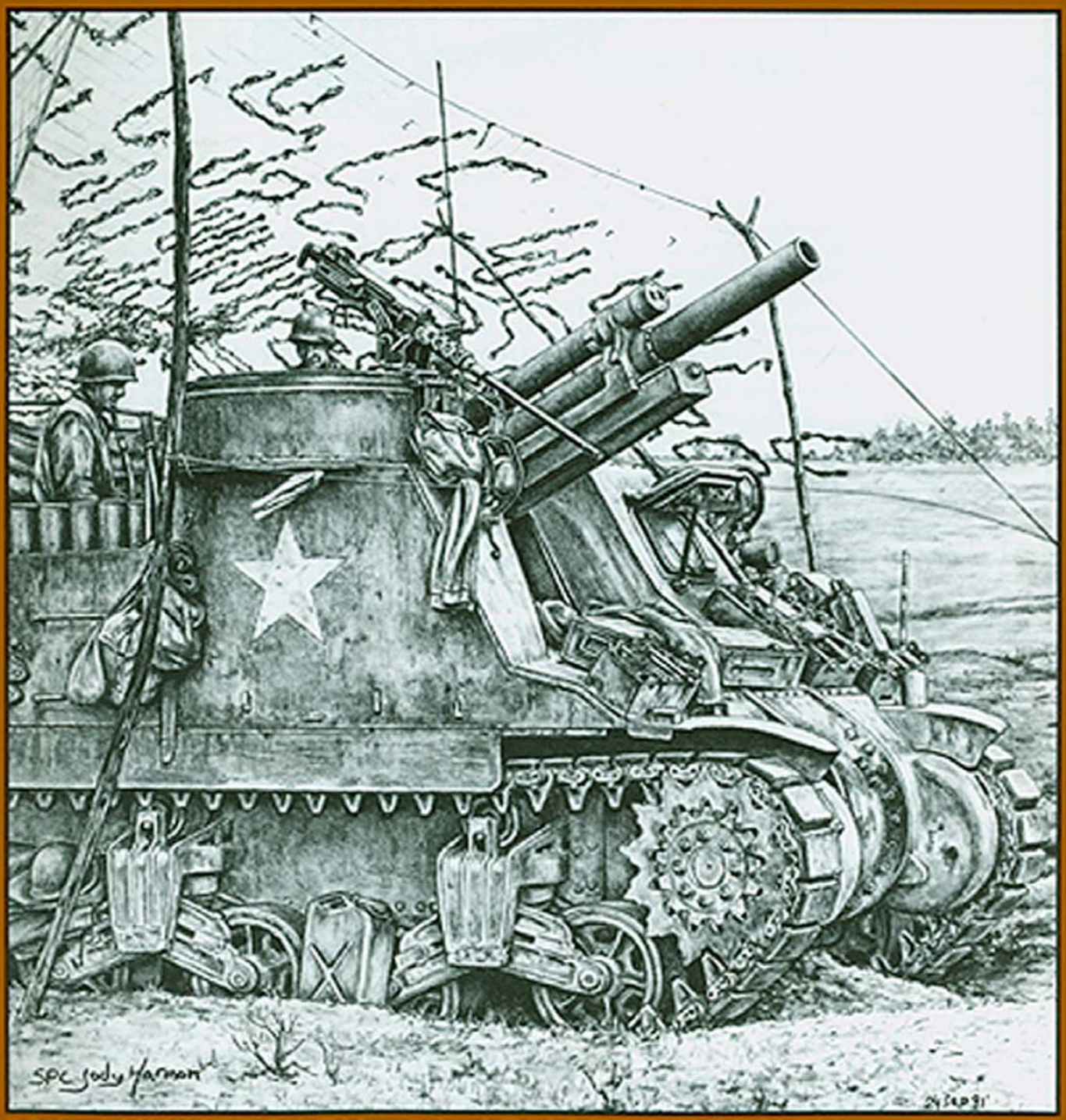
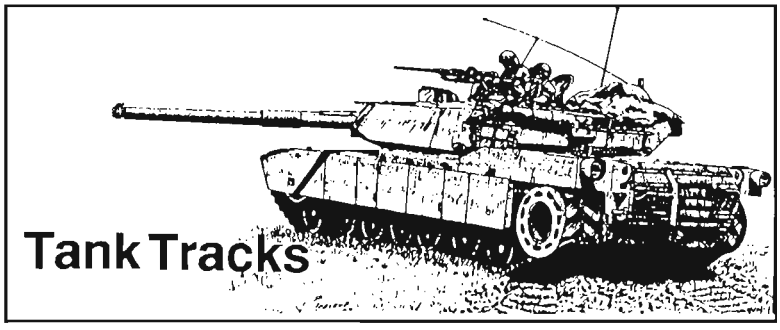
ARMOR



50th ANNIVERSARY - 5th ARMORED DIVISION

PB 17-19-5 This publication approved for public release, distribution is unlimited September-October 1991



A year ago we were in the midst of the massive buildup in Saudi Arabia, dubbed Operation DESERT SHIELD. The subsequent battle of annihilation placed Operation DESERT STORM in the history books and smote the Babylon lion with the most thorough thrashing those books have ever described. We didn't expect so much as a meow to come from the banks of the Tigris for a long time to come.

Yet, as this issue goes to press, it seems apparent that Saddam's lessons learned task force has failed its mission, because he has once again gotten everyone's attention by hindering the UN inspection teams. Not a smart move, but consider the source. How then can we assume that DESERT STORM lessons reached other potential regional threatmongers? We can't, which is why we must think in terms of the mythological Roman god, Janus, with one face firmly on the past, while the other gazes steadfastly toward the future. We must not forget the lessons of the past, yet we cannot fall into the trap of preparing to fight the next war as we fought the last. Armies tend to do both at different times, with soldiers paying the bills.

