, “Exciting, General!” And I said, “Well look here soldier, you get the Purple Heart and you get one other thing which is the hallmark of every infantryman, and that is the famous Combat Infantryman Badge and I held up the blue badge and said, “You are an 11B, right?” and he said, “Yes, sir,” and I said, “You did go in there and you did fight in a battle?” and he said, “Yes, sir,” and I said, “You get one of these, soldier!” and with that he ripped off his pajama top and said, “Punch it right in there, General, just punch it right in there!” So I did! The only thing was, I couldn't get the grippers through the back of his chest!

What I want to try to explain to you is that in those two incidents if you get a chance to see the insight of the great young Americans who have joined your United States Army, Navy, Air Force, Marines and the Coast Guard, they're looking for one thing. They're looking for dynamite leadership and you know that the group in this room can provide it.

## Reducing Training Costs

### An Armor Conference White Paper

(The following two Armor Conference white papers were selected from the many discussed).

#### Introduction

The purpose here is to describe a combined arms unit training program that provides equal or better training than is currently available and at lower operating and support costs.

The key is to understand the objective before choosing a specific training event and manpower/vehicle density. After designing a leader-intensive, resource-relaxed training program, USAARMC determined the cost of this program in terms of hours, miles, and dollars for tank operation. Finally, USAARMC estimated what cost savings and cost avoidance could occur were a battalion to be equipped with near- and intermediate-term training devices.

Use of training devices reduces Class III, V, and IX expenditures, while increasing training. All the training events described in the Combined Arms White Paper can be accomplished as overall Armor Force readiness is improved.

#### Objectives

The objectives are fourfold: One, to outline a plan for the Armor Force to enable each battalion to increase the quantity and the quality of every training event while operating in a resource-constrained environment; Two, to outline present testing and validation efforts while projecting future application of resource-saving devices and cost-conscious scheduling; Three, to assist in accelerating procurement of essential training devices and simulators to improve the quality and quantity of training the active and Reserve components; Four, to assist in accelerating the necessary materiel acquisition to reduce O&S costs.

First, we must identify those cost areas we can change by modifying training needs. Vehicle-use curtailment reduces organizational and depot maintenance costs and fuel consumption, but the personnel and other support costs required for tank ownership do not change. The differences in the type of tank or in how much it is operated are not remarkable. What is expensive is the support structure needed for the tank, such as personnel and indirect support.

Tank ownership simply incurs an overhead which no amount of reduction in training funds can vary significantly. Training costs are almost marginal compared to the cost of maintaining the large tank combat fleet which is the centerpiece of the European battlefield. Nevertheless, we need to reduce current training costs so we can transfer savings to improved training, leading to higher levels of training readiness on our AirLand Battle doctrine and new capabilities.

#### Present Requirements

Training regulations prescribe mandatory training events but each unit must be able to modify training programs according to the factors of METT-T, as interpreted by the unit chain of command.

Current training programs are not correlated to miles or hours of operation, but rather to various training and administrative events. Hours and miles can be reduced by doing what is required more efficiently. Armor battalion unit training begins with the individual Soldier's Manual crewmember tasks. The next step is tank-pure training using the tank combat manual with its tank gunnery and tank tactical proficiency tables. Unit training culminates in combined arms training using the ARTEP and ARTEP Mission Training Plans (AMTP) with associated situational training exercises (STX) and Combined Arms Live-Fire Exercises (CAL-FEX). The goal of these training documents is to provide guidance and standards for effective and efficient training. With the proper use of time and resources, we can train at a greater frequency for a reduced cost.

In approaching possible reductions in training-related O&S costs, we first determined what unit training events should occur and at what frequency, using AR 350-1, including USAREUR and FORSCOM supplements. Additionally, with the *M1/2/3* vehicles, there is a need for more training, not less. These new training requirements are generated by the need for the Armor Force to use to the fullest the mobility, agility, and survivability of these vehicles and to train a force in these new capabilities.

#### Model Training Program

A sample annual training program was designed as described in the battalion AMTP (TC 17-17-1). All required events for each company were accounted for. Recommended frequencies to accomplish the training which the new systems demand were determined for each training event.

This model training program allows considerably more training than required by AR 350-1. For example, there are three repeats of tank combat tables combining gunnery and tactical proficiency as described in the new FM 17-12 series, Tank Combat Training. This is a notional program for a fiscal year. USAARMC is in the process of validating all the program elements at Fort Knox: STXs, tactical tables, and field circulars (FCs). We are confident that we have developed an appropriate training program, which will be demonstrated as more units credit the effectiveness of the program in PRENTC training.

In the next phase, representative figures for hours of engine operation and vehicle mileage per tank were assigned plus the number of tanks required for each event. The results were then multiplied by the annual frequency of the event. Only training event miles were computed. Vehicle miles to and from training sites are an administrative cost, and generally do not relate to training. These costs may be assigned to cost-efficient vehicles, such as heavy equipment

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transporters (HET) or railroad flat cars. Training event miles also represent the lowest common denominator for all armor battalions in the force, regardless of location. The TACOM *M1* dollar cost of \$121 per mile was assigned.

The only cost considered for each event results from multiplying tank mileage by \$121 per mile. We considered engine operating hours for those events in which a tank would not move. We considered unit maneuver areas assigned by the ARTEP and AMTP for the appropriate unit level and computed mileage requirements to do each mission in the postage-stamp maneuver area one time in an FTX period (allowing sufficient time for after-action reviews and special training).

Our estimate developed a total annual requirement of 762 hours and 695 miles per tank for a per-tank cost of \$84,000. Any program must not, however, overly restrict the ability of the commander to be innovative. Each commander should be allowed to increase his hours of usage or miles required to meet a particular need, such as a change of mission or additional training to compensate for maneuver restrictions.

Mileage and engine hours are associated with normal maintenance procedures as well as various community good will and administrative requests. To account for these contingencies, battalion commanders should be allowed a 15 percent, or 100-mile, flexible reserve to be used at their discretion.

After calculating these costs, we identified those areas where substitution of current or near-term devices could be applied to reduce either miles or hours of engine operation, or both.

The videodisc gunnery simulator (VIGS) substitutes for basic gunnery Tables I and II. It saves engine hours but not mileage because it is used for stationary tables only. The unit conduct-of-fire trainer (UCOFT) substitutes for basic gunnery Tables III and IV as well as for intermediate Tables VI and VII. The platoon combat mission trainer (PCMT) is a computer-assisted decision support system that duplicates the combined arms environment. It will enable the platoon to carry out field maneuver-like missions while actually located in a simulator room. It portrays the exterior environment using digital image generation and allows free play and specific problem-solving. We think it will be a substitute for low-level platoon combined arms training at a minimum cost.

We also determined its cost, and estimated the impact a tank driver trainer would have on the program.

## Device-Enhanced Program

Incorporating these new devices in the training program, we calculated the mileage, hours, and dollar figures for the device-enhanced program and determined the actual savings per tank as well as the percent savings of the training device-enhanced program over the present method. We realized a savings of 4.7 percent in engine hours and 6.4 percent in mileage driven. Though the percent savings may seem petty when compared to the total O&S cost figures, the dollar savings for the Armor Force in one year are significant.

What has to be acknowledged is that cost savings cannot be realized until these devices are in place in each unit. This means that the cost of device acquisition cannot come from cost savings that are realized after the device is issued. None of the devices mentioned are yet fielded. Development pro-

cesses have begun but device development, test, and evaluation is a laborious, time-consuming process. Only after the force is trained to use the new devices can a payback in terms of genuine cost savings or force proficiency be expected.

## Additional Factors

One factor not yet considered is cost avoidance.

If we introduce a training device and hold proficiency constant, fewer resources are required for training. This represents an actual cost savings.

If we introduce a training device and hold resources constant, the effect is to achieve an increase in proficiency. If we had tried to achieve the same proficiency gain without the training device, more resources would have been required. Cost avoidance represents the “might-have-been” costs if we try to achieve proficiency gains without using the devices already considered.

Cost avoidance is vital as we field revolutionary new equipment with remarkable capabilities that must be trained to take full advantage of the equipment. The synergistic interaction of the *M1*, *M2*, *AAH* is an example. Training resources must be shifted to combined arms exercises. Training at individual weapon and small pure-unit proficiency must be more effective and more efficient to generate resources to buy the devices which will facilitate enhanced combined arms training proficiency.

There are many benefits in a device-enhanced program that cannot be documented. Because an event appears on a training program does not necessarily mean it was done; conversely, because an event does not appear on a training schedule does not mean that it was not done. When a device is on hand, it can be used formally during scheduled time periods and informally during spare time. It is the latter use that cannot be estimated in a cost/benefit analysis. We know units can do additional, unprogrammed, unscheduled training by one or two crews, using a device like VIGS or UCOFT whenever they have time and the device is not in use. There is no way to accurately capture this increased cost savings and proficiency. What should be appreciated, however, is that the cost of a device is minimal compared to what a unit gains in increased proficiency.

The increased capability of our combat systems dictates that units train and rehearse how to maximize system performance under realistic conditions. They must not spare themselves from the necessity of doing, now, what they will be required to do in combat. More effective and efficient training programs and increased simulator usage are practical means to this end.

## Device Savings And Cost Avoidance

The hour, mileage, and cost savings that will occur when the UCOFT is fielded were estimated. Units could amortize the UCOFT on mileage savings alone in 7.6 years — and this again does not account for any cost avoidance or ammunition savings.

When the UCOFT is fielded, the present allocation of 134 main gun rounds may be reduced to realize additional savings. For example, if a crew fires calibration three times per year, (3 rounds each), three Table VIII qualifications (25 rounds each), and fifteen rounds during a company live-fire exercise, it requires 99 rounds per year. A per-tank savings of 35 rounds (or approximately \$8,000 for a 105-mm ammunition and approximately \$22,000 for 120-mm

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ammunition) is realized. Per battalion, the savings is \$473,000, or \$1,295,000 respectively. As ammunition costs increase over FY84 actual costs, then the savings increase accordingly. Mission funds cannot be reduced before the devices have been introduced without having a serious adverse impact on force readiness. The money for device procurement must come from elsewhere—possibly after a review of our national combat vehicle acquisition strategy. For the cost of several new *MI* tanks, the necessary training devices could be purchased to equip the entire fielded force. By consolidating UCOFT mileage and ammunition savings the *MI* UCOFT can be amortized in three years.

## Unit Drivers Training Program

We estimated the dollar savings impact of driver trainer simulation. Using the current training device requirement, we identified 27 tasks for training, 25 of these must be done on a moving tank. Several of these tasks cannot be reproduced on an actual tank due to safety or cost; others, such as snow, ice, or sand, cannot be reproduced in the unit on order.

A 50 percent personnel turbulence rate is assumed. In a given year, six men will operate a given tank (1.5 drivers and 4.5 crewmen). Each driver will receive an initial training program when he arrives at his unit and the other crewmen will receive an annual driver's skills sustainment program.

A battalion will require 3,480 hours of trainer availability per year. Our model program requires 342 mi/tank/yr. The tank battalion requires 19,836 miles/yr. By using the driver trainer, the battalion could avoid \$2,400,156 per year. A driver trainer costing \$1,800,000 would amortize itself in nine months.

## Future Applications

While this example has focused on an Active Component tank battalion, equally impressive results could be realized from Army Reserve and National Guard applications. In fact, by using mobile training device equipped vans, the armor force has a feasible solution to the sustainment training requirements of the National Guard. Stationing training device platoons, with appropriate training support material, throughout the United States would provide a workable solution to the requirement for regional training centers to support the Reserve Component and would enable us to provide a trained armor manpower pool to support immediate personnel needs during mobilization. These applications seem workable and may, indeed, be the only solution if we are to have a trained, combat-ready Reserve Component force in a resource-constrained world. They do, however, call for a substantial new look at our Reserve Component training procedures, our mobilization plans, and our training device budgets.

## Conclusions

The Armor Center, in its efforts to identify areas for O&S cost reduction, while increasing the amount of training, concluded:

First, tank mileage could be held to below 700 miles per year. We could, perhaps, require considerably less with an auxiliary power unit (APU).

Second, APUs must be acquired for the *MI*. This equipment is needed now. The product improvement process

must be streamlined to get our *MI* fleet equipped as soon as possible.

Third, DARCOM and CAC should aggressively pursue the acquisition of sufficient HET assets to move the armor force in a peacetime environment to save operational costs. There is an obvious application of HETs to tank force mobility at the operational level, but we are emphasizing the peacetime necessity of holding down needless tank mileage with use of HET assets. These assets could be used more efficiently by pooling at a central point.

Fourth, DA should fund essential training device acquisition now, so that PM TRADE could begin development. The need is pressing to expedite this long, rigorous device acquisition cycle with the wise, timely, selection of off-the-shelf technology where possible. The tank driver trainer is a good example. Once the pump is "primed", savings accrued will fund the purchase of additional training support material.

Fifth, USAARMC is now moving to validate specific pieces of a model annual training program, but we need to accelerate and expand this process. We especially need assistance, both in USAREUR and FORSCOM, to validate our complete training program.

## Action Plan

The *Abrams* and *Bradley* are already being issued to the close combat (heavy) force. The Armor center has been moving to support that force and a number of actions are underway:

First, we have briefed this training program and our conclusions to DARCOM, the DA Staff, FORSCOM, USAREUR, and the Undersecretary of the Army. We have put together a mileage-constrained sample unit mission training program for evaluation in FY84-85. The training is now being evaluated by a battalion of the 3rd ID and one from the 8th ID(M), both in USAREUR. III Corps at Fort Hood has also begun initial coordination in preparation to validate the program beginning on 1 Oct 84. This mileage-constrained program could be available for general use by FY86.

Second, we have provided input to PM *MI* for acquisition of an *MI* APU. A field verification will be done at Fort Knox this year. Additionally, we are doing an *MI* fuel-usage test at the Armor and Engineer Board during FY84 to determine the impact of various driving techniques on fuel consumption.

Third, we support accelerated HET acquisition. If a data collection effort is necessary to determine how many HETs we need and where best to station them, DARCOM should collect that data now. USAARMC is presently coordinating the requirement of such an effort with TACOM, but no data-collection contract has been funded.

Fourth, the coordinating draft of FM 17-12-1, *MI Tank Combat Training*, is now available. The ARTEP mission training plans are distributed in draft. The institutional courses have been modified to include use of these training documents in the training of all armor NCOs and officers.

Fifth, we are fielding the UCOFT as rapidly as possible. There is a USAARMC representative as a subject matter expert with the PM TRADE in Orlando to assist in the GE UCOFT development. We are continually sending experienced vehicle commanders and gunners to participate in the training matrix validation and first article testing. UCOFT fielding begins in March 1985.

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Sixth, we have written a training device requirement for both *M60* and *M1* tank driver trainers. It includes trainers for both institutional and unit use. We have already formulated an initial and sustainment driver training program. We need support to get the device requirements funded, so we can begin to realize savings while increasing the amount of driver training necessary to take full advantage of the mobility and agility of the *Abrams*. We have asked the Director of Training at DA to help us acquire one THOMSON/BURTEK or SINGER/LINK *M60* tank driver trainer in FY84 for a concept evaluation program (CEP). We are also asking that the current TDR be placed higher on the training device priority list so it can be funded as an *M1* tank driver trainer in FY84-85.

Seventh, we are working with DARPA on a large-scale simulation device. The platoon combat mission trainer is part of this technology search to determine how much technology is available to produce such a training device. We are ready to review a platoon combat mission trainer as soon as

one becomes available, hopefully by the end of 1984.

Finally, we have introduced problems in conserving mileage and operating hours, as well as our proposed solutions, into courses at the Armor School. School training is absolutely essential if we are to avoid past inefficiencies associated with implementing new devices and training concepts into units before leaders understand them. We are working to instill in all our students a consciousness of efficiency, that there are ways to train that are just as effective as those they have used in the past, but cost far less.

In summary, we need your assistance to get additional armor training devices funded to begin acquisition cycle. The Army must also start to decrease needless administrative tank mileage with lower cost combat service support assets. Finally, the Armor Force must be educated in using more cost-effective training methods. All these training assets can become the basis for improved training and readiness in the close combat (heavy) force. We must begin now to work together to improve the quality of our total close combat (heavy) force.