This issue attempts to fulfill the image of Janus. Major James M. Milano digs back to WWI and WWII to see how Erwin Rommel took lessons from his WWI command experience at the small unit level and applied them on a much grander level in North Africa in WWII.

This issue's other face is embodied in the Chief of Armor's "Commander's Hatch" column, which imparts MG Foley's vision of our branch beyond the turn of the century. Once you consider the possibilities, the concepts are at once startling and exciting. Armor will remain the centerpiece of future mobile combined arms operations, and the centerpiece of Armor will be, as today, the armor crewman and cavalry scout. The Chief of Armor's look down the road will conclude with part II in the November-December issue.

I commend to you the article, "Bravo Company Goes to War." SSG Jeffrey Dacus, USMCR, tells the story of B Company, 4th Marine Tank Battalion, which activated for the Persian Gulf, deployed, transitioned from M60A1s to M1A1s, then fought its way to Kuwait City. Not only is this a great commendation for the Marine Corps Reserve tankers who comprise B Company, but it is a screaming endorsement of the M1A1 MBT — that a group of farmers, plumbers, and teachers can learn a new tank weeks or days before fighting it in combat.

Do not overlook the remainder of the issue. CPT A.A. Puryear and LT Gerald Haywood narrate the events of 2/3 ACR's hasty attack on the Ar Rumaylah Airfield; 1LT Charles Gameros provides an insightful analyses of HMMWVs vs. Bradleys, and which is better for different scout missions; 1LT John Hyatt sends us his views on the scout use of LAV-25s; MAJ John Faulconbridge discusses the company XO's role in tactical operations; and former Armor Branch Chief COL Stephen E. Wilson lays the personnel and assignment cards on the table in "Ruminations of a Branch Chief." Don't miss this important article.

Finally, we salute the 5th Armored Division on its 50th Anniversary. Some 46 years ago, the soldiers of the "Victory Division" were the first to break onto German soil.

— PJC

By Order of the Secretary of the Army:
GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:
PATRICIA P. HICKERSON
Brigadier General, United States Army
The Adjutant General

ARMOR

The Professional Development Bulletin of the Armor Branch PB-17-91-5

ARMOR (ISSN 0004-2420) is published bimonthly by the U.S. Army Armor Center, 4401 Vine Grove Road, Fort Knox, KY 40121.

Official distribution is limited to one copy for each armored brigade headquarters, armored cavalry regiment headquarters, armor battalion headquarters, armored cavalry squadron headquarters, reconnaissance squadron headquarters, armored cavalry troop, armor company, and motorized brigade headquarters of the United States Army. In addition, Army libraries, Army and DOD schools, HQ DA and MACOM staff agencies with responsibility for armored, direct fire, ground combat systems, organizations, and the training of personnel for such organizations may request two copies by sending a military letter to the editor-in-chief.

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

September-October 1991, Vol. C No. 5

Features

Departments

Second-class official mail postage paid at Fort Knox, KY, and additional mailing offices. Postmaster: Send address changes to Editor, ARMOR, ATTN: ATSB-AM, Fort Knox, KY 40121-5210.

Distribution Restriction: Approved for public release; distribution is unlimited.

USPS 467-970

LETTERS

Let's Bring Consistency To Combat Badge Awards

Dear Sir:

Having served in Vietnam as an OH-6 aerial scout platoon commander involved with cavalry operations, I would support combat badges for the combat arms branches similar to the Combat Infantry Badge.

In those air cavalry squadrons, infantrymen of the aerial rifle platoon were awarded the CIB. Air cavalry scouts and the air cavalry gunner and life platoon pilots and crewmembers were not similarly recognized when involved in the very same fire fights and exposed to similar dangers.

I've served both as an aviation battalion commander and an armor battalion commander and wear the Master Aviator Badge with pride. However, wearing a combat branch badge similar to my infantry comrades-in-arms would be suitable and deserving recognition for combat veteran aviators, tankers, and cavalrymen.

CHARLES R. RAYL
COL, Kansas ARNG
Troop Command Commander
Wichita, Kan.

NCO Career Progression: How It's Supposed to Work

Dear Sir:

In the July-August 1991 issue of ARMOR, SFC Wells wrote a letter discussing his concern about career progression of master gunners. Specifically, SFC Wells feels that master gunners are disadvantaged when considered for promotion to master sergeant, because their specialized training and unique career patterns often preclude them serving as platoon sergeants. His

Continued on Page 51

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ARTICLE SUBMISSIONS: To improve speed and accuracy in editing, manuscripts should be originals or clear copies, either typed or printed out double-spaced in near-letter-quality printer mode. We also accept stories on 5-1/4" floppy disks in MultiMate, WordStar, Microsoft WORD, WordPerfect, XyWrite, Xerox Writer, and ASCII (please include a double-spaced printout). Please tape captions to any illustrations submitted.

PAID SUBSCRIPTIONS: Report delivery problems or changes of address to Ms. Connie Bright, circulation manager, P.O. Box 607, Ft. Knox, Ky. 40121 or call (502)942-8624, FAX (502) 942-6219.

UNIT DISTRIBUTION: Report delivery problems or changes of address to Ms. Mary Hager, DSN 464-2610; commercial: (502)624-2610. Requests to be added to the free distribution list should be in the form of a letter to the Editor-in-Chief.