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## Combat Service Support — At War

### An Armor Conference White Paper

#### Introduction

This white paper is structured in three parts: The first part will focus on the capabilities of combat service support (CSS) in support of the AirLand Battle, examining the challenges and proposed solutions to CSS doctrine, materiel, training and organization. The second part will develop a picture of CSS requirements to support Army 21, including a technology base proposal. The last part is a summary of Armor Center Combat Service Support (CSS) directions produced at the 1983 Armor Conference and an overview of the 1984 CSS Conference plans.

#### The Battlefield

The battlefield of central Europe and those of other potential theaters of operation pose great challenges to the CSS elements of maneuver battalions. U.S. forces must make the most of what they have. They must take advantage of every conceivable support asset. CSS planners and operators must possess the same resources and perspectives as combat leaders in order to support adequately the tactical plan.

The CSS force must incorporate the principles of responsiveness, flexibility, and initiative. The fluid situations that will be encountered in the AirLand Battle require that the supporter anticipate needs, not wait to react to demands. They must not only be imbued with the spirit of aggressive support, they must also have organizational flexibility and authority to seek and implement innovative support concepts. CSS operators will have to be prepared to accept as routine deviations from plans. They must use initiative to carry out their responsibilities. They must devise innovative ways to support the plan and lessen the risks.

Support of the combat mission of the maneuver battalion must remain the foremost consideration in the function of

CSS units. Resources and priorities must be tailored to changing combat situations. Appropriate CSS should provide survivable logistical resupply methods as well as the means to sustain maneuver battalions, maximizing the combat potential of our weapons by arming, fueling, fixing, and manning systems as far forward as possible to minimize the time it takes to return them to combat.

#### Capability Today

The examination of CSS capability within a tank battalion today requires laying out a Division 86 organization which is in a transition period of doctrine, organization, and equipment. Therefore, each element of the CSS function within an *M1* battalion will be presented separately to isolate problems, and to propose corrective actions and developmental requirements. Interwoven into proposed corrective actions will be reference to a CSS Concept Evaluation Program/Force Development Test & Experimentation (CEP/FDTE). The scope of this test is to conduct an evaluation to address specific deficiencies in CSS support to the *M1* tank company team by conducting isolated trials, small-scale trials and isolated actions at Fort Knox during the 2nd and 3rd quarters of FY 84 to determine proposed corrective actions and define new procedures. The proposed solutions will then be validated on a noninterference basis in brigade-sized CSS evaluations under the aegis of III Corps at Fort Hood, the National Training Center, and during the Reforger exercise in Europe in the fall of 84. The CSS test initiative is the Armor Center's means of ensuring a CSS force which will optimize the combat potential of the fighting element weapons system.

#### Rearming

Class V hauling capability in the transitional *M1* battalion is a mix of 5-ton trucks and 8-ton GOERs. There appear to



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be several serious challenges in providing the rearming function now, with incomplete fixes in the future.

- The mix of 5-ton trucks and GOERs at battalion cannot lift the entire basic load when ammunition is in a palletized configuration. The 5-ton "weights" out and the GOER "cubes" out, requiring pallets to be broken with existing basic load.

- Wheeled vehicles lack sufficient mobility and survivability to closely accompany the fighting systems, particularly in offensive deep attack operations. Thus, there is a continuing requirement for rearm operations to be conducted generally at night, using the "service station" method, requiring fighting vehicles to withdraw from position and travel to a terrain feature behind the FLOT to rearm.

- Current ammunition packaging in wooden boxes (excepting APFSDS M833 in the metal canister) continues to cause rearming to be excessively manpower-intensive and time-consuming. In an NBC environment, wooden boxes pose a potential contamination problem when soaked with a persistent agent. Further, the increased packaging volume of the 120-mm round in its current wooden box increases the battalion requirement for HEMTT trucks to lift the current basic load above the 15 trucks currently authorized by TO&E.

- Class V truck driver shortage. The transportation section of the battalion support platoon is authorized 1.3 drivers per assigned vehicle. Draft AR 570-2, *Manpower and Equipment Control Organization and Equipment Requirements Tables Personnel*, recommends 1.5 drivers per vehicle for single shift operations and 2 drivers and 2 assistant drivers per vehicle for two shift (round-the-clock) operations. Still further, the (Analysis of Military Organizational Effectiveness) (AMORE) conducted as part of the Close Combat (Heavy) Mission Area Analysis (CC(H)MAA) indicated that, "Driver structure for all wheeled vehicles is insufficiently robust." The analysis, which examined the TOE J-120 tank company's unit resiliency and recoverability, did not specify the number of drivers required to sustain the force over time, but it did indicate that the addition of assistant drivers appeared to be justified.

## Interim Solutions

- The HEMTT cargo truck, *M977*, with materiel handling equipment (crane) will be fielded beginning in the fourth quarter of FY 85. Ten HEMTTs in an *MI* battalion will adequately lift the current basic load and moreover, provide individual pallet lift which will speed operations at the ammunition transfer point (ATP). Further, this will enhance the ability to drop a pallet behind a fighting vehicle forward at all times. The HEMTT is, however, a vulnerable, wheeled vehicle with limitations in off-road mobility and survivability.

- Reduced packaging volume (cube), for 120-mm ammunition will resolve two problems: First, metal canister packaging will permit less manpower-intensive rearming operations while providing a "clean" round which is protected from chemical contamination. Secondly, the reduced volume which allows 25-30 round pallet configurations, maintains the Class V truck requirement for the *MIEI* battalion within current TO&E authorizations. The packaging resolution will lag behind *MIEI* fielding by approximately two years, causing an interim two-truck shortfall of basic load lift. Expediting the packaging resolution will alleviate the

truck shortfall. There are no plans to increase the HEMTT truck authorization to fill the shortfall in the meantime.

- Movement of Class V within the brigade boundary will be a primary issue in the CSS CEP. Specifically, we'll examine the relationship of the HEMTT cargo trucks with the surrogate palletized loading system (PLS) and armored forward area rearm vehicle (AFARV) to determine the best means to maximize the fighting vehicles' capability, using one, two, or all three systems. PLS appears to have great promise. It would appear, however, that some armored tracked resupply will be essential to support off-route deep-attack offensive operations. Additional test issues will be the transloading of ammunition from the ammunition transfer point to the fighting systems under all conditions, day and night and under NBC conditions.

## Refueling

Class III systems currently in the field are the 5-ton truck with tank and pump unit and the GOER truck. These systems will be replaced by the HEMTT *M978*, a 2,500-gallon tanker, in unit sets, beginning in the fourth quarter of FY 84. Problems similar to those of the Class V vehicles also exist in this system — specifically, a shortage of drivers to sustain the force, and potentially inadequate mobility and survivability in forward areas. These questions and potential problems will be closely examined in the CSS test at Fort Knox and Fort Hood.

- The HEMTT refueler provides a significant step forward with its capability to refuel at a rate up to 150 GPM. When fielded, the *MIEI* will be the first ground armor combat system capable of fast refuel operations. This capability is a step toward force optimization and sustainment.

## Medical Evacuation And Treatment

The *M113* is the primary medevac and treatment system available to front line units. This vehicle is sufficient in mobility and protection afforded, but there may be an insufficient number in each company to evacuate expected WIAs to the battalion aid station. National Training Center (NTC) feedback indicates a shortfall of medical evacuation vehicles and a lack of emphasis in training to sustain the force in this critical CSS function. This issue will be thoroughly examined during the CSS test and any additional requirements will be identified.

There is, however, a more serious issue concerning the medical treatment of injuries that can be expected from fighting in armor systems. The Arab-Israeli War of 1973 fully validated the value of crew protective clothing and equipment, consisting of NOMEX coveralls (to include a NOMEX face mask) to reduce burn injuries and ballistic chest protectors to reduce spall injuries. Using the NOMEX ensemble with chest protection reduced armor injuries by 50 percent in the latest Israeli-Arab conflict. As of now, ballistic eye protection is an unfulfilled requirement. Seven percent of all Israeli combat related injuries in Lebanon were to the eye, of which 100 percent would have been preventable by eye armor protection. Prototype ballistic eye protectors are currently being tested.

Proper crew protective clothing and equipment is an essential ingredient to overall force sustainment and weapon systems replacement operations. The combat vehicle crew clothing system, type classified in 1980, will begin fielding in 1985.

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The current surgical pack on the *M113* is not oriented to armor combat injuries, but more to a peacetime training exercise. For example, Israeli experience in 1973 indicated that normal delays in evacuation demanded that resuscitation treatment be started by the front-line medic using Ringer's-lactate through a large-bore intracath. This need has not yet been introduced in medic training or in the composition of the medical aid vehicle basic load. This deficiency, combined with the potential necessity to treat in a contaminated environment, presents a serious potential deficiency of medical support to our mounted soldiers.

Clearly, NOMEX suits, gloves, face masks, chest protectors, ballistic goggles, proper overgarments and decontamination facilities for medical units, and initiation of Ringer's-lactate resuscitation at the point of first contact with the seriously wounded, are minimum requirements to sustain the force.

These issues, plus others, such as handling of battle stress, will be closely examined during the CSS test, starting with the basic load for the medical aid vehicle.

## Maintenance

Combat maintenance is dramatically different from peacetime maintenance. Repair versus recovery decisions will be largely contingent upon the initial battle damage assessment report. Night operations will be more frequent. Application of field expedients will take on increased emphasis. Repair part needs will be based on combat damage rather than normal wear. And the performance of maintenance will shift from preventive to mission-essential criteria.

Forward support and Division 86 doctrine require crew members and maintenance personnel to be proficient in combat maintenance skills that have not been fully defined, taught, or practiced to date. Currently, resident training and practice in the field focuses on those skills directly related to the peacetime environment. A major portion of the CSS test will examine the tasks of the maintenance team, and make recommendations for materiel and organizational improvements to enhance sustainment of maneuver elements by the rapid return to combat of fighting vehicles. Emphasis will be on fundamental tasks:

- Ability to load required equipment, PLL, crew members and personal gear on authorized vehicles.
- Ability to conduct recovery operations back to the brigade support area, with *M88A1* battalion assets.
- Assess the requirement for the first sergeant to coordinate and execute CSS operations at the company/team in a dedicated armored vehicle (separate *M113*) instead of using the maintenance team's tracked vehicle or attempting to use a vulnerable wheeled vehicle with marginal mobility.
- Assess the impact of the Army of Excellence-design cuts on CSS operations, particularly in regard to PLL clerks and mechanics.
- Battlefield damage assessment and repair.
- Maintenance in continuous operations (day/night).
- Use of labor- and time-saving equipment.
- Utility, convenience and location of TMDE.

In sum, the ability to quickly repair and return combat fighting systems to the battlefield may be a critical combat multiplier to sustain the robustness of the fighting force.

## CSS-Communications

- The ability of the S1/4 to conduct effective CSS opera-

tions is keyed to their ability to anticipate needs, not to wait to react to demands. A critical force sustainment issue is effective communications to fight the logistics battle. Currently, scrubs of data distribution, present and future needs, are being conducted to determine requirements. Additionally, NTC lessons learned are providing the doctrine and organization proponents the necessary justification and validation to effect appropriate changes.

## NBC Environment

The CSS test will focus on the requirement to conduct continuous combat operations in an NBC environment. This is the key to continued flexibility in future battles. Serious attention is given to providing the fighting vehicle with a microclimate cooling system, overpressure, and a means to live and fight for extended periods inside the fighting compartment. If CSS elements cannot operate in that same environment, the fighting elements may not be sustained under NBC situations. Procedures to conduct necessary maintenance, rearm, refuel, and provide medical treatment and evacuation in a contaminated environment are CSS test issues to be included. New procedures and doctrine should result as these critical issues are reviewed to ensure a resiliency and depth of CSS provided to the maneuver forces.

## Combat Logistics Training

A combat logistics course is taught to each officer and noncommissioned officer who attends the Armor School, to include the pre-command course for armor/cavalry battalion and brigade commands. The CSS portion of each course describes what logistical assets are available, how they will be organized for combat and how support is provided to the maneuver force. Each block of instruction is geared to the appropriate level of student expertise and need. Additionally, each student participates in a situational training exercise (STX) Log, which trains them in specific resupply methods at the small unit level.

The Armor School will continue to expand and enlarge combat logistical training as a critical force multiplier in sustaining the Armor Force.

## Summary of CSS Today

As the fighting force transitions with the introduction of powerful new weapons systems, CSS improvements have not kept pace. Introduction of the HEMTT fleet of trucks and new ammunition packaging are notable exceptions to an otherwise inadequate effort to field CSS systems compatible with the supported fighting systems. The CSS test initiative is the first step in a collective effort to identify solutions in the near, mid, and far range which will ensure appropriate CSS to enhance tank company team and cavalry combat power.

## Future Development

CSS systems required to resupply weapons must be designed to ensure that those systems are provided sufficient fuel and that the weapons are resupplied as close to the point of employment as possible. Vehicles capable of quickly fixing, rearming, and refueling the fighting systems are necessary to keep maintenance and resupply times to a minimum. Such vehicles must venture close to the battle, necessitating armor protection to withstand the indirect fire threat. This need is fully supported by the Close Combat (Heavy)

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Mission Area Analysis which identified CSS deficiencies as:

- Inadequate ability to rearm, refuel, repair and resupply fighting systems.
- Vulnerability of rearm, refuel, and repair vehicles.
- Inadequate ability to receive accurate and timely status reporting.
- Deep attack operations cannot be sustained by current CSS assets.

Further, in order to conduct the AirLand Battle deep attack, some armored CSS vehicles capable of moving as part of the fighting force are required. Our current family of CSS vehicles (supply trucks, ammunition carriers and petroleum tankers) are essentially thin-skinned vehicles vulnerable to almost every weapon from a .22-caliber up. Since the deep attack combat environment can best be described as "fierce", they would not survive long enough to perform the resupply tasks essential to the success of the deep strike. Thus, without such vehicles, optimum potential operational effectiveness of new close combat fighting vehicles cannot be achieved. Attrition of the current fleet of wheeled resupply vehicles would begin with the first requirement to support in combat.

## The Requirements

The heavy combat force needs logistical vehicles that approximate the mobility and survivability of the weapon systems they support. Absolute parity in mobility and survivability is unnecessary because logistical operations are most effectively carried out during pauses or lulls in the battle, not during direct fire or indirect fire situations. Nor should all CSS support provided to the battalion/squadron be armored and tracked. In some cases, wheeled transport may be preferable, particularly in conjunction with aerial resupply.

Furthermore, logistics vehicles should have V(INT)<sup>2</sup>, a command and control aid which is integrated into close combat vehicles to receive, assimilate, and process information, and to assist the S4 in fighting the logistics/maintenance battle within the battalion. V(INT)<sup>2</sup> is essentially an electronic information gathering, processing, and distribution system. With it, the S4 could identify the requirements for logistical support and balance on-hand material against proposed courses of action. Using on-board sensors, the S4's V(INT)<sup>2</sup> could accumulate on-hand supplies of ammunition and POL. It could determine consumption rates and measure these rates against projected operations. When an immediate need arose, the S4 could divert material already enroute by changing route data to the transportation platoon.

Maintenance planning could be conducted in a similar manner through the battalion maintenance officer and the battalion maintenance platoon. For example, selected vehicles in the support platoon might be equipped with limited V(INT)<sup>2</sup> to provide the platoon leader/S4 with an accurate status of battalion logistical support. The display could be primarily a map system with capabilities to display routes from brigade trains to company resupply points. The S4 or support platoon leader could select the appropriate route for each class of supply base on V(INT)<sup>2</sup> information and analysis. Proposed unit supply points could be designated by the S4 as part of his overall support planning. These points could be displayed as on-call information to the unit for each support vehicle. Displaying additional information concerning

obstacles or congestion on routes could allow vehicles to avoid major delays in changing routes. The S4 could divert supplies enroute simply by identifying the appropriate vehicles and changing their route to the new location. On the small-scale map the vehicle could receive information concerning the route and local friendly and enemy forces. Air attack warnings and protective measures could be displayed on the V(INT)<sup>2</sup> to reduce vulnerability. Friendly forces could be displayed on a small-scaled map to facilitate linkup.