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(The Armor Hotline is a 24-hour service to provide assistance with questions concerning doctrine, training, organizations, and equipment

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MG Thomas C. Foley
Commanding General
U.S. Army Armor Center

An Armored Force For The Future 2000 And Beyond — Technology

(Part I)

At the Armor Center last year, as reported earlier, we began an internal study dubbed Armor 2000. We saw only a relatively small portion of the changes that have remade the world in recent years, months, and weeks. The decline of the Warsaw Pact was clear, and we received a new azimuth from the revised national strategy statement and the chief of staff's January 1990 white paper. This was made more clear on 2 August 1990 when the president announced the dimensions of a new strategy. Ironically, this was the very day Saddam Hussein launched his fateful attack.

Even before DESERT SHIELD and DESERT STORM we published our Armor 2000 white paper — on the 50th anniversary of our Armored Force. In this paper — published under the umbrella of the TRADOC AirLand Operations process — we foresaw the rise of regional conflict and the challenge to project armored forces in contingency conflicts. Also, we completed a very thorough relook at potential threats, including a nation-by-nation, and region-by-region examination of stability, policy, potential for conflict, danger to U.S. interests, and the role of armored forces in any outbreak of hostilities. Our conclusion, which turned out to be prophetic, was that potential for U.S. involvement in armored warfare existed in many parts of the world. DESERT SHIELD and DESERT STORM validated many of our conclusions.

At this year's Armor Conference in May, we published a full Armor Branch operational concept, addressing the branch's future needs in the areas of doctrine, organizations, training, leader development, and materiel. Over 200 representatives of the uniformed Army, the Army's civilian leadership, and the industrial sector reviewed and commented on the document. The vast majority of the comments have been integrated into the evolving product.

In this article, I want to focus on materiel aspects of our long-range vision. Let me begin with those things that make the formation of a reliable vision more difficult. Perhaps the most basic uncertainty is in the realm of the threat. It is not that there are no potential enemies. There indeed are. As we see in Eastern Europe, the potential for conflict in a multi-polar world is arguably increasing. But a nation so used to focusing on a single, mammoth, openly hostile opponent, finds it very difficult to be impressed

by an array of diverse, relatively weak nations, whose intentions are not openly hostile and, perhaps most important, cannot directly threaten our national survival.

There is a declining consensus for the need for military forces in competition with domestic programs. As the newspapers tell us, the collapse of the "Monday coup" in the Soviet Union reopened demands for a larger peace dividend at the expense of combat forces and readiness. That erosion places even our projected force and funding cuts in the uncertainty column. We may not yet have a good feel for how far down the bottom is.

Some may not be aware of the current projected cuts. One way to look at the build-down of Armor is to count the number of battalion-size units. The good news is the addition of two light armor battalions and possibly three light cavalry squadrons in a light cavalry regiment. All will add air-delivered punch to quick deploying contingency forces like the XVIII Airborne Corps. The not-so-good news is the projected loss of 15 tank battalions, two squadrons of division cavalry, and one complete armored cavalry regiment. In all, a 25 percent loss in units. At present, the strength of our branch in the Active Army is expected to drop by more than 9000 officers and troopers.

It surprises many that Armor is so small a branch. We are currently the eighth largest of the Army's 16 branches, and comprise only 4.4 percent of the Active Army. We offer, however, an excellent return on investment; from that tiny fraction comes more than 40 percent of the ground maneuver battalions. And if you accept the combat power scores used by the Combined Arms Center and the Command and General Staff College, we provide about 70 percent of the Army's combat power. This is by any measure a tremendous return on investment. It is no wonder that so many consider Armor to be special. It is interesting that virtually every nation authorizes its armor force to wear a special beret.

Our need, as an Army, for total obligational authority for research, development, and acquisition, vastly exceeds what DA expects to have available. Further cuts will result in more and more critical systems becoming unresourced. This whole climate of uncertainty, which begins with threat credibility and national resolve translated into force structure and funding, places all of our fielding and modernization strategies into massive uncertainty. For example, in 1990 we formulated an Army position that we would forego M1A2 production, except for 62 systems, in order to preserve the Armor Systems Modernization Program with the Block III tank in the lead — then planned for 1998 fielding. At that time we accepted a five-year window of risk. That position may still be the right option. But we must now realize that the very earliest we can expect the Block III main battle tank is now 2003, and our risk extends to 10 years with no clear-cut stopping point.

With all of that uncertainty there are a few things on which we can hang our hats. The potential for conflict remains high. In May 1990, I said the same thing at the Armor Conference and even cited Iraq as just one example of potential conflict. Large stores of armored weapons are still out there in the hands of nations capable of threatening our interests. And, for the most part, we are the only nation left capable to deter them, or, if necessary, to form the bulk of a coalition to defeat them. In almost every conceivable case we can expect the challenge of massive movement of forces and the building of a logistics base with little warning.

Perhaps of most significance is the continually growing role of technology and technological innovation in the nature of the battle and the battlefield. To see the full dimension of that assertion, I encourage each of you to read the newly published *TRADOC Pamphlet 525-5*, which lays out the AirLand Operations concept for the future battlefield. Technology drives the key differences. Specifically, the emerging ability to locate and destroy enemy units and individual vehicles will lead to wide dispersion of forces on both sides. In addition, the climbing expense of maintaining modern armies as well as arms limitation agreements will work to reduce force levels. The result will be a battlefield totally lacking in the continuity of forward lines or locked-in flanks.

Instead, we will see an array of wide separation between opponents and among forces of the same side, a battlefield on which terrain declines in importance, and focus narrows on enemy destruction. We will see a cycle of overlapping stages of finding the enemy, engaging him with long-range fires, and then maneuvering to destroy the remnants of his force.

All of these things pulled together give me a reliable basis to build a vision of Armor's future. I foresee nothing in the future that displaces Armor as the centerpiece of the combined arms team. Other branches and their systems are playing a greater role in attrition than ever before, but it is still the presence of main battle tanks that defines the decisive phase of combat. In DESERT STORM not one enemy element withdrew one meter until the arrival of tanks and the rest of the armored ground force. Then and only then did the enemy realize that he must fight, surrender or flee.

Likewise, I see no reduction in the importance of cavalry and scouts. Security of our force and precise infor-

mation on the enemy and terrain will only become more important on a non-linear battlefield, but, at the same time, all of these changes dictate a partial shift in the focus of the Armor Force. The need for rapid deployability on short notice demands that an increasing portion of our force be built around air-deliverable combat vehicles.

Our declining active force strength tells us that our Reserve Component armor battalions will be an indispensable component of our force, especially if we ever again launch an operation as large as DESERT STORM.

Just as RD&A funds are declining, so will training dollars. Our challenge will be to maintain and enhance the readiness of both the AC and RC with less actual maneuver and less live fire. I am also certain that the quality of weapons our soldiers will face will continue to increase. We must maintain the edge by insuring our dominance on any battlefield in crucial armor systems, as well as in those systems that protect and support them.

But more than with any other component of the vision, I remain absolutely convinced that neither technology nor shifting national strategy reduces the importance of the most critical component of victory — the armor soldier and leader. Everything we do to prepare for the future must be squarely focused on these mobile armor warriors.

What then of our future weapon systems? What kind of replacements do we need for our current main battle tank, M551 Sheridan, and scout/cavalry fighting vehicles? What do we need as the next generation of combat vehicles for a force that will have to deploy on a moment's notice to anywhere in the world and defeat the enemy quickly and violently with a minimal loss of men and machines?

First, let's look at the main battle tank. We need a lethal, deployable, and reliable system that will continue to be the primary offensive weapon to close with and destroy the enemy on the future battlefield. To provide such a system will require the integration of a number of advanced technology designs. It must be user friendly, both in terms of protecting its crew and in terms of easing its crew's burden during extended continuous operations.

We at the Armor School still recognize the need for a reliable means to defeat kinetic energy munitions. We are looking anxiously for armor technologies and concepts that will meet our requirements for vehicle and crew protection. But, I believe we have reached the limit on how much we can rely on passive armor alone to do the job. We must fully recognize all of the contributors to increasing survivability. We need lighter armors that outperform the armors of today. Armor packages that are tunable to the threat as well as being modular and easy to install are needed. One concept that merits special consideration is "mission packages," which can be added to the vehicle for mission or threat-specific protection.

Our concept and requirements for the Armored Gun System are an example of this thinking. The AGS is central to our acceptance as a true member of the contingency team. Our proposed organizations to bring armor onto the contingency battlefield have gained a broad consensus across the Army, and one of our top priorities is to replace the obsolescent M551 Sheridan.

Let me correct those who may have some misconceptions about the AGS. We do not suggest that it replace the main battle tank. We believe that it is a direct support weapon to support the infantry, but it can provide near main-battle-tank-type capabilities. It can be used in main battle tank roles in those contingencies when and where the main battle tank has not arrived or has been committed elsewhere.

In order to defeat all future threat tanks, we want a main battle tank with greatly improved target acquisition, data processing, and artificial intelligence capabilities, and an improved main armament system.

Our analyses have identified that an advanced fire control system is essential because it will enable our crews to execute their duties in a more efficient and effective manner on the battlefield. The fire control systems of the future must be able to detect targets independently of gunner control or input. In addition to detecting the target, the fire control system must have the capability to acquire, identify, track, prioritize, and engage the target, all with limited input from the gunner or crew. Voice activated systems may be one of the ways in which the crew can do its job in a more efficient manner. The system must also be able to describe targets to the crew down to the detail of type of target and the optimum aimpoint. Ideally, all the crew or gunner should be required to do is to tell the system whether or not to engage a given target. However, the system must also have the capability to make judgments on its own. In the absence of crew input or interaction, the system must have enough processing capability and sophistication to determine if it should engage a given target, and just as important, with which weapon system: main gun, machine gun, or directed energy system.

One other very important element of the fire control system needs to be an automatic identification, friend or foe system (IFF). As we saw during Operation DESERT STORM, in the swirling maelstrom of battle IFF can be very difficult at best, impossible at times. We absolutely need a system

that can identify targets and determine friend or foe to ensure the survival of our systems and our allies on the battlefield.

Once we have detected and acquired a target, we need to ensure certain destruction. An area that bears special consideration is the work being done in electromagnetic and electro-thermal/chemical gun technology. This potentially could improve the velocity of kinetic energy munitions, while reducing the overall weight of the combat system, thus greatly improving not only the lethality of the tank, but also its mobility and sustainability.

Another area that may deserve attention is combustion augmented plasma propellants. These technologies offer the promise of vastly increased projectile velocities and penetration capabilities combined with reduced weight.

Directed energy bears special scrutiny. The use of lasers and microwaves may have several benefits: less demand on the ammunition supply system, higher volume of fire capability, and vastly increased engagement ranges. The laser technology used in the Stingray Program today is a good first start, but we require systems with extended range, as well as a system that can acquire and destroy optics and fire control systems, not merely disrupt or temporarily disable the system.