Using the V(INT)<sup>2</sup> system, the S4 has the potential to integrate all classes of supply and maintenance, push his supplies forward to units without requiring detailed reports with precise accuracy, timeliness, and consistency which in sum should sustain and maximize the operational effectiveness of the fighting force. The concept needs to be scrubbed across the force. Initially it will be expensive; the focus will be on combat and combat support. How much of what should we develop for CSS in what priority of effort?

## Priority Development

Medical, vehicle recovery, and a portion of the maintenance team are currently mounted in track-mobile, survivable armored vehicles. Rearm and refuel vehicles remain wheeled. We at the Armor Center believe that the first priority in CSS vehicle development is for an armored tracked refueler (ATR) capable of carrying 1,800-2,000 gallons of fuel, and an armored forward area rearm vehicle (AFARV) capable of carrying 200 rounds of 105-mm tank ammunition, 105 rounds of 120-mm tank ammunition, or 75 TOW missiles. The AFARV/ATR systems should be developed in concert with the wheeled palletized load system (PLS), as complementary systems designed to pick up the full pallet of unit-configured ammunition or fuel for final delivery to the combat vehicle near the fighting position. If possible, the ATR and AFARV should be interchangeable versions of the same vehicle, offering further application to artillery, ADA and engineer units supporting the Close Combat (Heavy) Battalion Task Force. Specifically, these capabilities should be flexible, compatible with PLS, and amenable to conversion from Class III to Class V, and vice versa. Recently, M88A1 recovery vehicle problems surfaced because the vehicles are experiencing difficulty recovering the heavier M1 and M1E1. The M88A1s are lighter vehicles, causing track slippage in recovery operations. A new vehicle, referred to as recovery vehicle-90 (RV-90), or an improved M88A1, are proposed as alternatives.

## Fielding Options

Because the ATR and AFARV are far more sophisticated and survivable than unprotected wheeled vehicles, the costs are considerably higher. Thus, fielding options must be developed.

For example, ATRs and AFARVs could be distributed (two per M1, M1E1 and M2 per company) only in Europe and to units with a NATO deployment mission. This would keep the total vehicles needed under 1,000 including those required in the training base. A second option would be a battalion of ATR/AFARVs at each corps, specially equipped to conduct, support, and survive deep attack and other special missions. This option could keep the total procurement well below the 500 mark, including training base requirements.

Fielding options regarding M88A1 improvement or new

# “Taking Stock and Directions for Excellence”

development of the *RV-90* are currently being studied by the Ordnance Center with Armor Center participation and input. A determination will be made to establish vehicle and equipment requirements which could be a mix of improved *M88A1s* and *RV-90s* or all of one kind.

## Logistics Research and Development

The Close Combat (Heavy) force needs logistics-related support to address generic logistical problems, to improve the wholesale/retail logistical systems, and to provide analytical management techniques for assuring logistical supportability of newly developed Army materiel.

The Close Combat (Heavy) and Combat Service Support MAAs identified 87 logistics research and development deficiencies. The overall conclusion was: “Battle cannot be supported.” Logistical systems are at least one generation behind the equipment they support. Regrettably, less than 2 percent of RDT&E is currently devoted to logistical system improvement. This is clearly inadequate.

## Tech Base Proposal

The Armor Center recommends that DARCOM establish a single point of contact for the Logistics Research and Development Technology Base Program, as a means to assimilate and establish a comprehensive Logistical R&D program, to define the key thrusts to be pursued in logistics, combat support, and technical data requirements. Ideally, this program would be chaired and executed by DARCOM with Armor, Infantry, Logistics and combined Arms Center represented as co-equal members. Currently, the Armored Combat Vehicle Science and Technology program directs the technology base through a number of action teams. For example, the support action team is primarily responsible for most, but not all, CSS activities. Regrettably, neither the support action team nor the other teams provide a forum to execute a coordinated Army-wide CSS tech base plan driven by the concept-based requirements of the user. To address these CSS inadequacies of the Close Combat (Heavy) Force, a single point of contact is essential to close the generation gap between combat and support systems.

## Combat Support Vehicle Systems

Plans should be developed for the fielding of a family of CSS vehicles which will enhance the potential of the fighting vehicles they support. As previously stated, the *ATR/AFARV* and *RV-90* area are priority developments requiring immediate action. The remainder of the family includes (not prioritized):

- **Armored Maintenance Vehicle (AMV):** Provides the capability of forward area repair of combat vehicles. Current maintenance teams lack the compatible mobility, ballistic and NBC protection of the systems they support when required to operate in the forward battle area. The vehicle should provide maintenance teams with power tools, diagnostics, and welding and cutting equipment.

- **Medical Evacuation Vehicle (MEV):** This vehicle will provide a rapid means for ground medical evacuation from combat company/team locations to the battalion aid station while providing the capability to immediately apply life-saving techniques to patients and provide armor and NBC protection.

- **Palletized Loading System (PLS):** This vehicle will interface with the *AFARV/ATR* and *HEMTT* vehicles. A hydraulic arm which drops or picks up racks loaded with Class III or V, quickly and efficiently, reducing manpower requirements.

Prototypes of the PLS system are currently being tested by the 9th ID. Prototypes of each vehicle should be developed now to isolate problems and be prepared for full production when funding becomes available.

## Future Developments Summary

Currently there is an incomplete data base on ongoing DARCOM and industry IR&D programs for logistics. Based on the numerous MAA deficiencies, logistics R&D requires more emphasis and associated funding since the current CSS systems are a generation behind the systems they support. To fully maximize the potential of our powerful fighting machines, CSS systems must be funded, developed, and fielded as part of the combat systems.

## General Officers Attending the 1984 Armor Conference

GEN Maxwell R. Thurman

LTG Donald E. Rosenblum

LTG Walter F. Ulmer, Jr.

LTG Carl E. Vuono

LTG Robert J. Baer

LTG Julius W. Becton, Jr.

LTG Donald H. Cowles

MG John L. Ballantyne, III

MG Frederic J. Brown

MG Wilber Bunting

MG Melvin J. Crain

MG Neal Creighton

MG Oscar C. Decker, Jr.

MG Robert M. Erffmeyer

MG Vincent E. Falter

MG John W. Foss

MG Roy C. Gray, Jr.

MG Johnny J. Johnston

MG Thomas W. Kelly

MG Thomas P. Lynch

MG Robert F. Molinelli

MG Delmer H. Nichols

MG George S. Patton

MG Crosbie E. Saint

MG James C. Smith

MG Robert B. Solomon

MG Elmer L. Stephens

MG Robert J. Sunell

MG Dale A. Vesser

MG Ronald L. Watts

BG Philip L. Bolte

BG James T. Bramlett

BG Lawrence Campbell

BG Michael J. Conrad

BG J.T. Dennis

BG Claude B. Donovan, III

BG Samuel E. Fleming, Jr.

BG Frederick M. Franks, Jr.

BG Charles E. Honore

BG Merwyn Jackson

BG Thomas J. P. Jones

BG Charles Kone

BG Edwin S. Leland, Jr.

BG Glynn C. Mallory, Jr.

BG Antone F. Remich

BG Kenneth Rieth



# CRUSADER: Slow Step to Victory

by Master Sergeant (Retired) R. E. Rogge

## Prologue

War is filled with lessons in victory and defeat, and it is not always the former that are the best classroom instructors. Valuable lessons can be learned from the study of selected battles and operations; for in all instances, victor and vanquished will have displayed many command attributes that must be shunned by today's leaders.

A case in point is the 55-day series of battles in the Western Desert of North Africa from 8 November 1941 to 12 January 1942 — the battles known as Operation *Crusader* to the British 8 Army that fought them against the Axis forces that were laying siege to Tobruk in Cyrenaica.

## Preliminary Operations

General Leutnant Erwin Rommel had arrived in North Africa in February 1941, and within a few months had recaptured almost all of Cyrenaica, which the British had taken earlier from Marshal Graziani's Italian armies. But Tobruk, a port city on the Mediterranean coast, remained in British hands. Tobruk was the objective in two British relief offensives, *Battleaxe* and *Crusader*. The first failed. The second succeeded, in spite of itself.

The 3-day shambles of *Battleaxe* should have proven to the British leaders—in the field and in London—the

folly of mounting a campaign for wholly political motives, but the British were desperate for a victory. General Sir Archibald Wavell, British commander-in-chief, Western Desert Force (WDF), had mounted *Battleaxe* after being incessantly badgered by Prime Minister Churchill to "do something" in the desert. He was later sacked for following orders.

During *Battleaxe*, Rommel's innovative and decisive use of his 88-mm AA guns in their first major desert role as antitank weapons severely wracked the British armor at Halfaya Pass (Hellfire Pass), destroying 11 of 12 *Matilda* tanks. Another factor was that the German *panzer* units were trained as combined arms formations, with tanks, artillery, AT weapons and infantry fighting as teams.

After *Battleaxe*, reinforcements of men and materiel flowed into the WDF. Meanwhile, Rommel, who was not as concerned with the logistical side of military operations as he should have been, began to plan for a decisive attack that was to be launched against the Tobruk perimeter on 20 November by the combined German-Italian armies.

General Sir Claude Auchinleck (The "Auk") was named C-in-C, WDF on 22 June 1941, replacing General Wavell. He had been General Officer Com-

manding, British Expeditionary Force, France, in 1940, and the German High Command regarded him as a "joke."<sup>1</sup> He proved them wrong. In addition to the WDF, Auchinleck also had command responsibilities over operations in Syria, Palestine, Transjordan and the Suez. Moreover, a major drain of his fighting forces in the Western Desert was underway to support the abortive campaign in Greece. Finally, he faced a continuation of the telegraphic bombardment from Churchill that had driven the distraught Wavell into launching the untimely *Battleaxe*.

Rommel, too, was plagued by higher commanders (he had both German and Italian governments with which to contend), but he developed the practice of simply not saying much to his superiors and not infrequently presented them with a *fait accompli*. Also, Operation *Barbarossa*, the German invasion of Russia on 22 June, was to play havoc with Rommel's victories and, in combination with Allied air and sea attacks on the Axis supply convoys from Italy to North Africa, was to eventually doom Axis endeavors in the Western Desert.

The North African campaign was seen in Berlin as a sideshow to the Russian campaign; a pulling of Italian chestnuts out of the fire, but had Rommel been adequately supplied, he



might well have taken Egypt and surged through the Near East with cataclysmic results for the Allies. It is not inconceivable that he would have linked up with German forces in southern Russia.

However, while Berlin saw North Africa as a minor front, it was the pit and pith of the British Empire's war. The Far East had been lost and Dunkirk had seen the withdrawal of British forces from the Continent. Their only fighting contact with the Axis on land was now centered in the Western Desert. Hence, Churchill's incessant demands for action.

General Auchinleck appointed Lieutenant General Sir Alan Cunningham as Commander, WDF, on 9 September 1941. Cunningham had just concluded a stunningly successful campaign in Italian Somaliland and Abyssinia against the Italians and had restored Emperor Haile Selassie to his throne from which Mussolini had deposed him in 1936. Cunningham had fought his infantry brigades with *eclat*, but he was to learn that commanding four brigades of infantry was a much different task than that of commanding a full-fledged army. Also, the Western Desert was a totally alien environment to Cunningham and to the majority of his newly-arrived battalion-level officers and men.

On 26 September 1941, the WDF was renamed 8 Army with Cunningham as commander, but changing the army's title did not ease its commander's problems for he not only had to assimilate new men and equipment into his battered regiments, he also had to train his troops in desert tactics—and that training was incomplete when *Crusader* was opened. He had two months in which to do all that. Also, Cunningham was under fire, via Auchinleck, from London, to mount an offensive—even though *Battleaxe* had been a disaster.

Such was the general climate for both armies before the British attack on 18 November. A short comparison of available forces and a recap of the German and British battle plans will clear the ground for the actual operation.

### **Crusader Background**

The British were supplied via sea convoys from England that circumnavigated the African continent and entered Alexandria, Egypt via the Suez Canal. German and Italian air and sea-power precluded the use of the shorter Mediterranean sea route except for a few desperate convoys that were forced through to besieged Malta.

Despite the 6-week (minimum) con-



British equipment during Crusader included the slow but heavily armored Matilda, above, the ubiquitous Bren Carriers, right, and the very reliable American M-3 light tank, opposite page. Reliability problems plagued some models, like the Mk IV Cruiser, below, and the Crusader IIs, bottom of page.



voy runs, General Auchinleck was receiving ample supplies of men and materiel. However, his new tanks were the product of hurried production lines and his men were wholly unacclimated to the desert. The *Crusader* tanks arrived with nuts and bolts only hand-tight and even when they were properly assembled they were "extremely unsound mechanically."<sup>2</sup> All of the thousands of new vehicles had to be fitted with sand screens on their engine air intakes and otherwise prepared for desert use.

In addition to the *Crusader* tanks, Auchinleck also received quantities of the *MkIIa Matilda* tank, the *Valentine* tank, *M3 Stuart* tanks and *A-13* cruiser tanks.<sup>3</sup> When *Crusader* was launched, Cunningham and Auchinleck had available 213 *Matilda* and *Valentine* infantry tanks, 220 *Crusader* cruiser tanks, 150 *A-13* tanks, 156 *Stuart* light tanks, 600 field guns and no less than 34,000 soft-skinned vehicles. The British also had available 700 aircraft, plus a sizeable reserve.

The terrible lesson of *Battleaxe* that had yet to be learned by the British was that lesson taught at Halfaya Pass when Rommel's 88-mm *AA/AT* guns ruined the British armor. The British had available in North Africa an excellent 3.7-inch AA gun that could penetrate heavier armor than the 88. There were more 3.7s in North Africa than there were 88s, but the tunnel-visioned British staff would not permit the 3.7-inch guns to be used in the AT role. They were to shoot at airplanes, and the 2-pounder (40-mm) was to shoot at tanks. And that was that.

In an attempt to copy the German practice of moving AT weapons in concert with their *panzer* units, the British mounted a number of 2-pounder AT guns on the beds of 3-ton trucks. These were called "portees" and a degree of "up front" availability was served, but the 2-pounder could not penetrate the *Mk III* and *Mk IV* *panzer* armor at long range without capped shot—and that type of ammunition was not available at that time in North Africa.

Rommel had both German and Italian armor and troops facing 8 Army. He had been husbanding his resources for the attack on Tobruk and when *Crusader* opened, the Axis forces had 248 *Mk II*, *III* and *IV* *panzers*, 3 captured *Matildas* and 145 Italian *M13/40* tanks.<sup>4</sup> In addition to the now-famous 88, Rommel had also received a number of 50-mm AT guns that could kill any British tank in the Western Desert.

Rommel's greatest problem was his logistics. Convoys from Italy were regularly intercepted and decimated by Allied sea and air attacks out of the



island fortress of Malta and Rommel had only the port of Tripoli whose facilities could handle only five cargo or four troop ships at one time. So intense were the convoy attacks that one group of four cargo ships was escorted by no less than four battleships, three light cruisers and twenty destroyers of the Italian Navy.<sup>5</sup> Rommel also had only 570 aircraft on hand.

As previously noted, Tobruk was Rommel's primary objective. He needed the port facilities and he wanted to eliminate the British force in his rear before he began his offensive into Egypt. But he faced high level opposition. German and Italian commanders in Berlin and Rome wanted him simply to hold on to what he had gained, but Rommel was a fighting general and holding a static line was not his cup of tea. His plan was simple: Attack the Tobruk perimeter with overwhelming armor, artillery and infantry; break through the lines and capture the port. He flew to Rome to argue his point and then phoned Berlin for final approval. He was in Italy when *Crusader* opened and immediately flew back to Africa.

The stage was set. Rommel planned to attack Tobruk on 20 November. Cunningham planned to unleash *Crusader* on 18 November with the express purpose of defeating the Axis armor and then of relieving Tobruk.

#### Operation Crusader

"At 0600, 18 November 1941, the Eighth Army with about 75,000 men excellently armed and equipped. . . started a general offensive in the Western Desert with the aim of destroying the German-Italian forces in Africa." Such was the British Broadcasting Corporation's announcement on 19 November to Britain and the world.