Why not use microwaves to disable personnel as well? The armor community has a need for both close-in and far defense against dismounted infantry. Microwaves may allow us to engage dismounted troops with a reduced danger of fratricide.

Building on the Line of Sight Anti-Tank (LOSAT) concept, an advanced kinetic energy missile may also provide our future main battle tank with an increased capability to destroy other tanks on the battlefield.

Mobility is also key. Not just battlefield mobility, but the entire gamut of deployability from home base to battlefield and return. We need systems that can be deployed via any number of means, to include air and sealift, quickly and efficiently, anywhere in the world on a moment's notice, and be ready to fight as soon as they hit the ground.

Electric propulsion will enable the main battle tank to deploy and operate in remote areas without the need for the large logistic tail currently required. In addition, the vehicle would be much more durable and responsive than current systems. An all-electric vehicle will allow relocation of major components and crew members for maximum protection, have reduced overall weight and size, improved performance, commonality, and reduced life cycle costs. An all-electric tank that can operate from solar-powered batteries may enable the Armor Force to deploy worldwide and conduct its missions without the need for refueling. This, coupled with the use of electric or electro-thermal guns, may enable us to have a completely self-sustaining vehicle. Think of the ramifications of a system that does not require refueling and rearming at regular intervals.

Active or tunable suspensions, designed to be crew adjusted or by computer, will maximize operation over all types of terrain and will greatly enhance the cross-country capability of the main battle tank, making it more maneuverable, more survivable, and much more lethal. Main battle tanks that can literally adjust their ground clearance and ground pressure at the touch of a switch would provide the maneuver commander a great increase in combat capability by enabling him to deploy his forces virtually anywhere.

If the enemy acquires us on the battlefield, we need to have on-board systems that will make it more difficult for the enemy to engage us. Second- and third-generation countermeasure systems are needed. Miss distance sensors, second-generation vehicle integrated defense systems, laser warning receivers, and a wide array of sophisticated detection sensors will enable the crew to react to any threat on the battlefield and survive.

Other technologies that may hold promise for the Armor Force of the future are false target generators, as well as high powered microwave and laser jammers that cause electro-optical and other types of acquisition and fire control sensors to be inoperative.

We need systems that have reduced signatures across all spectrums. Ideally, we would like to have similar capabilities in our ground combat vehicles that are present in the F-117 stealth fighter making it virtually invisible. Other improvements to the main battle tank that will help to increase system and crew survivability are insensitive munitions to help reduce secondary explosions, compartmentalization of fuel and ammunition, IFF capability to prevent fratricide, fire detection and suppression, NBC protection, and an extensive use of robotics, unmanned vehicles, and artificial intelligence to take the soldier out of the loop whenever and wherever possible. These measures will keep our crews alive. We must remember that our soldiers are the most critical component of our systems.

Forge the Thunderbolt!

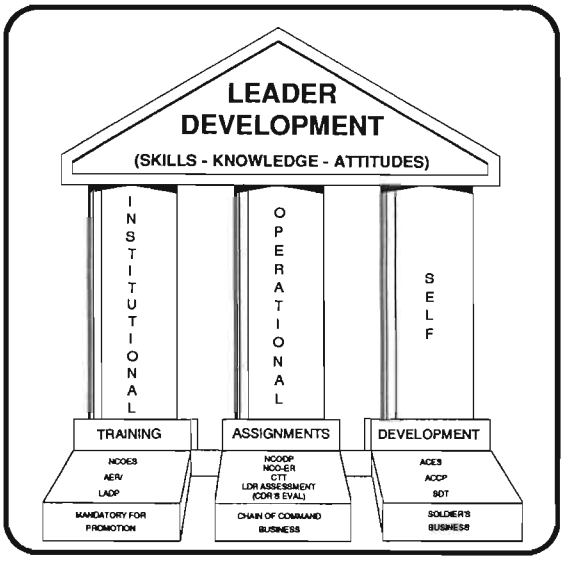
In Part II, we will conclude our discussion of technology and the future Armor Force.

CSM Jake Fryer
Command Sergeant Major
U.S. Army Armor Center

The Self-Development Test: A New NCO Evaluation Tool

October marks a major change of course in the Army's individual testing program, when the first Self-Development Test, or SDT, is scheduled to be administered. The Army had outgrown the need for the Skill Qualification Test (SQT), which was designed to promote and evaluate individual training in units. The NCO Corps is the best trained in this nation's history, due largely to the highly successful Noncommissioned Officer (NCO) Education System and continuing advances in training doctrine.

What was needed instead of the SQT was an instrument to evaluate an NCO's progress in self-development as part of leader development. This led to the command sergeants major recommendation for the SDT, the stated purpose of which is "to allow NCOs to measure and guide their growth in the skills and competencies they will need as they continue to develop as leaders." The former Chief of Staff of the Army, General Vuono, accepted the recommendation and, in a 3 July 1990 message to the field, directed implementation of the SDT in FY 92.



The SDT is, in fact, an important part of the self-development pillar of leader development. Leader development rests on the three pillars of institutional training, operational assignments, and self-development. Under the first two pillars, the NCO learns fundamental skills, knowledge, and attitudes and puts them to use in his various job assignments. Under the third pillar, self-development, he initiates and completes a program of self-development to round out leader development needs not addressed or satisfied under the first two pillars.

The Army has instruments to measure NCO performance under the first two pillars (e.g., resident course tests, NCO Evaluation Report), but none for the self-development pillar. The SDT is the Army's response to that shortcoming. While it does not provide a complete profile of NCO self-development, it does measure certain critical aspects: MOS knowledge, leadership, and training.