Operation *Crusader* brought into the open the long-range results of two decades of Parliamentary parsimony. 8 Army faced the enemy with tanks that had been designed 10 or more years previously and that had never been improved upon. They were thrown

against battle-proven tanks, some models of which had only recently been uparmored and upgunned.

*Crusader* was planned and fought by British generals who knew little or nothing about desert fighting. Auchinleck had been brought from India and Cunningham was fresh from Central Africa. He had never commanded an army, nor had he ever commanded armor. Auchinleck, as well, had never commanded armor in a pitched battle. Cunningham's principal subordinates were desert veterans and he tended to listen too closely to their opinions when drawing up his battle plan.

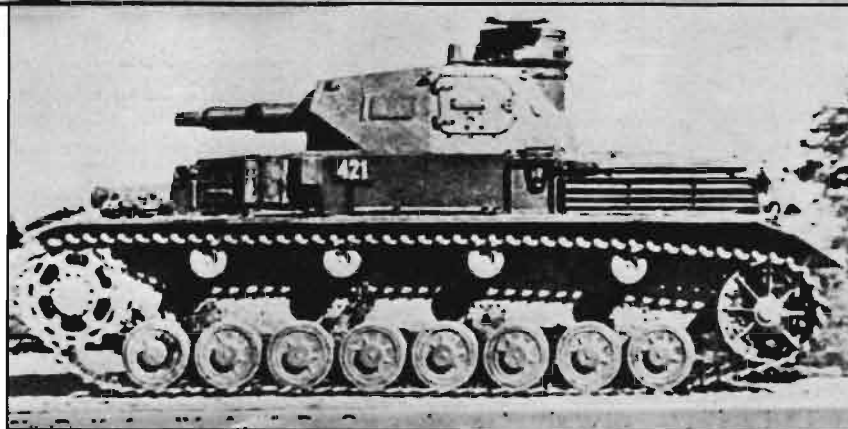
However, he set about his job with commendable alacrity and organized 8 Army into two corps: 13 Infantry and 30 Armored. 13 Corps, commanded by Major General A.R. Godwin-Austen, was composed of 1 New Zealand Infantry Division under Major General Bernard Freyburg, 4 Indian Infantry Division under Major General Frank Messervy and 1 Army Tank Brigade with 225 "infantry" tanks under Brigadier H.R.B. Watkins. (Note: A British brigadier does not equate to an American brigadier general. He commands a brigade, hence the title.)

30 Corps, commanded by Major General Willoughby Norrie, was composed of 7 Armored Division (the "Desert Rats") under Major General W.H.E. "Strafer" Gott and contained three armored brigades: 4 Armored Brigade under Brigadier A.H. Gatehouse, 22 Armored Brigade under Brigadier J. Scott-Cockburn, and 7 Armored Brigade under Brigadier G. Davy. 30 Corps also contained 1 South African Infantry Division under Major General G.E. Brink, and 201 Guards (Motor) Brigade under Brigadier J.C.O. Marriott, 2 South African Infantry Division under Major General I.P. DeVilliers, and 29 Indian Infantry Brigade under Brigadier D.W. Reid, were in reserve.

At this period of the war, it was British doctrine for the various arms (armor, infantry, artillery, etc.) to fight



The German Afrika Korps relied on three models of tanks during the Crusader battles, including the obsolete PzKpfw II (Panzer Mk II) at upper left, a light tank armed with a 20-mm autocannon. The 24-ton PzKpfw III, above, carried a 50-mm cannon. The PzKpfw IV, at right, was a 27-ton machine armed with a low-velocity 75-mm gun.



separately, and such thinking was reflected in Cunningham's pre-battle declaration, "the alternative would have been mixed groups."<sup>6</sup> Such mixed groups, however, were precisely the types of combined arms units that all but defeated him.

General Auchinleck sent Cunningham two plans for *Crusader*. The first called for a wide-flanking movement to the south around the Axis forces, and the second called for a "direct thrust along the coast, with feints in the centre and left."<sup>7</sup> (map 1). Both plans had the primary aim of the relief of Tobruk.

Cunningham rejected both and on 28 September submitted his own version to Auchinleck. It was a combination of both of Auchinleck's plans, but saw the relief of Tobruk as a secondary aim; Cunningham's primary target was the destruction of Rommel's armor in an all-out tank battle.

In order to accomplish this, Cunningham proposed sending 30 Corps on a left flank swing to the south around the Axis flank to Gabr Saleh

where he assumed Rommel would mass his armor for the climactic battle. At the same time 30 Corps was making its move, 13 Corps would assault the Axis line in the north to prevent any shifting of forces to the south. Following the looked-for victory at Gabr Saleh, 30 Corps would turn north, link up with 13 Corps, attend to the relief of Tobruk and both corps would then clear Cyrenaica of all Axis forces.

Cunningham had excellent intelligence on the whereabouts of his enemy because the British had broken the German *Enigma* codes and fed him up-to-date information on Axis plans. According to this information, 21 *Panzer* Division, commanded by General Major Walter Neumann-Silkow, lay northwest of Bardia, an Italian armored corps lay between Tobruk and Derna, Italian 21 Infantry Corps faced the Tobruk perimeter, and 15 *Panzer* Division, under General Major Richard Beith, lay south of Tobruk.

During the period from Rommel's arrival in Africa and the onset of *Crusader*, the separate German *Afrika*

*Korps* and the Italian XXI Corps had been consolidated into *Panzergruppe Afrika* with headquarters at Gambut. Rommel was in command. General Leutnant Carl Cruwell was named commander of *Afrika Korps* headquartered at Bardia, and General Novarinna was in command of Italian XXI Corps Headquarters at El Adem.

Each *Afrika Korps* division was made up of 1 *panzer* regiment of 2 battalions, 1 motorized infantry regiment, 1 artillery regiment, 1 AT battalion, 1 armored reconnaissance unit and 1 machinegun battalion. The division composition amply demonstrated the German combined arms doctrine that was to prove so effective against the British.

Cunningham's two-pronged plan left a 70-mile wide gap between his two corps and he placed 3 Armored Brigade (from 7 Armored Division) on the southern flank of 13 Corps. 4 Armored Brigade had just been equipped with *M3 Stuart* light tanks that were faster than any tank in the desert (40 mph), but were armed only with a 37-mm gun



British troops in the Western Desert received many American M-3 light tanks prior to Operation Crusader. Here, a Royal Tank Corps officer looks one over, accompanied by Walter Kirk, U.S. minister to Egypt.

and three .30-caliber machineguns.

Cunningham laid down that if no threat developed on 13 Corps' flank, 4 Armored Brigade would join 30 Corps' assault on Rommel's armor.

Auchinleck accepted Cunningham's plan, but General Norris (30 Corps) loudly doubted whether Rommel would so conveniently oblige them by coming to Gabr Saleh. The place was more than 20 miles behind Rommel's southernmost defense position at Sidi Omar. (Note: the frontier wire fence shown on map 1 represented only a barbed wire fence on the Libyan-Egyptian border and posed no problems to passage in either direction.) The Axis forces were dug in from Sollum on the Mediterranean coast south to Sidi Omar in the desert.

Norrie felt it would be disastrous to go "swanning off into the desert" behind enemy lines and then sit and wait for the enemy to show up. Norrie, who had desert fighting experience, also argued against his commander's plan to move 4 Armored Brigade from his (Norrie's) 7 Armored Division to the flank of 13 Corps. "It would be a very dangerous dispersal of armor,"<sup>8</sup> he contended, especially so when Cunningham was hoping to bring on an all-out armor battle. Norrie proposed thrusting 30 Corps straight for Sidi Rezegh, which lay on the decisive

ground south of Tobruk, and assaulting the Axis besiegers from that point.

Major General Godwin-Austen (13 Corps) also disliked Cunningham's plan, and it was his insistence upon flank protection that led Cunningham to move 4 Armored Brigade to his southern flank.

By now Cunningham had begun to have his own doubts about his plan. His corps and brigade commanders had desert fighting experience and he had none. Perhaps Norrie was right? What if Rommel did *not* attack them at Gabr Saleh? That was the key to his whole operation. But it was too late to change. He would launch *Crusader's* two-pronged assault and then *wait and see* what Rommel would do. Only then would he decide upon when and where 4 Armored Brigade would move.

Such indecision is fatal when facing an enemy of Rommel's caliber and Cunningham should have been aware of this because Rommel had already established himself as a premiere armor tactician. The mere rumor of his presence on a battlefield was enough to cause considerable anxiety in the minds of his opponents. In fact, so omnipotent had Rommel's presence become to the British in the Western Desert that Auchinleck felt it necessary to publish the following order to his commanders:

"There exists a danger that our friend Rommel is becoming a kind of magician or bogeyman to our troops, who are talking far too much about him. He is by no means a superman, although he is undoubtedly very energetic and able. Even if he were a superman, it would still be highly undesirable that our men should credit him with supernatural powers.

"I wish you to dispel, by all possible means, the idea that Rommel represents something more than an ordinary German General. The important thing now is to see to it that we do not always talk of Rommel when we mean the enemy in Libya. We must refer to the 'Germans' or the 'Axis powers' or the 'enemy' and not always keep harping on Rommel.

"Please ensure that this order is put into immediate effect, and impress upon all Commanders that, from a psychological point of view, it is a matter of the highest importance."<sup>9</sup>

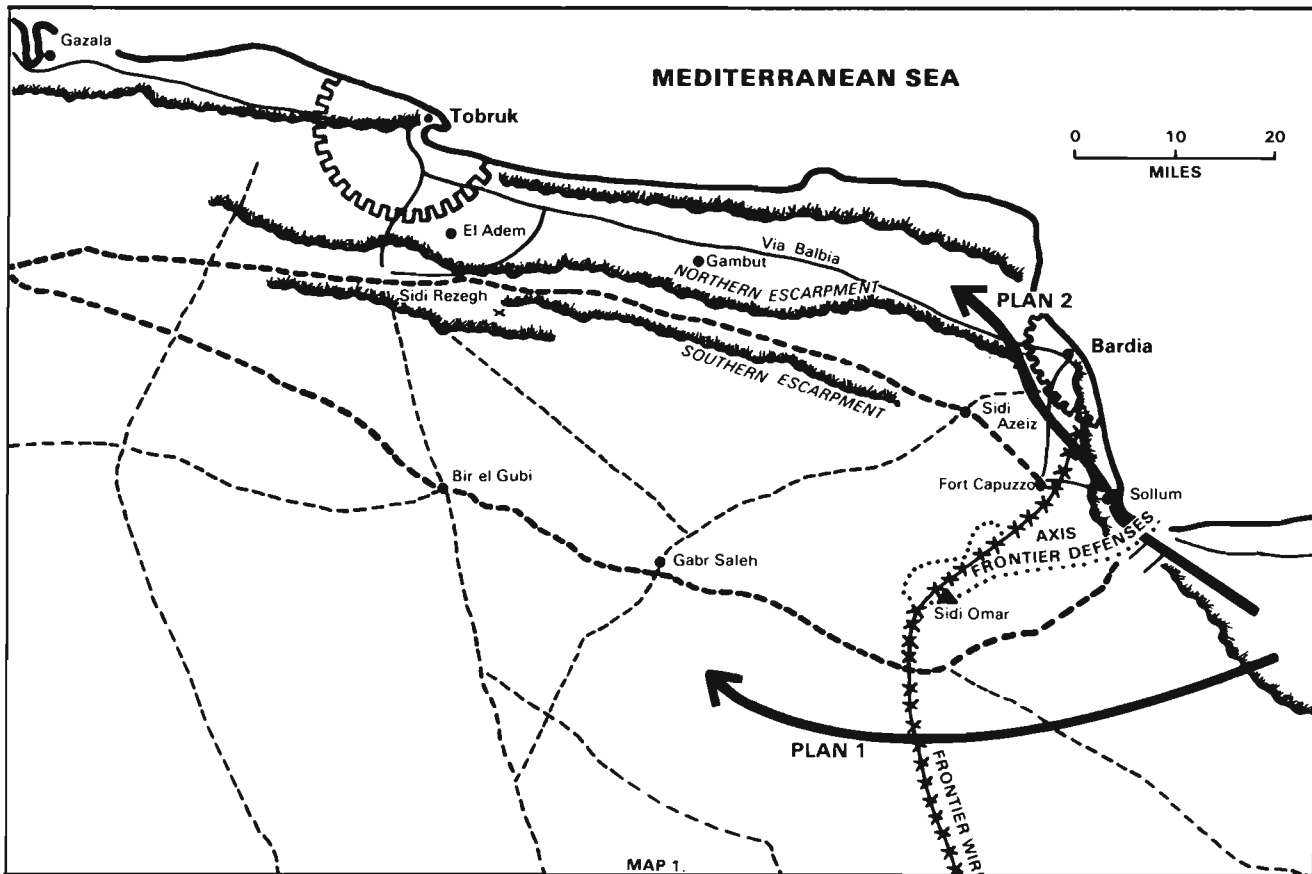
Not even Churchill was immune to Rommel's presence and he said in the House of Commons: "We have a very daring and skillful opponent against us and, may I say across the havoc of war, a great general." All of which was a backhanded slap at his own generals.

The only sure thing that Auchinleck had going for him when *Crusader* was launched was the high morale of his inexperienced troops. Overawed by the masses of new armor, they fully believed that they were going to get the "Desert Fox" once and for all.

Auchinleck was already in serious trouble with Churchill because he had delayed the start of *Crusader* from 1 November to 18 November, and Churchill was of two minds about firing him. However, Auchinleck had good reasons for postponing the operation: His armor was not all that mechanically reliable and his new troops were not fully trained. His army commander had doubts about his own plan, and nobody knew what Rommel might do. The latter situation is more or less normal in war, but when a theater commander has doubts about his army commander's battle plan and the overall efficiency of his army, some action should be taken. Instead, Auchinleck permitted *Crusader* to begin. He had no option, for Churchill was constantly agitating at him to "do something."

Perhaps the biggest threat to *Crusader's* success was Cunningham's lack of understanding, through no fault of his own, of desert fighting. His corps and brigade commanders knew, but were unable to impress upon him those four very special rules that applied to desert fighting. Those rules had always





General Auchinleck's original two plans for Crusader are shown above. Both plans were aimed at the relief of Tobruk. Both were cancelled by Cunningham who combined their

principal parts into his own operational plan with the major thesis of forcing Rommel to fight an all-out armor battle at or near Gabr Saleh.

controlled all previous desert combats, and were regarded as immutable as Holy Writ. They were:

- Desert armies brought *everything* with them on a campaign. Especially water.
- *Total mobility* ruled the battlefield—infantry was always trucked and tanks were the queen of battle.
- The *need for speed* in thinking and moving—a fast-moving army possessed the tactical edge and a quick-thinking general could dominate an opponent who gathered up all his loose ends before making a move.
- The *open battlefield*—there were no cities or towns, no civilian population to be concerned with, nor political considerations to clutter up the tactics. The desert offered limitless tactical mobility.<sup>10</sup>

Von Ravenstein, one of Rommel's staff officers, is credited with the pithy remark that the desert was the tactician's paradise and the quartermaster's nightmare.

And so, *Crusader* was launched with artillery and mortar fire falling heavily on the Axis line from Sollum south to Sidi Omar and 30 Corps began its flanking swing through the desert wastes to Gabr Saleh (map 2) while 13

Corps fought along the northern front. The tanks and soft-skinned vehicles of 30 Corps, accompanied by the trucked 1 South African Infantry division, raced all but unopposed to their goal in a cross-desert lunge of some 50 miles. A torrential downpour of rain and sleet the night before had grounded the *Luftwaffe* (and the RAF, too) and the Axis forces were denied the vital air reconnaissance that would have laid bare the British flanking move.

Five hours after the flank movement had begun, a screen of light tanks and armored cars of 21 *Panzer* Division skirmished with the armored cars of 11 Hussars at Gabr Saleh and General Cruwell was informed of a "reconnaissance in force."<sup>11</sup>

Rommel was on his way back to Africa and Cunningham had established his battle headquarters at Fort Madalena at the southern flank of 30 Corps' sweep toward Gabr Saleh. The German garrison at Halfaya Pass again shot up the British armor. 7 Armored Division that had been so severely handled in *Battleaxe*, reached Gabr Saleh, halfway to Tobruk.