So what can we say about the SDT itself? Every sergeant, staff sergeant, and sergeant first class will take the SDT, with a test for each rank within an MOS. Active Component and Active Guard and Reserve NCOs will begin testing in October (FY 92) and will test annually; Reserve Component NCOs will begin testing in FY 93 and will test every other year. The FY 92 SDT test period schedule is laid out in DA Circular 350-91-1, now in the field. The Training Standards Officer network now in operation will administer the new test.

MOS 19K Skill Level 4

Questions in the SDT will come only from primary and supporting references listed below.

Leadership	Primary References
Leadership	FM 22-100
Leadership Counseling	FM 22-101
Soldier Team Development	FM 22-102
Training	
Battle Focused Training	FM 25-101
MOS Knowledge	STP 17-19K1-SM, Nov 89 STP 17-19K23-SM, Nov 89 STP 17-19EK4-SM, Aug 89

Task Number	Task Title	Supporting References
Subject Area 1	**NBC and Smoke SL4**	
031-503-4002	Plan and Supervise Positioning M8 or M8A1 Alarm	a,b
Subject Area 3	**Move the Platoon SL4**	
171-121-4030	Conduct Armor Tactical Navigation	c,d
171-123-4007	Coordinate an Armor/Scout Platoon Passage of Lines	e,f
Subject Area 5	**Defensive Operations SL4**	
171-123-4001	Prepare a Platoon Fire Plan	e,f
Subject Area 6	**Logistics SL4**	
171-091-1022	Conduct Platoon Resupply/Rearm	e
Subject Area 7	**Tank Gunnery SL3**	
171-126-3010	Direct Main Gun Engagement on an M1/M1A1 Tank	g

Supporting references:

a. FM 3-3
b. FM 3-5
c. FM 21-31
d. FM 101-5-1
e. FM 17-15
f. FM 71-1
g. FM 17-12-1

The SDT will be a written test, normally taking two hours or less to complete. It will have 20 questions each on leadership and training and about 60 questions on MOS knowledge. To promote NCO versatility in an MOS, the MOS knowledge section will be broad-based, testing the NCO on his entire MOS, rather than a single duty or equipment system. This is a fundamental difference between the SQT and SDT.

An NCO will prepare for the SDT on his own. This matches up with the self development philosophy, which stresses personal responsibility. Units will no longer allocate time on their training schedules to prepare soldiers for an upcoming test.

To aid his study, the NCO will receive an SDT notice about two months before the test period. To prepare for the leadership section of the SDT, the NCO must study FM 22-100 *Military Leadership*, FM 22-101 *Leadership Counseling*, and FM 22-102 *Soldier/Team Development*. For the training section, he must study FM 25-101 *Battle Focused Training*. For the MOS knowledge section, he will need to study his MOS-specific Soldier's Manual (SM) and any supporting references shown in the SDT notice. In the example above, the M1/M1A1 Armor Crewman (19K40) must obtain FM 17-15 and FM 71-1 to prepare for task 171-123-4001, "Prepare a Platoon Fire Plan."

By now, each NCO should have a personal set of the above leadership and training manuals, which he will maintain and take with him when he PCSs from a unit. If the NCO does not yet have the manuals, he should immediately notify the unit publications clerk to order them. The NCO should be able to obtain the MOS-specific SM and needed supporting references in his work area or the installation/unit learning center.

Following testing, the NCO will receive two reports showing his SDT results. He will get the first report, the Initial Individual Soldier's Report (ISR), within 30 days after testing. This report, which is unofficial, tells the NCO how many questions he answered correctly on each section of the SDT — leadership, training, MOS knowledge — and on each subject area of the MOS knowledge section. The NCO will receive the second report, the final ISR, about two and one-half months after his test period closes. In addition to SDT section feedback, the report will show the NCO's official SDT score (0 to 100) and a corresponding percentile or ranking. If, for example, the NCO receives an SDT score of 85 and a percentile of 65, this means his SDT score of 85 was as good as or better than the scores of 65 percent of the NCOs taking his SDT.

The FY 92 and FY 93 iterations of the SDT will not be used for personnel management purposes. Individual test results will go to the NCO only. Besides acclimating himself to the new test, he can use the results to steer his self-development. Beginning in FY 94, however, the NCO's SDT results will become a part of his permanent records and be tied to the Enlisted Personnel Management System. As such, they will be an important factor in promotion, retention/separation, and school attendance decisions.

In conclusion, the Army has high expectations for the SDT. Properly designed and adminstered, it should be a highly useful new NCO evaluation tool.

Bravo Company Goes to War

by Staff Sergeant Jeffrey R. Dacus, USMCR

The phone calls began on November 17, 1991. Farmers, plumbers, teachers, salesmen, and dozens of students received the call from their platoon leaders and platoon sergeants. Bravo Company, Fourth Tank Battalion — a Marine reserve unit out of Yakima, Washington — had been activated in response to the crisis in the Persian Gulf.

Author's tank, "Rockin' Reaper," on the southwest edge of Kuwait City. Crew is, from left, LCpl Sean Edler, loader; LCpl Rick Freier, driver; Cpl James Brackett, gunner; and SSG Dacus, the TC.

The company reported in on December 12, at 100 percent strength. The hectic pace of preparation continued for five days. The company had staged a practice mobilization, leaving little left to do. The unit briefed dependents and formed support groups.