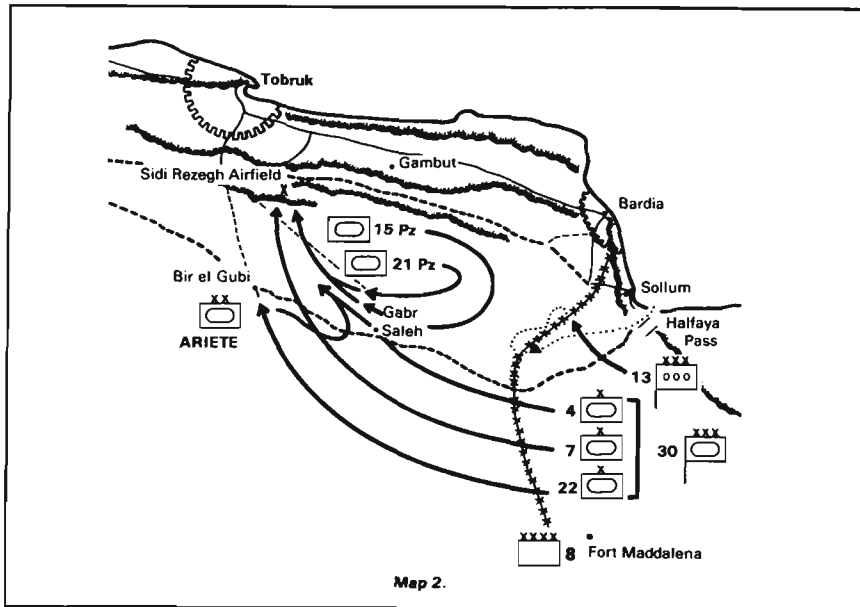
Rommel arrived in Africa and cancelled Cruwell's order to move 21 *Panzer* Division to Gabr Saleh. He also

ordered 15 *Panzer* Division to hold fast east of Tobruk. Rommel was still enamoured of taking Tobruk and felt that the British move to Gabr Saleh was, in truth, a reconnaissance in force.

The next day, under Cruwell's urgings, Rommel dispatched a force of about 120 *panzers* to Gabr Saleh where they stopped 4 Armored Brigade. Rommel *had* come to Gabr Saleh, as Cunningham had hoped, but not with *all* his armor. The Germans quickly saw 4 Armored Brigade's thrust for what it was—one part of the British forces that were running north, aimed for Tobruk. The desert terrain south of Tobruk—at Sidi Rezegh, would become the focal point of battle.

A broad plateau runs roughly from southwest of Tobruk eastward to Bardia on the coast. The escarpments (sides) on the southern flank were steep and could only be scaled by armor at a few isolated positions: Halfaya Pass was one, and Sidi Rezegh was another. Sidi Rezegh lay below the southern flank of the escarpment just southeast of Tobruk and if British armor could scale the escarpment and establish itself on the plateau, the Tobruk garrison could sortie from its lines, link up, and break the siege.





At Bir el Gubi, the Italian stand disrupted British plans for the assault on Sidi Rezegh airfield, enabling German armored units to join the fight.

22 Armored Brigade had swung on a wider southern arc than had 4 and 7 Armored Brigades and went for Bir el Gubi, roughly 25-30 miles west of Gabr Saleh, where it was stopped cold. (Map 2).

Up to this point, and especially after the overwhelming British victories prior to the appearance of Rommel and his *Afrika Korps*, the Italians were held in low esteem. But at Bir el Gubi, the *Ariete* Armored Division, dug in behind a screen of AT guns, effectively shot up 22 Brigade and its accompanying 1 South African Infantry Division. It was the first of several such Italian holdouts and shocked the British.

Meanwhile, British armor (7 Armored Division plus attached infantry) had swept into Sidi Rezegh where they captured the airfield that was quickly to become a murderous battlefield.

On 20 November, 4 and 7 Armored Brigades converged on Sidi Rezegh airfield and Rommel swung 15 and 21 Panzer Divisions into the attack, but not without some confusion as 15 Panzer Division had emptied its gas tanks while searching for 4 Armored Brigade. After a quick refueling, 15 Panzer made contact and destroyed 26 *Stuarts*. Then 22 Armored Brigade disengaged from the *Ariete* Division at Bir El Gubi and raced to 4 Brigade's help, but nightfall put an end to the fighting.

The British withdrew from the battlefield to refuel, rearm, and recuperate during the night, but the Germans, as was their practice, leaguered on the spot and were able to recover many of their knocked-out *panzers* and to destroy the abandoned British

armor. Expediency and German efficiency in recovering battle-damaged vehicles was further spurred by the Axis' precarious supply situation. At Gambut, *Panzergruppe Afrika's* headquarters, complete machine shops were set up, able to affect major tank repairs, and the efforts of the mechanics and technicians were responsible for a large number of damaged vehicles being quickly returned to combat. Such work was indispensable to Rommel, for in November, convoy losses ran to 63 percent.<sup>12</sup>

The next day, 15 and 21 Panzer Divisions withdrew toward Sidi Rezegh airfield and Cunningham believed he had beaten the Germans and sent 4 and 22 Armored Brigades in pursuit. Auchinleck's Cairo headquarters radioed to the world that Rommel was in full retreat.

Far from retreating, Rommel was massing his *panzers* at Sidi Rezegh and holding back 4 and 22 Armored Brigades with skillfully deployed AT screens that leap-frogged back, keeping the British at arm's length.

Then, 15 and 21 Panzer Divisions hit 7 Armored Brigade with AT guns and tanks and began its decimation on the airfield. 7 Armored Brigade held grimly with its remaining 26 tanks and for two days the battle raged. Although the *panzers* finally took the airfield, both sides were exhausted.<sup>13</sup>

The severe British losses were tied to two vital factors:

- They did not realize that the only viable counter to the tank was the AT gun, not another tank. Rommel used his AT guns both in offensive and defensive operations and they maneuvered with the *panzer* divisions, whereas British AT guns were a part of the

artillery arm and were maneuvered separately from the armor formations.

- Many British tank commanders, still imbued with the traditions of their cavalry regiments, attempted time and again to form battle lines and charge the German AT guns and were shot to pieces.

Cunningham had fed his three armored brigades piecemeal into the Sidi Rezegh cauldron and the massed *panzers* of 15 and 21 Divisions destroyed them. The British lost over 300 "cruiser" tanks.

Rommel, correctly gauging his opponent's frame of mind, took his remaining 90 *panzers* and went all out for the Egyptian border in his famous "dash to the wire" (map 3). He was counting on devastating the British rear areas, cutting off their supplies and communications and overrunning their infantry. It was an audacious tactic and failed only because of Rommel's disregard of his logistics.

Typical of Rommel's attitude toward logistics was his remark in the early days of the African campaign to Colonel General Franz Halder, chief of the general staff, at a Berlin conference. Rommel had visions of taking the Suez Canal in one grand thrust and when Halder asked him what he would need in addition to the forces he already had in Africa, the impetuous general replied he need two more *panzer* corps. Halder then asked him how he would supply and feed them and Rommel replied, "That's quite immaterial to me. That's your pigeon."<sup>14</sup>

Even so, the "dash to the wire" came within an ace of success. Rommel's racing *panzers* came within 15 miles of a pair of gigantic British supply dumps in the desert below Gabr Saleh. Had they found those treasure houses of food, ammunition and fuel they undoubtedly would have struck deeper into Egypt, perhaps even as far as Cairo. The *panzers*, running amok in the British rear areas, did considerable damage and unnerved Cunningham who ordered his forward fighting units back to protect his rear. but Auchinleck, who had flown up to Fort Maddalena, took matters into his own hands. He saw Rommel's spectacular move for what it was; a raid, pure and simple, and disregarded the damage the Germans had done to his rear echelons and refused to panic. He replaced

Rommel's "dash to the wire", a deep strike attack, aborted due to fuel and parts problems. Rommel rejoined the action at Sidi Rezegh airfield but succumbed to superior British forces.

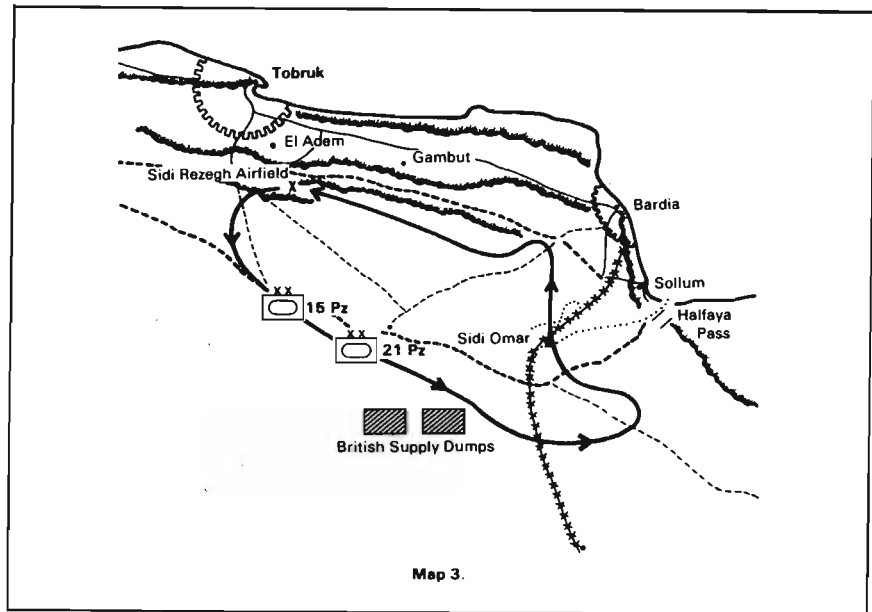
Cunningham with General Neil Ritchie, countermanded Cunningham's withdrawal orders and ordered the forward units to stay at Sidi Rezegh and fight it out.<sup>15</sup>

Meantime, Rommel and his nearly fuel-starved *panzers* returned to Sidi Rezegh where they became embroiled in the battle that raged for 10 more days.

### Conclusion

The *panzers* were finally overwhelmed because of the unfailing supplies of new British tanks and men. The Axis forces began a long, well-fought, retreat westward to El Agheila where Rommel had taken command of the *Afrika Korps* nine months before. The Tobruk seige was lifted and the German garrison at Halfaya Pass surrendered. A third of Rommel's command had been lost, 36,000 prisoners were taken and his *panzer* strength was reduced to 30 running tanks. The British lost 18,000 men and their tank losses have never been accurately determined.

Operation *Crusader* proved to be a British victory, but the battles were won only because of their superior supply system. There was never any doubt about the courage and tenacity of the British soldier, but his upper echelon leadership left much to be desired.



Rommel, ever the impetuous commander, spent many vital hours in the front lines with his fighting troops and was often unavailable to his staff when they needed him. His men adored him, but a commanding general's place is not necessarily in the front line when the battle is raging. Also, Rommel's disregard of his logistics did him severe damage when he made his "dash to the wire." He simply did not have the fuel or spare parts to maintain his impetus and was forced to backtrack to Sidi Rezegh where his depleted *panzers* had to fight it out with the never-ending British forces.

But *Crusader* did not mark the end of Rommel in North Africa by any means and when the British entered Benghazi in their pursuit of the Axis forces to El

Agheila they found a hand-lettered and prophetic sign in one of the cafes that read: "Back Soon."

The operation was filled with "ifs", many of which apply to present day armor operations. The lessons to be learned from the mistakes of both army commanders are there:

- Train your troops.
- Fight as a combined arms unit.
- A general's place is not necessarily in the frontline but where he can best affect the outcome.
- Select skilled subordinates who are as knowledgeable of local conditions as you.
- Finally, never underestimate your enemy, always give him credit for as many brains as you believe you have—and perhaps a few more.

### Footnotes

- 1 "Checkmate at Ruweisat," p. 29. Hereafter "Checkmate."
- 2 "The Desert Generals," p. 70.
- 3 British tanks were designed as 'cruiser' or 'infantry' types. Cruisers were to exploit a breakthrough that had been made by the heavier infantry tanks working with the infantry.
- 4 "Rommel," p. 70.
- 5 Ibid. p. 70.
- 6 "The Desert Generals," p. 84.
- 7 "Checkmate," p. 42.
- 8 Ibid. p. 43.
- 9 "Rommel as Military Commander," pp. 245-246.
- 10 "Desert War in North Africa," p. 27.
- 11 "Afrika Korps," p. 51.
- 12 "Desert War in North Africa," p. 27.
- 13 "Tank Warfare," p. 164.
- 14 "Triumphant Fox," pp. 68-69.
- 15 "The Desert Generals," p. 121.

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## Gaining and Exploiting Initiative

In order to gain and maintain the initiative on today's high-intensity and lethal battlefield, the underlying purpose of every encounter must be to seize and/or retain independence of action through maneuver. To do this, we must continuously decide and act more quickly than the enemy. We must present him with new problems so frequently that we disorganize his forces and keep him off balance. My purpose here is to present a theory which, if put into practice in our training and operations, will enable us to do this. The theory was developed by Colonel John Boyd, USAF (Ret.), and centers around the concept of the *OODA LOOP*.

An *OODA LOOP* is an observation-orientation-decision-action (OODA) cycle. As operations are conducted, individuals and units at every level continuously are going through these cycles. As an example: a U.S. tank is in bounding overwatch and the tank commander starts a cycle by observing a T-72. The tank commander orients himself by identifying the tank as enemy and noting that both tanks are in range of each other. He decides to engage and acts by issuing the appropriate fire command. The enemy tank commander has made a similar observation and gone through a similar cycle. The tank that survives will be the one that completed the *OODA LOOP* first.

The *OODA LOOP* of the tank commander is not independent of other actions. Instead, while that cycle is being acted through, the platoon leader observes that, in fact, a Soviet tank company is approaching. He goes through his own cycle and acts by issuing a platoon fire command and informing the company commander. Using the spot report as an observation, the company commander orients by considering the mission of the company, the relative positions of the platoons, and their capabilities. He decides and acts by issuing orders which reposition the reserve platoon. Thus, each *OODA LOOP* is not only independent of other cycles, it may initiate a new cycle at a higher or lower echelon, or it may already be part of a larger cycle.

Understanding and employing the *OODA LOOP* will assist us in obtaining our goal of gaining and/or maintaining the initiative in battle. Given the same observation, the tank which reaches the action phase of *OODA* first will survive. If the platoon can reach the action phase of platoon fires, it stands a good chance of evening out the 3-to-1 odds initially held by the T-72s. Still, these are simple advantages. The cumulative advantages of continuously completing cycles first are far more devastating.

When the Soviet tank company commander received his initial spot report (at the same time as the U.S. platoon leader), he went through his own cycle and issued a fire command to his lead platoon. However, the U.S. platoon, by cycling faster, fired on and destroyed the lead T-72 platoon, rendering the Soviet commander's initial decision meaningless. Now, the Soviet commander must go through a new cycle observing that he has three less tanks and the U.S. platoon is now hull-down in relatively secure positions. His new decision, after taking time to complete his cycle, is to bypass and he issues orders accordingly. Except that, in acting, the T-72s run straight into the reserve platoon which the U.S. company commander, again by moving more quickly through his *OODA LOOP*, has already repositioned. The Soviet company commander, now totally frustrated and with

only four tanks left, takes up a defensive position and calls for reinforcements.

By continuously deciding and acting more quickly than the enemy, the U.S. commander has disorganized his forces, kept him off balance, and defeated him. By repeatedly cycling through *OODA LOOPS* more rapidly than the enemy, the U.S. commander has gained the initiative by creating a situation where the Soviet is continually reacting to him and it appears to him that his force's reactions are always slower than his enemy's and doomed to failure.

Thus, given that our objective must be, at every level, to cycle through our *OODA LOOPS* as quickly as possible, we must examine the cycles we will be a part of to streamline them to the maximum extent possible. Needless to say, the examination and streamlining of the *OODA LOOP* of a platoon reacting to indirect fire is far less complex than that of a battalion absorbing an enemy attack and then conducting a counterattack. Following are examples of the *OODA LOOPS* by phase at each level:

The *observation* phase requires a rapid, accurate determination of the situation and a reporting of the information rapidly up and down the chain of command. Early warning allows cycles at each level to be initiated. Every intelligence-gathering device within the battalion must be used; bare eyes, binoculars, tank/TOW/DRAGON sights and ground surveillance radars must be focused on determining enemy intentions. During periods of limited visibility, every night observation device in the unit must be manned. Continuous reconnaissance patrols will assist in gaining early notice of enemy actions. Once the observations are made, command and intelligence nets must give priority to the passing of reports to commanders and staffs.

The *orientation* phase requires that the commander have a solid foundation of knowledge. At each level, the location and capabilities of friendly and enemy units, terrain, weather, and intentions of friendly higher commanders must be known. When new observations or information becomes available, the commander, with his staff (if he has one), can determine courses of action to best take advantage of the situation. Sound contingency planning, even if it is just a platoon leader thinking "what would I do if . . .?" will lead to a preparedness to transition rapidly through the orientation phase.

The *decision* phase should be the shortest of all. Given reliable observations and a solid orientation, the commander should be able to quickly make a firm decision and translate it into orders. Leaders at all levels should constantly practice and be required to make tactical decisions. Since new information will be arriving all the time, leaders must learn to act when enough information is available for a sound decision and not wait until every last detail is known.

Effective conduct of the *action* phase will, of course, be dependent on the technical and tactical expertise of the unit, as well as strong command and control procedures.

A discussion of some specific elements will aid in improving your ability to cycle through *OODA LOOPS*. Tank crews and platoons must be expert at the battle drills which make up most of their combat activities. Each drill is an *OODA LOOP* in itself and, if completed efficiently, will enable the crew or platoon to move on to their next objective. The

battalion staff is critical to the battalion being capable of rapidly cycling through an event. The tactical operations center (TOC) staff must be trained to absorb information and translate it into course of action (plans) from which the commander can make a decision. The early completion of plans will allow a rapid transition to the action phase once the commander has made his decision. During all phases of a cycle, the TOC acts as a vehicle to facilitate command and control and rapid passing of information. The tactical command post (TAC CP) allows the battalion commander to move forward to where he can add his own observations to a cycle. A well-trained TAC CP, acting as a mini-TOC, can conduct short-range immediate operations *OODA LOOPS*, allowing the TOC, with its greater resources, to handle the long-range *OODA LOOPS* that require the extensive information gathering, planning, and coordinating of more detailed operations.

In summation, we have observed that each operation, at every level, consists of an observation-orientation-decision-action loop; that these loops are occurring continuously and simultaneously at every level in both forces; that the force which understands and exploits the *OODA LOOP* first will gain and maintain the initiative by deciding and acting more quickly, thus making the enemy's reactions increasingly less effective.

The cumulative effect of the enemy losing initiative and the capability to make a meaningful response to our actions will eventually defeat him. Finally, throughout the army, we can establish and train in operational procedures at every level that will allow us to exploit the *OODA LOOP*.

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## ***FASTS – and FASTS (Forward)***

Today's armored forces will consume huge quantities of fuel, ammunition and parts in combat. Assuming the combat forces to be equal, the side that can most rapidly resupply, repair and/or replace its forces will win.

Current doctrine is based on the AirLand Battle, which entails striking at the enemy's second echelon before it is deployed. The commander will have to commit some of his mechanized forces to this effort, but if he cannot provide a viable logistic base for its support, such a maneuver is foredoomed. The introduction of the *Abrams M1* tank and the *M2/3 Bradley* vehicles have only added to the commander's logistical problems.

The majority of our present ammunition and fuel supply vehicles are wheeled and have a limited cross-country ability. This will preclude their keeping up with the tracked fighting vehicles. This situation will continue for some years to come. Compounding the supply problem further is the increased range of Threat artillery which will force our support teams even farther behind the fighting area. This dispersion not only complicates the support problem, it reduces the ability of our fighting forces to exploit any initiative they may have secured.

Currently, the forward area support team (FAST) that is committed in each brigade sector of our mechanized divisions consists of a forward support maintenance company, a medical evacuation company and elements of the division's supply and transport battalion that provide fuel, ammunition and food. With the addition of graves registration and communications assets, as well as portions of task force field trains, the FAST can be expected to cover between four and 12 square kilometers. The forward support battalion of Division 86 will probably serve to increase the area needed to locate the support area.

Rarely will this organization be located closer than 30 kilometers to the brigade's front line. The vast majority of vehicles in the FAST will be unarmored and the commander will be unwilling to chance the destruction of a large percentage of his support by allowing it within enemy artillery range. His concerns will not be lessened by the knowledge

that it is extremely difficult to electronically and visually hide this organization. Although this location will allow support of operations along the front, it will be unable to provide responsive support to a rapid strike force closing in on second echelon enemy forces that may be 20 kilometers or more behind the front.

Every round trip that task force ammunition and fuel vehicles will be required to make to the brigade support area could well take a minimum of 3-5 hours. Every disabled vehicle that task force recovery vehicles have to drag back to the FAST will remove those recovery vehicles from immediate task force support for at least five hours. An engaged task force might find itself without its organic support elements available if it were to receive a rapid change of mission.

A miniature FAST, or FAST forward, will have to be used if the task forces are to be provided with the combat support they will desperately need. This element will have to be small and extremely mobile, providing only those items that are essential to sustain the forces in contact and will have to be equipped with armored, tracked vehicles and sited within 7-12 kilometers of the line of contact. Diesel fuel, tank, TOW, and small arms ammunition will most probably be the critical supply items. Two 5,000-gallon tankers and two 12½-ton tractor trailers of ammunition will provide much of the rapidly-consumed items that the brigade task forces might need to execute a mission. When all the fuel or ammunition on one trailer is exhausted, it can return to the FAST for replenishment. Items and classes of supply not available at the forward FAST can be obtained at the rear FAST or the division support area.

Maintenance support must also be provided in the forward FAST. Contact teams from the division forward support company and battle damage evaluators need to locate with the forward FAST and begin a triage system on disabled vehicles.

These teams will repair vehicles or assist units making repairs on vehicles that can be rapidly returned to battle. The teams will also decide which vehicles must be sent to the forward support company in the FAST, to the heavy DS

company, or to GS maintenance. Evacuation priorities are set here. Vehicles that are beyond rapid repair will have the lowest repair priority. Evacuation of disabled vehicles to maintenance organizations further to the rear should be made by heavy equipment transporters, rather than battle-field recovery vehicles.

Control of the forward FAST is provided by the brigade assistant S4. Using the section's M577, he remains in touch with the tactical situation and keeps the S4 informed of the operations and siting of the forward FAST. Due to its small size — four semi-trailers, one M577, and three to five maintenance contact vehicles — the forward FAST can be set up in a small village in a NATO environment or in a wooded area near a good road net. The growing collection of disabled vehicles might disclose the location to enemy observers, but by retaining the tractors for the semi-trailers, the forward FAST will be able to relocate within 30 minutes.

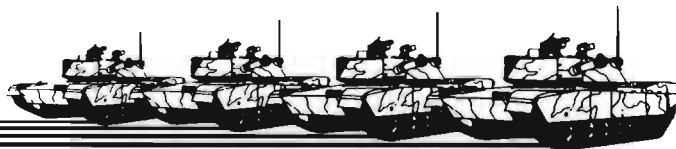
The forward FAST will serve as the quartering party for the main FAST during offensive operations. Because it will move several times daily, it will be able to reconnoiter a number of sites and choose the best before the main FAST begins to move. The main FAST will then merely have to fall in on its forward element. During defensive operations, the

forward FAST will fall in on the main FAST before it jumps and take control of all elements that are unable to move in the first convoy due to the non-availability of transport.

Mini-FASTS, tailored to the needs of the supported unit, are not a new concept. The 1st Brigade, 2d Armored Division, used them several times in November 1981 at the National Training Center during Exercise Tiger Fite. The use of organizations very similar to the one described reduced the supply route of one task force by 25 miles, one way, greatly increasing the responsiveness of the support provided. Several command post exercises have also proven the validity of the concept.

Establishment of a forward FAST is only a first step toward the solution of the logistical problems that have been created by the new combat vehicles. Tacticians and logisticians must work together to solve the problems that loom on the horizon. The most powerful combat vehicle is going to be worthless if we cannot keep it fueled, armed and/or repaired.

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## Times Change: Soldiering Doesn't

The trials and tribulations, the expectations and the doubts, the homesickness and the concern of an officer for his troops in combat were as much a part of military life two hundred years ago as they are today.

Following are extracts from some of the letters written by one Otho Holland Williams, an officer in the Continental Army during the American Revolution. Otho Williams helped raise a company of Maryland riflemen at the outbreak of that war and began his service as a lieutenant. *Six years later he was promoted to brigadier general.*

Shortly after his company went to war, Williams, now a captain, wrote to his brother and displayed an early appreciation for the lay of the land as he writes on 11 April 1776 from Staten Island:

"...the great heights on this Island surrounded. . . by plentiful farms (and) broad and bold waters. . . afford a Delightful prospect, but those beautiful prospects are not the only advantage of the Hills many of which are natural fortifications and very happy for us if the Report is true that the Parliment intends landing 25,000 of their mercenary Troops here this Spring."

His letter continued with a description of what may have been his first action and then expresses the hope that the next time he will be in command:

"Sunday morning (being easter Sunday) we had a little Skirmish with a parcel of Marines that came on shore to get fresh water, the first intelligence that we rec'd was that five hundred were landing at the watering place (about three miles from our Quarters) the alarm was given and Capt. Stephenson (also a company commander) went to collect his men who were stationed near the spot, leaving me to bring up the rear--the fact was the ships wanted water and sent about 25 men to fill their barrells."

"Captain Stephenson sets off for Virginia this afternoon & leaves me Commander Officer. . .and I hope the next affair of this sort will be conducted by Yr Affectionate Bro."

Like every soldier in every army in the world, Colonel Williams knew pangs of homesickness and the desire to tell 'war stories', as this extract from his letter dated May 1779 relates:

"I flatter myself that I shall still see a Day, a prosperous Day when we shall all be assembled in some agreeable spot in the Neighborhood. . .and cheerfully recount the tedious Hours. . .and then the Dangers that are past will serve as a Subject for an Evening tale."

The colonel was dependent upon his home for materiel support to a far greater degree than is today's soldier as we note when he writes home:

"...I want my blue Cloth and trimmings for a Regimental Coat very much. . .with two or three shirts & three pr homespun thread Stockings. . .I wish you (could) contrive to convey them to me."

Rumor mills were just as prevalent and operative in the Revolution as they were in Vietnam. Upcoming troop movements were speculated upon and Williams adds his own thoughts on a particular campaign:

"Genl Sullivan will march in a Day or two towards Fort Pitt. He will have abt 3,000 Continental & probably be joined by abt 2000 (Pennsylvania) State Troops. The design of this Expedition is not publicly known but the conjecture is that the reduction of Fort Stanwick and some Indian Towns are the principal objects."

Following the Battle of Monmouth, N.J. on 28 June 1778, Williams was transferred to the Southern Department and



was named deputy adjutant general, a position that removed him from troop command and saddled him with a multitude of staff jobs. None of this pleased him and he repeatedly requested assignment back to his troops. The following extracts from his letter dated 23 September 1789 should make present day staff officers feel not too badly about their jobs:

“. . . I am employ'd by Genl Gates in almost every department of the Army. I act as Adjt Genl to the Troops. The Quarter Master Genl of the (Southern) Army receives his Instructions principally from me. The . . . Commissary's Department is regulated by my order. The Prisoners are disposed of according to the directions I give. I am President of a Committee for the distribution of public clothing and have the duties of Those to attend to and in some small degree to Govern, not by my own authority, but by a kind of consequence which the Commander in Chief has given me resulting from a confidence which is very obliging to an Officer of my Rank, but very troublesome to one of my abilities. I do not mention these things as flattering my vanity for the power is very agreeable to a Military Man. This is a fort of Temporary Authority which is by no means of permanent advantage or profit. It will end with the campaign if not sooner and I shall not be a Friend nor a farthing richer unless some liberal fellow will be persuaded I am actuated by motives of patriotism and esteem me for the virtue. It would give me pleasure if the General (would) give me leave as I have repeatedly requested to resign those employments and confine myself to my particular duty as Inspector of the Maryland and Delaware Troops and to the Command of a Regiment composed of all the Troops of those two states, and tho' I have not attained his permission to decline the Extra Duties I am by no means unmindful of my Regiment which consists of one Col One Lt Col two Majors ten Captains of Twenty Subalterns beside Staff Officers sixty eight non commissioned officers, twenty drummers and pipers and between eight and nine hundred good men. This is of real importance to me and is the basis upon which my reputation is to stand. The more I elevate the fame of this fine Corps by good discipline

and military consequence the more exalted will my own be.”

In that same letter, Williams makes note of the constant and frustrating supply and logistics problems that faced the Continental Army:

“I have got them (the troops) all handsomely encamped. . . in Wigwams and tho I have not yet been able to get a supply of tents, blanketts, shoes & other necessary articles for my men they are pritty well arm'd and are daily increasing in numbers by coming in of those who escape from Captivity, upwards of 150 have been retaken and many others have been fortunate enough to get (away) from the Enemy. . . .”

“The Enemy the Superior in (number) to our little Army dare not to penetrate far into the Country the militia so harass them that they have not yet advanced about 50 miles from their former post. . . If we get supplies and reinforcements that are promised. . . we shall be able to send them to (Charles Town) before many more weeks elapse.”

And, like all soldiers, private or general (Williams was promoted brigadier general on 9 May 1782), he complains of the bodily weariness that comes from constant campaigning.

“The fatigues of campaigning in the country is almost inconceivable. Since our retreat from PeeDee River in January last I have slept, when I had time to sleep, in my clothes. I seldom divest myself of my sword, boots or coat, my horse is constantly saddled and we eat when provisions is to be got and we have nothing else to do.”

This brief glimpse into the exigencies of the service as they pertained to the Continental Army two hundred years ago has shown us that officers and soldiers have the same problems now as they had then. Whether mounted on a horse or an *MI*; whether wielding a saber or a computerized cannon, the very basic problems of survival and human emotions have remained.

(Ed. Note: The extracts from the Otho Holland Williams letters were compiled for the “Otho Williams Papers,” MS. 908, Manuscripts Division, Maryland Historical Society.)

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## Staff Obfuscations: 10 Axioms

Every organization has staff problems, and the nature of these problems hasn't changed since armies came into existence. Today's military organization is no different, in this respect, than Caesar's. We are still plagued with personnel problems, training and procurement are still on our backs, there are more than enough critics around to satisfy anyone, and “sacred cows” still abound at all levels. Now, with tongue in cheek, we offer the following observations and axioms concerning today's military organizations. And we begin with a question: How well do they fit *your* organization?

*Observation 1.* The higher the level of the staff organization, the greater the amount of “necessary” paperwork. In today's Army we keep detailed records of everything we do.

We suffer from overweight files and paper fat. Like the human element in our staffs, our organizational designs are highly susceptible to overweight. We must constantly deal with excess and needless paperwork — “fat paper.” Our acceptance of this situation has been developed very subtly over the years and today we find bulging files and overburdened “hold” boxes overflowing with “important” papers.

*Axiom 1.* Thou shalt not require unnecessary paperwork.

*Observation 2.* The greater the quantity of paper surrounding a staff officer's daily routine, the more important he is perceived to be. Some staff people are compulsives when it comes to paperwork and become mired in it. Large piles of staff paper are supposed to be impressive and can serve as a smoke screen for lack of ability, security, or even a lack of

productive things to do.

*Axiom 2. Thou shalt not accumulate, nor sequester unnecessary paperwork.*

*Observation 3.* The greater the amount of paper produced by a staff officer, the more productive he is assumed to be. The volume of paper produced is popularly associated with success and demonstrates a potential for higher levels of responsibility. Please note: no mention was made of quality of paperwork — just quantity. Also note that no staff officer is ever rewarded for producing less paperwork. The creation of staff paper indicates that he is thinking, resolving the Army's problems and, in general, being productive.