The biggest change the company faced was the transition from two five-tank platoons to three four-tank platoons, increasing the required tank crews from 12 to 14. There were more than enough tank crewmen available, but tank commanders might be hard to find. Bravo was lucky in that two trained tank commanders with years of experience had anticipated their country's call and returned to the unit just before mobilization, after several years of inactive duty. They would prove invaluable. From Oklahoma, a new platoon commander arrived. A new first sergeant also joined the unit as it prepared for its first extended active duty since World

War II. As company first sergeant, Master Sergeant R.D. Martin would also prove a very valuable asset.

With last-minute preparations for duty complete, Captain Ralph F. Parkison took the company south to Twentynine Palms, California, for the next step in mobilization, transition training from the M60 tank to the new M1A1.

On December 17th, the company arrived at Twentynine Palms in anticipation of final mobilization processing and the beginning of M1A1 training. Because the New Equipment Training Team (NETT) would not begin instruction until December 26th, the company used the interim time to shake down its new platoons, draw additional gear, and conduct training in areas not previously covered in any depth. There was time for a series of NBC warfare classes, conducted by CWO Norwood of 2d Tank Battalion, combined with a great deal of practice. The UCOFT simulator was used for gunnery training. Training also included desert survival, Arab customs and culture, land navigation, and armored vehicle recognition. The three platoon commanders, WO Larry E. Fritts, Captain Alan R. Hart, and Captain B. Cline, conducted classes in tactics. Platoon sergeants or section leaders conducted other classes on subjects such as motor transport and tracked vehicle repair.

NETT training, methodical and well-coordinated, began on schedule. When not actually training on the new tank, the Marines of Bravo Company saw films and attended lectures, often accompanied by hands-on instruction using oversized training aids that enabled them to quickly adapt to their new weapons system. Bravo Company's Marines completed basic NETT training on January 2, and moved to the field the following day to begin applying what they learned on the ramp and in the classroom. With the assistance of the NETT instructors, the company completed individual, section, and platoon gunnery runs, as well as completing Gunnery Tables VI and VII during both daylight and darkness. This phase ended with a company exercise over very demanding terrain. NETT training ended with a formal graduation on January 13th. Now the company was eager to try its skills on the battlefield, the so-called Gunnery Table XIII.

Above, Bravo Company receives its new M1A1 tanks on January 22. Below, the company practices battalion tactics in the Saudi desert less than a week later.

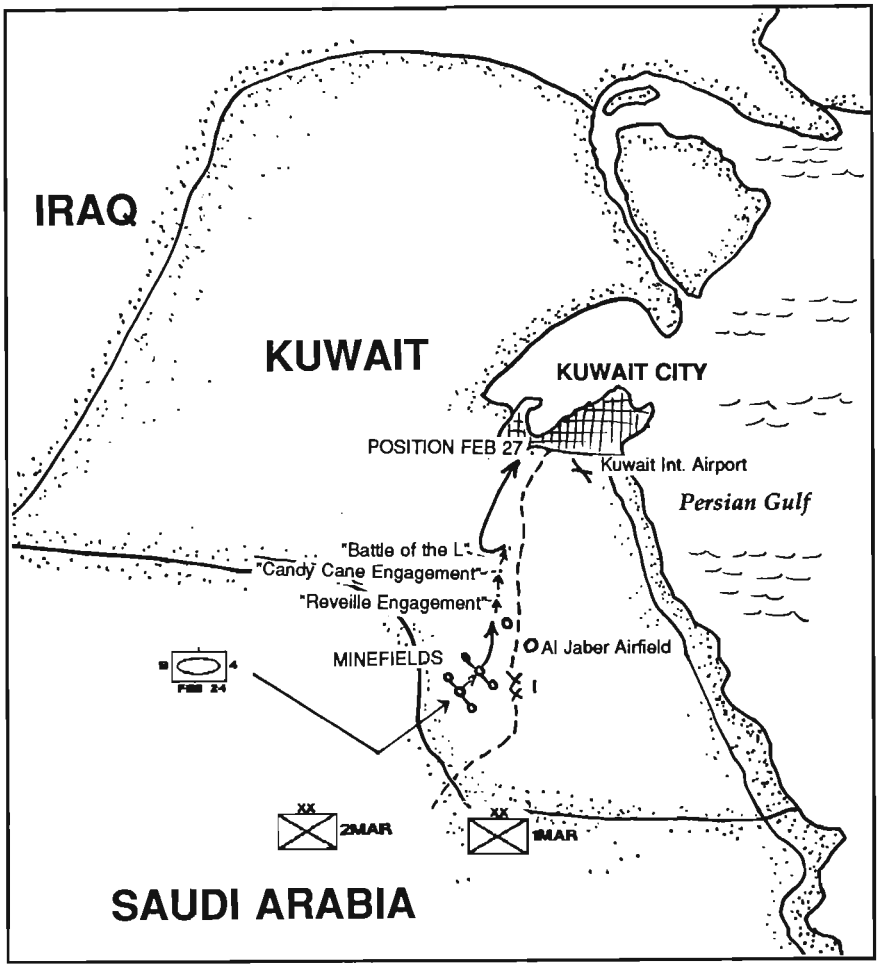
After a great deal of last-minute gear issuance and double checking of seabag contents, Company B left Norton Air Force Base for Saudi Arabia, arriving at Al Jubail January 17th. The company linked up with its tanks and its parent regular tank battalion on January 21st, only to find its tanks without most tools, nine of the 14 had no radios, and the grenade dischargers were all missing.

After replacing necessary equipment, the company moved on January 23d to Thunderbolt Range and boresighted all weapons. On January 26th, the company arrived at battalion assembly area Crush. The next three days were spent in large-scale, battalion exercises that allowed the company and each platoon to practice basic tactical movements.