*Axiom 3. Thou shalt produce quality, not quantity.*

*Observation 4.* The volume of "fat paper" varies inversely with the self-confidence level of the organization's leaders. The insecure division chief or staff officer sees in the absence of volumes of paper a lack of productive work and is instilled with a sense of vulnerability. This situation normally results in the insecure officer producing and storing more and more "fat paper" in order to feel more and more secure.

*Axiom 4. Thou shalt be confident in thy actions.*

*Observation 5.* High level staff officers speak and write an entirely different language from that used by the rest of the Army, and the higher the staff level, the more obfuscatory the phraseology. For example, AR 40-501 defines obesity as indicating "an excessive accumulation of adipose tissue manifested by increased body weight above that considered desirable for height and body frame and implying excessive caloric intake, or a sedentary existence, or both, as causative factors." This means that if he eats too much and doesn't exercise, he gets fat. The proper jargon, acronym, and syntax are very important to a staff officer. In fact, creation of a new acronym will assure a staff officer's promotion. The Society for the Perpetuation of Unintelligible Language and Acronyms (SPULA) has been formed to increase the promotion potential of staff officers.

*Axiom 5. Thou shalt write simply and never obfuscate.* (confuse, Ed.)

*Observation 6.* Staff officers' telephones serve as an escape mechanism. A good staff officer can stay on the phone all day long. This is really a form of self-aggrandizement. The secret here is that if he looks busy, he is busy. It really doesn't matter if he calls "Dial-a-Prayer" and hangs on through 5,000 repeats; being on that phone will keep all kinds of staff actions, "fat paper," and other staff officers from finding his desk and his in basket.

*Axiom 6. Thou shalt not abuse the phone.*

*Observation 7.* Recognition of quality staff work does not rely on substance, but on form. It does not matter what is said, but how it is said. Quality of staff paper depends principally on neatness and format. A good staff officer turns out huge quantities of neat, well-formatted paper.

*Axiom 7. Honor content above format — for it is holy.*

*Observation 8.* The larger the office files, the safer the staff officer feels. First of all, the sheer bulk of office files lets everyone know that this is an important office (see Observation 3); one that "gets the job done." If he can surround himself with filing cabinets that contain information on everything, then he has minimized the risk of losing something; or worst of all, being asked a question on a subject that he has never heard of before. Instead of appearing honestly ignorant, he can always refer to "the files" and then blame the administrative help if it's not there.

*Axiom 8. Thou shalt not covet voluminous files.*

*Observation 9.* The bureaucracy is the incubator from which all "fat paper" grows. Too often, prolific paper systems have been substituted for managerial ability and, once started, are perpetuated forever. Newly assigned officers see the "old hands" writing numerous memos and reports and begin to realize that the volume of paperwork produced is the key to success. The cost of maintaining this mountain of paper is staggering. More and more time and effort is expended in maintaining the files and keeping track of suspense dates than in controlling the staff actions that the paperwork was intended to satisfy in the first place.

*Axiom 9. Thou shalt not emulate the uselessly prolific.*

*Observation 10.* Absolutely nothing gets accomplished on military staffs without lots of paperwork. Memos, information papers, point papers, decision papers, supply requisitions, requests for orders, orders, trip reports, surveys, minutes of meetings and conferences, comments made on comments pertaining to any request. . . *ad nauseum*. For some staff officers, "fat paper" and phone calls represent the key to success and their maximum productive output; and every effort must be expended to ensure that each finished product represents the position taken by this headquarters. . . except this paper.

*Axiom 10. Thou shalt never over-staff actions ad nauseum.*  
(Please prepare 500 copies for distribution.)

DON SKIPPER  
Major, Infantry  
ROGER GOODRICH  
Lieutenant Colonel, CANG



## LOGMOD — A Tool for Logistic Leaders

Success in combat operations will hinge on the ability of logistics people to support and sustain combat systems and fighters. This is the primary mission of the combat service support (CSS) leader.

Following is a system for constructing a training and operational aid for CSS through the use of the Brigade/Battalion-Level Logistics Module for Battle Simulations and Wargames (Graphic Training Aid 101-1-1).

The unit S4 needs an effective system to meet the chal-

lenging responsibilities of forecasting, procuring, and distributing material to a unit when and where the commander wants it. GTA 101-1-1 can assist the S4 by providing a framework for development of the necessary management tools. This operational aid incorporates the components of a graphic training aid with other basic unit directives and reference material. The result is a simple and functional system to train subordinate leaders in their responsibilities, and provides an excellent operational aid in S4 logistics management.

The five components of GTA 101-1-1 are: position and location charts, ammunition charts, a requisition file system, vehicle cards, and an instruction reference book that provides basic guidance for the module's use.

Position and location charts allow leaders to program and account for logistic assets while a file system accounts for requisitions. Ammunition charts provide sample unit basic load information that practical use refines by specific unit authorizations. Vehicle cards represent specific ammunition, POL, or material loads arranged by the S4.

Before the S4 can develop a functional system with this GTA, he must review other appropriate documents. Two of these are: the Modified Table of Organization and Allowances and the unit property book. After recognizing unit equipment and personnel authorizations and current assignments, the S4 reviews pertinent ARs or theater directives on unit basic loads for the various classes of supply. The requirements of the unit general defense plan (GDP) and unit standing operating procedures (SOP) will clarify specified or implied missions for logistical support. The S4 compares the capabilities and requirements of all this information and determines the doctrinal concepts or improvisations that can be used.

Vehicle load plans are made up with available vehicles and equipment to ensure realistic planning for mission support. Vehicle and trailer cards are assigned appropriate bumper numbers and other information. Load plan cards, based on vehicle volume and weight capabilities, will show specific SOP plans. These load plan cards can be attached to vehicle cards to denote an uploaded vehicle, marked as issue in a specified unit, or maintained as available stocks on the ground.

When all equipment has been configured into initial support packages for subordinate units, they are placed on the combat trains or field trains location chart. In addition to current positioning locations, these location charts can be noted with the departure time, anticipated arrival time and destination for individual or grouped support assets.

A tactical situation map is posted from the GDP overlays with the location of supported and supporting units. Other unit locations or information that may influence the CSS operations can also be posted. Time-distance factors are determined between these locations and are annotated to the location charts. Movement restrictions and time delays are also posted.

Frequency call signs and security codes are extracted from the unit communication-electronics operating instructions.

A simple matrix can be secured and maintained with current information for command and control.

The S4 must also maintain the status of the various classes of supply to properly support the mission and be able to recommend actions to the commander. Current status must be available on essential ammunition, POL, subsistence, water and major end items or components. General supplies, medical items and repair parts must also be monitored. A unit SOP can be used to identify unit status reporting formats and suggest effective means of quick reference or status presentation.

An administrative plan for managing the complex actions in the many logistics areas should include requisition, suspense, status confirmation, and receipt of supplies following standard practices tailored to a mobile field environment. A basic reference library of publications should be available for procedural methods, improvisation ideas, and planning. The operational combat readiness of the unit can be summarized by highlighting several key pieces of equipment, personnel, and items of supply. The commander's overall evaluation of operation readiness will aid in prioritizing support efforts.

Now that the logistic module has been organized to the specific structure and situation of the unit, many effective training scenarios can be portrayed, with minimum resource commitments, to give logistic personnel experience in problem solving. Logistical team members, including the supply officer, support platoon leader, supply sergeant, truckmaster, POL sergeant, ammunition specialist and supplymen, will gain valuable experience in procedural methods and decision-making in preparation for actual employment.

When the logistic module is exercised on a regular basis it becomes an easy and familiar procedure for managing supply functions. The transition from a training aid for wargame simulations or command post exercises to a regular operational tool in daily garrison or field operations is a logical progression. At this point, the unit has achieved a functional peacetime system that will provide continuity of effort in a rapid escalation of alert readiness conditions.

This logistics module provides a simple, effective training aid for schooling supply personnel in unit logistics operations. At the same time, it can be used as a planning and operational tool for daily logistics missions, or actual combat service support.

JON H. MOILANEN  
Captain, Armor  
Indiana, PA

### Recognition Quiz Answers

1. **MERKAVA** (Is). Crew 4; weight, 60,000 kg (132,300 lbs); maximum road speed, 46 km/hr; maximum road range, 400 km; armament, 1 x 105-mm main gun, 1 x 7.62 coaxial machinegun, 2 x 7.62-mm AA machineguns, 1 x 60-mm mortar. Can carry 8 infantrymen in rear or 4 litters.

2. **SPAHPANZER LUCHS** (FRG). Crew 4; weight, 19,500 kg (42,977 lbs); maximum road speed, 90 km/hr; maximum road range, 800 km; 8 x 8 drive; maximum water speed, 9 km/hr; armament, 1 x 20-mm cannon, 1 x 7.62-mm AA machinegun; armored against 20-mm shot.

3. **VIJAYANTA** (Ind). Crew 4; weighs, 38,600 kg (85,113 lbs); maximum road speed, 48 km/hr; maximum road range, 480 km; armament, 1 x 105-mm main gun, 1 x 7.62-mm coaxial machinegun, 1 x 7.62-mm AA machinegun; armored from 80-mm on hull nose to 17-mm on floor.

4. **PANHARD VCR/TT** (Fr). Crew 3 plus 9 infantry; 6 x 6 drive; weighs, 7,000 kg (15,435 lbs); maximum road speed, 100 km/hr; maximum road range, 800 km; maximum water speed, 4 km/hr; armament, 1 x 20-mm main gun, 1 x 7.62-mm coaxial machinegun; armored from 8 to 12-mm.

5. **CENTURION** (Can). Crew 4; weighs 50,728 kg (111,855 lbs); maximum road speed, 35 km/hr; maximum road range, 102 km; armament, 1 x 105-mm main gun, 1 x 7.62-mm coaxial machinegun, 1 x 7.62-mm machinegun, 1 x 12.7-mm AA machinegun; armored from 152-mm on turret front to 17-mm on floor.

6. **M60 ALVB** (US). Crew 2; weighs 55,746 (w/bridge) 122,919 lbs; maximum road speed, 48 km/hr; maximum road range, 500 km; armored from 120-mm hull front to 12.7-mm on floor; bridge weight 14,470 kg (31,906 lbs); gap span 18.288 meters (60 feet); maximum load capacity 60,000 kg (132,300 lbs).

# REGIMENTAL REVIEW

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## Armor School Hotline Now Open

The Armor School has installed an Armor hotline. This 24-hour-a-day recording service will give field personnel the opportunity to ask questions, raise issues, and identify problems concerning the training, personnel and logistics subsystems of armor.

The recordings will be transcribed daily and appropriate action will be taken to provide assistance as rapidly as possible.

The hotline numbers are: Commercial: (502) 624-TANK; AUTOVON: 464-TANK, and FTS: 354-TANK."

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## 2d Armored Museum Seeks Artifacts

The 2d Armored Division Museum is looking for information and photos from its various units that served in Korea and Vietnam. These units were: 2d Squadron, 1st Cavalry; 1st Battalion, 92d Field Artillery; 5th Battalion, 46th Armored Infantry Regiment and the 1st Battalion, 50th Armored Infantry Regiment.

Any information or photos loaned to the museum can be copied and the originals returned. Interested persons should contact Paul Beck, 2d Armored Division Museum, P.O. Box 5009, Fort Hood, Texas, 76545. Or phone (817) 287-8811/8812. Also, AUTOVON 737-8811/8812.

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## Armor Force Monument to Be Erected

Senator Strom Thurmond of South Carolina recently introduced legislation authorizing the creation of a national memorial to the "American Armored Force," which has served in every major U.S. military conflict since WWI.

The bill would authorize the U.S. Department of Interior to select a suitable site for a memorial to the Armored Force, which would then be constructed with private donations. The only expense of the government would be maintenance and care of the memorial by the Interior Department.

The bill would authorize placement of the monument on government property in Arlington, Virginia, on "The Avenue of Heroes" between the Arlington Memorial Bridge and the entrance to the Arlington National Cemetery.

The National Commission on Fine Arts and the National Capital Commission would work with the Interior Department in selecting an exact site for the memorial. Thurmond's bill has the endorsement of the Armored Force Monument Committee, headed by General Bruce C. Clarke, USA (Ret.). General Clarke is a past president of the U.S. Armor Association. The bill is also endorsed by the U.S. Armor Association, the World Wars Tank Corps Association, the Veterans of the Battle of the Bulge and seven armored division associations.

"This memorial would recognize the contributions of the American Armored Force and its great value to the entire U.S. Army," Thurmond said in introducing the bill. Thurmond is a retired major general in the U.S. Army Reserve and a veteran of WWII. "One of the finest chap-

ters in the epic history of the U.S. Army has been the story of the American Armored Force, which had its beginnings when General "Black Jack" Pershing established the U.S. Army Tank Corps during World War I. Since that time, the American Armored Force has been an invaluable asset to our defense in every major theater of battle and armed conflict involving the United States."

He added that the memorial "would be a lasting tribute to the valiant soldiers of the American Armored Forces who have given so much in the defense of freedom around the world."

In a separate announcement, General Clarke said that individuals wishing to make a contribution may do so by sending it to the Armored Force Monument Committee (AFMC) P.O. Box 1146, Ft. Myer, VA 22211.

Plans call for the design to be representative of the Armored Force shoulder patches superimposed on a granite slope representing a tank glacis. The inscription below the patch, a quote from the late Major General Adna R. Chaffee, will read: "A balanced team of combat arms and services of equal importance and equal prestige."

Two curving arms of granite, representing the envelopment, will be inscribed with the unit patches of armored units.

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## Fire-Resistant Hydraulic Fluid Under Test

A fire-resistant hydraulic fluid that will reduce the chances of crew-compartment fires in combat vehicles is under development at the Belvoir, VA, Research and Development Center's Materials, Fuels and Lubricants Laboratory.

Post-battlefield analysis of vehicle casualties in the 1973 Middle East War clearly identified hydraulic fluid fires as contributing to the loss of life and equipment. The Army subsequently replaced its petroleum-based hydraulic fluid (MIL-H-6083) with an Air Force/Army developed synthetic hydrocarbon-based substance (MIL-H-46170) with improved fire-resistant properties.

However, this was seen as only an interim solution and a completely halogenated material is being tested. This fluid can be diluted with up to 20 percent of currently-used hydraulic fluid without losing its fire-resistant traits. Efforts continue to develop a fully formulated, non-flammable hydraulic fluid that can be used in existing hydraulic systems.

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## 1st Cavalry Division Scholarships Announced

The 1st Cavalry Division Association is offering scholarships at a maximum of \$2,400 to children of soldiers who died while serving in the 1st Cavalry Division during and since the Vietnam War.

Scholarships are offered only if the deceased parent was a member of the Association and serving with the 1st Cavalry Division at the time of death.

Scholarships are also open to children of soldiers who have been declared 100-percent disabled from injuries incurred while serving with the 1st Cavalry Divi-



### **Bulldozer Blade Kit Under Test for M1**

The Army's Armor and Engineer Board recently gave the go-ahead for further testing of a bulldozer blade kit for the M1 Abrams tank.

Adapting the M9 bulldozer kit used with the M60 tank

proved unfeasible, and a new kit was designed specifically for the M1. A contract was awarded to Barnes and Reincke, Inc., for the prototype kit which was tested at Fort Knox, KY.

sion during the Vietnam War.

Potential students must furnish proof of relationship and death or disability of parent and evidence of acceptance into a recognized institution of higher education. Scholarships will be paid at the rate of \$600 annually for as many as four years and may be used for whatever need the student chooses — tuition, books, clothing, etc.

Qualified students should send DA Form 52-2 "Report of Casualty" to: First Cavalry Division Assn., 302 N. Main, Copperas Cove, TX 76522-1799.

### **Training Opportunities Guide Published**

"A Guide to Training Opportunities," listing the ranges, firing points, observation posts and other training and administrative facilities available at Fort Chaffee, Arkansas, is now available to interested parties.

Fort Chaffee offers accommodations on its 70,000-plus acres for more than 30 battalions. Among the training facilities available are a tactical, sod, C-130 landing strip, two drop zones, and three prepared bridge training sites for river crossing operations.

Units desiring to secure a copy of the guide should write to: Headquarters, U.S. Army Garrison, ATTN: ATZR-Z-OPS, Fort Chaffee, Arkansas 72905. Or call, AUTOVON 926-2206/2466 or commercial (502) 484-2206/2466.

### **U.S. Horse Cavalry Association Meeting**

The U.S. Horse Cavalry Association will hold its annual meeting from October 5 through the 7th at Fort Riley, Kansas. All former cavalymen, horsemen and historians are invited to attend. For information, contact the USHCA, P.O. Box 6253, Fort Bliss, Texas, 79906. Or phone (951) 565-3378.

### **Sustainment Training for Cavalry**

Crews from the 3d Squadron, 12th Cavalry, recently underwent two weeks of intensive sustainment training at the Baumholder Training Area, FRG. They trained on individual, squad and crew proficiency with particular stress laid on crew drills.

Individual training included firing the M16A1 rifle, the .45-caliber pistol, the .50-caliber machinegun, the 7.62-mm machinegun, NBC proficiency, and live hand grenade throwing.

Cavalry tank crews fired the new tank tables VI, A and B, and VII, A and B, and scout crews trained on the *Dragon*, including tracking and live-fire. Demolition training techniques were worked on and the scout squad proficiency course was run.

Mortar crews conducted dry and live-fire exercises and supported the tank table VII-B with illumination rounds.

Lieutenant Colonel John K. Muzzy, commander, 3-12 Cavalry said after the training period: "The tankers gained experience in the new tank tables. . .our mortars are prepared to fire in any contingency. . .our scouts learned a lot of lessons. . .All sections were great. . ."

### **New Protective Goggle Lenses Available**

The U.S. Army Materiel Systems Analysis Activity at Aberdeen Proving Ground, Maryland, announces the availability of new ballistic protective goggle lenses for the standard sun, wind and dust goggles. These are similar to comparable goggles fielded by the Israelis in 1976 and have the potential for reducing eye injuries by about 50 percent for tank commanders and others exposed to armor debris or small shell fragments.

The lenses are available as replacements only and are listed as: Lens, Ballistic, Class 4, Neutral Gray, NSN 8465-01-109-3996 and Lens, Ballistic, Class 3, Clear, NSN 8465-01-109-3997.



**THE BELARUS SECRET** John Loftus, ed. by Nathan Miller. Alfred A. Knopf, New York 1982. 196 pages. \$13.95.

This is a deeply disturbing book, both for what it says and what it does not say. The author, a former Army officer, served as a trial attorney for the Office of Special Investigations in the Justice Department. In that capacity, he conducted investigations into allegations that many—perhaps hundreds—of Byelorussians who had collaborated with the Nazis in the extermination of Jews in the Soviet Union have been brought into this country illegally since the end of WW II.

Who was responsible for these illegal immigrations? Name almost every American intelligence agency known to have existed since 1945, then add the FBI, the State Department and the Immigration and Naturalization Service. By acts of commission and/or omissions, these agencies' programs, policies and procedures enabled alleged war criminals to obtain visas to enter the U.S., according to the author. Once here, these agencies, including the FBI under J. Edgar Hoover, continued to aid in the coverup of the Byelorussians' activities in support of the Nazis. Finally, these alleged war criminals succeeded in obtaining American citizenship. Only now, nearly forty years after the end of WW II, are facts concerning this matter coming to public light.

The book, consisting of nine untitled chapters and an epilogue, left me empty. There was no reassurance that this great wrong, having now been exposed, would be righted. Yes, legal proceedings have been initiated against a few old men, but one does not gain comfort in that knowledge. What of all the others? What about those government officials and agencies that helped these men gain entry into the U.S.? What about those government officials and agencies which, even to this day, conspire to hide the unpleasant truth from investigators and the public?

The failure of the author to address these issues constitutes the greatest weakness of this book. He builds a very sound case to support his allegations of conspiracy in government agencies. He begins to hint at corrective actions, forthcoming or contemplated. But at that point he stops. In the final two paragraphs, he alleges that another conspiracy is in progress, to smuggle "war criminals" into this country from the Middle East. The reader is left with the impression that our intelligence agencies are still ignored by their congressional oversight committees. As the author is now in private law practice, one may wonder why he left his work, and his book, unfinished.

Despite its shortcomings, this book is important in that it breaks new ground. Anyone who studies the Holocaust or watchdogs the intelligence agencies will want to read it.

JAMES F. GEBHARDT  
Captain, Armor  
Presidio of Monterey, CA

**TANK BATTALIONS OF THE U.S. ARMY** by James A. Sawicki. Weyvern Publications, Dumfries, VA 22026. 427 pages. \$25.00

This volume is a fitting tribute to the valiant service of U.S. tank battalions since their formulation in WW I. These units have played a decisive role in most campaigns since then and set the standards for offensive action.

Many of the WW II tank battalions fell by the wayside in peacetime and many lack the background to qualify as 'historical' or 'traditional' units. Unfortunately, the limited Army historical resources precluded preparing detailed unit histories for these units.

A major value of this book is that it ensures that the many superb tank battalions of WW II will not be forgotten or merely remembered as numbers.

The introduction includes an excellent history of armored warfare from its beginnings through the Korean War.

The author has assembled the important facts of every tank battalion that has served in the Army since WW I. A total of 417 battalions is included in this massive work and each entry includes the history, decorations and coats of arms of every unit.

Tankers, past and present, will find much of value and enjoyment in this volume.

BRUCE C. CLARKE  
General (USA Ret.)  
Ft. Myer, VA 22211

*(Ed. Note: Jim Sawicki, the author, has generously offered to donate 20 percent of the sale price toward the Armored Force Monument that is now in the planning stages. See Regimental Review this issue for details of the monument.)*

**YURI ANDROPOV—A SECRET PASSAGE INTO THE KREMLIN** by Vladimir Solovyov and Elena Klepikova. Macmillan Publishing Co., N.Y., 256 pages. \$15.95.

The most difficult task in biography is an honest portrait of a totalitarian leader because that system's closed nature yields information grudgingly and in an exaggerated manner. Yet two Soviet dissidents try to pierce the conspiracies of silence and lies in this book.

Written just after Andropov assumed power, it is intended as a warning to the West that this man was not the closet liberal that many assumed him to be. Instead, we see a man of a great many faces, able to manipulate and intrigue past all that stand in his path. He fits the neo-Stalinist mode, suspicious of both the West and its pluralistic ideology. Yet he is crafty enough to make himself seem to be moderate and sympathetic to many of the very same groups that he worked so hard to crush.

As head of the KGB, Andropov systematically rooted out the dissent that arose during the Khrushchev era. He was the driving force behind the high technology spy program directed against the U.S. and its Western trade allies.

By the late 1970s, Andropov had expanded the role of the KGB into every area of Soviet life, including its foreign policy. He also consistently tried to scuttle attempts at Soviet-American friendship because it might lead to a domestic thaw with restraints placed on the secret police.

Even though Andropov is now dead, the book gives us an insight into the political system that produces men like him.

EDWARD S. SHEA  
1st Lieutenant, Military Intelligence  
Fort Hood, TX

**KGB TODAY: THE HIDDEN HAND** by John Barron. Readers Digest Press, New York, 1983. 489 pages. \$19.95.

This is a sober and fascinating book documenting the actions of the KGB—the Soviet apparatus that functions as a secret political police force within the Soviet Union and abroad and as an instrument of clandestine action. It also illustrates the disillusionment of KGB operatives and growing Soviet weaknesses and vulnerabilities.

The book portrays vivid insights into KGB operations—knowledge gained from some of the most important KGB officers and spies ever to flee Russia or to be caught by the West. Portrayed are a diversity of KGB tactics including overt and covert propaganda, mass demonstrations, controlled international assemblies, disinformation, forgeries, sabotage, terrorism and murder. The author details how the Soviets are endeavoring to foment and guide peace and disarmament movements in their interests.

This book will appeal to the general reader and the student of Russian affairs alike.

JAMES B. MOTLEY  
Colonel, USA  
Washington, D.C.

# **STEEL ON TARGET**



Dear Doug:

*You finally came home. It was a long journey in miles and time, but an honor guard escorted you the whole way. Over the weekend that you lay in the Capitol rotunda, many came to pay their respects and not a few wiped away a tear as they remembered you.*

*It's been so long since we shared that trailer in Ozark next to Rucker. You wanted scouts so bad you could taste it. I warned you about it, but you wouldn't listen. I told you to think positive, but you insisted you knew you weren't coming back. Just like your dad, you said. Later, the Elder who conducted the service said you had arranged your memorial even before you went over.*

*What an odd couple. You, the good old country boy from Battletown, and I from the city. You a Morman and I, the Catholic. You liked a good time and I a good book. Stick buddies are like that.*

*They took you out with an RPG and the Loach exploded on impact. Lam Son it was called. The flak over Laos that day was as thick as any your father wrote about before his Liberator went down over Germany. You wore those old tarnished wings of his on graduation day and probably had them taped to the bubble the day you bought it. Your buddies tried to bring you out, but it was impossible without losing many more good men. They knew you understood when they broke it off.*

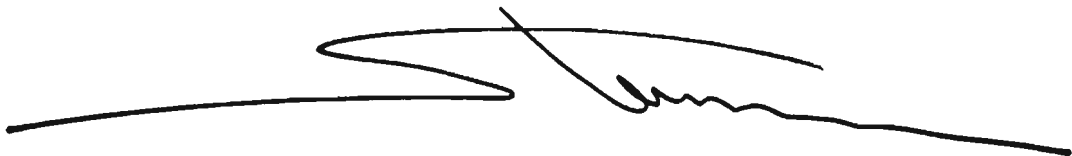
*Zelko went down that day too. He got his Snake on the ground and fired up a whole company of them with the minigun before skating. It took him three days of moving at night and hiding by day before making it back to the friendlies.*

*The President said some nice words over you and awarded you the Medal of Honor. You weren't into medals, but this one you deserved.*

*Your name is on that polished black wall on the Mall. The girl I was with that overcast day didn't understand why I wore the dark sunglasses. She said we shouldn't have been there in the first place. What did she know?*

*Your flag-draped bier called our nation to an accounting. You cried loudly in your stillness and every citizen was summoned to answer your anguished query: Did you support me or did you spite me?*

*The book is not closed, Doug. For the others, it will take more time. But, at least for you, welcome home.*



# 67th Armor

## Lineage and Honors

Constituted 1 September 1929 in the Regular Army as 2d Tank Regiment; concurrently, organized (with only one active battalion) as follows: Headquarters and Headquarters Company, newly constituted (inactive). 1st Battalion by redesignation of 19th Tank Battalion (inactive) (19th Tank Battalion constituted 24 March 23 in the Regular Army). 2d Battalion by redesignation of 17th Tank Battalion (active) (17th Tank Battalion organized in 1918 as 303d Battalion, Tank Corps, and elements of the 1st Separate Battalion, Heavy Tank Service, 65th Engineers). 3d Battalion, newly constituted (inactive).

(2d Battalion [less Company F] inactivated 15 September 1931 at Fort George G. Meade, Maryland.)

2d Tank Regiment redesignated 31 October 1932 as 67th Infantry (Medium Tanks). (Headquarters and Headquarters Company, 2d Battalion, and Company D activated 1 October 1939 at Fort Benning, Georgia.) Regiment activated 5 June 1940 at Fort Benning, Georgia. Reorganized and redesignated 15 July 1940 as 67th Armored Regiment and assigned to 2d Armored Division.

Regiment broken up 25 March 1946 and its elements reorganized and redesignated as follows: Regimental Headquarters and Headquarters Company; 3d Battalion Headquarters and Headquarters Company; and Companies D, G, H, and I as 67th Tank Battalion, an element of the 2d Armored Division. Companies A and C as Companies D and C, respectively, of 6th Tank Battalion, an element of the 2d Armored Division (concurrently, certain elements of the 66th Armored Regiment were redesignated elements of the 6th Tank Battalion). Reconnaissance company as Troop E, 82d Mechanized Cavalry Reconnaissance Squadron (separate lineage). Remaining elements of the 67th Armored Regiment disbanded.

67th Tank Battalion redesignated 11 October 1948 as 67th Medium Tank Battalion. Redesignated 1 April 1953 as 67th Tank Battalion. Inactivated 1 July 1957 in Germany and relieved from assignment to 2d Armored Division.

6th Tank Battalion redesignated 31 January 1949 as 6th Medium Tank Battalion. Relieved 14 July 1950 from assignment to 2d Armored Division. Assigned 6 October 1950 from assignment to 2d Armored Division. Assigned 6 October 1950 to 24th Infantry Division. Redesignated 10 November 1951 as 6th Tank Battalion. Company D, 6th Tank Battalion, redesignated 1 July 1957 as Headquarters and Headquarters Company, 1st Medium Tank Battalion, 67th Armor, relieved from assignment to 24th Infantry Division, assigned to 2d Armored Division, transferred (less personnel and equipment) from Korea to Germany, and reorganized. 6th Tank Battalion inactivated 5 June 1958 in Korea and relieved from assignment to 24th Infantry Division (a new Company D, 6th Tank Battalion, constituted 1 July 1957, was disbanded 5 June 1958).

Headquarters and Headquarters Companies, 1st and 2d Battalions, 67th Armored Regiment; Companies B, E, and F, 67th Armored Regiment; and Maintenance and Service Companies, 67th Armored Regiment, reconstituted 6 February 1947; concurrently, consolidated and redesignated as 321st Mechanized Cavalry Reconnaissance Squadron, allotted to the Organized Reserves and assigned to First Army. Activated 21 February 1947 at Boston, Massachusetts. Redesignated 21 October 1948 as 1st Battalion, 304th Armored Cavalry. (Organized Reserves redesignated in 1984 as the Organized Reserve Corps.) Inactivated 31 July 1950 at Boston, Massachusetts. Redesignated 17 October 1950 as 57th Medium Tank Battalion; concurrently, withdrawn from the Organized Reserve Corps and allotted to the Regular Army. Assigned 20 October 1950 to 2d Armored Division. Activated 10 November 1950 at Fort Hood, Texas. Redesignated 1 April 1953 as 57th Tank Battalion. Inactivated 1 July 1957 in Germany and relieved from assignment to 2d Armored Division.

67th and 57th Tank Battalions and Company D, 6th Tank Battalion, consolidated, reorganized, and redesignated 1 July 1957 as 67th Armor, a parent regiment under the Combat Arms Regimental System (Headquarters, 67th Tank Battalion, redesignated as Headquarters, 67th Armor). (Company C, 6th Tank Battalion, redesignated 6 June 1958 as Headquarters and Headquarters Company, 3d Medium Tank Battalion, 67th Armor.)

### Campaign Participation Credit

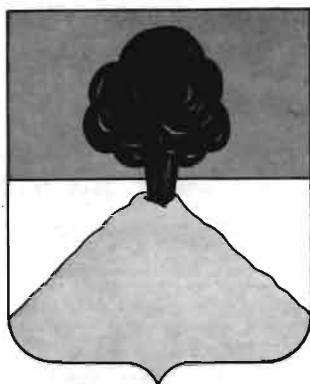
<i>World War I</i>	Normandy	UN Offensive
Somme Offensive	Northern France	CCF Intervention
<i>World War II</i>	Rhineland	1st UN Counteroffensive
Algeria-French Morocco	Ardennes-Alsace	CCF Spring Offensive
(with arrowhead)	Central Europe	UN Summer-Fall Offensive
Sicily	Korea	2d Korean Winter
(with arrowhead)	UN Defensive	Korean Summer 1953

### Decorations

Presidential Unit Citation (Army), Streamer embroidered NORMANDY (67th Armored Regiment [less 3d Battalion] cited; DA GO 28, 19486)

Presidential Unit Citation (Army), Streamer embroidered SIEGFRIED LINE (3d Battalion, 67th Armored Regiment, cited; WD GO 108, 1945)

Belgian Fourragere 1940 (67th Armored Regiment cited; DA GO 43, 1950)



#### Symbolism

The personnel of the 17th Tank Battalion, from which this regiment descends, were in the old 305th Tank Brigade and therefore adopted the undifferenced arms and crest of that brigade. The erupting mount symbolizes the antitank mines that caused heavy losses within the 17th Tank Battalion. The crest is taken from the ancient arms of Picardy, where the brigade saw all of its action. The colors of the shield commemorate the insignia worn by the brigade.

#### Distinctive Insignia

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