Bravo Company, attached to 6th Marines on January 30th, moved into position to support 2d Bn., 2d Marine Regt. just south of the Kuwait border. Despite several Iraqi attempts to cross the border and engage 6th Marine positions, Bravo Company was not engaged, due to superb aerial support that blunted enemy incursions. February 2d found Bravo Company rejoining its parent tank battalion as division reserve.

The following week was spent moving the battalion forward and training the company in breaching techniques. Two tanks in each platoon were fitted with mine plows, the last two receiving theirs on February 12. February 5th was spent acquainting the crews with mine plow employment. On February 8th, the battalion assembled to prepare a giant ambush to forestall a possible Iraqi invasion, but the threat never materialized. The following day Bravo Company was attached to 1st Battalion, 8th Marines.

During the period of February 11-13, the company practiced breaching operations with 1st Bn., 8th Marine



Path to Victory

Map outlines Bravo Company's progress and major engagements as it fought its way north.

Regt. Engineers, TOWs, Amtracs, and infantry were all involved in the training, which covered minefield and berm breaching as well as exploitation of the resulting gaps.

The company moved into its final assembly area on February 15th, approximately eight kilometers from the Kuwaiti border. At this position, the unit made last-minute preparations, completed preventive maintenance, and conducted tactical briefings on its role in the upcoming offensive.

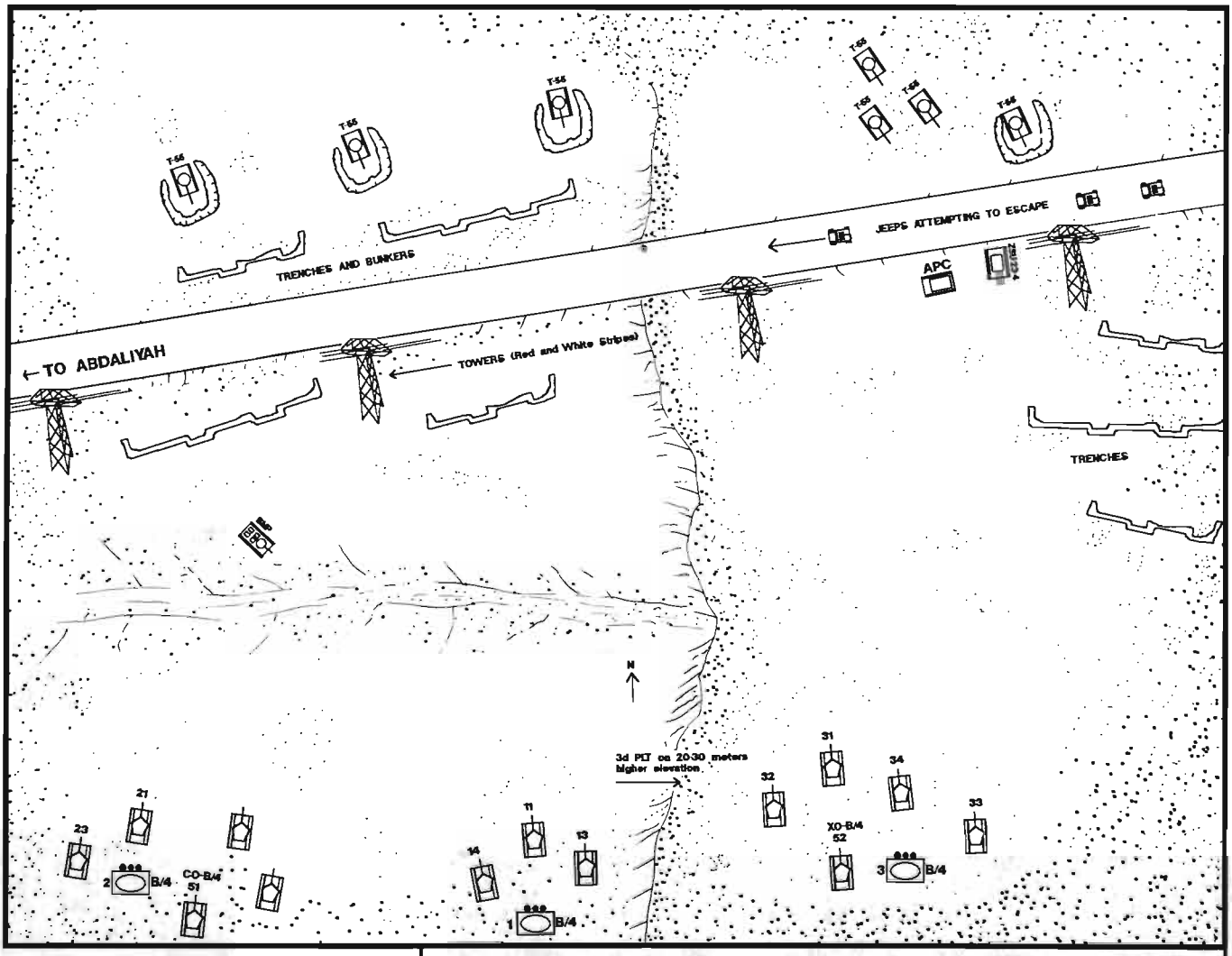
At approximately 1900 on February 23, Bravo Company moved into a position next to the Saudi berm. One of the tanks, **When's Chow**, commanded by SGT John Gibbert, had been left in the assembly area because of a fuel leak. This tank appeared at the attack position at 0415 on the morning of the 24th, just 15 minutes before the offensive was to begin, thanks to superhuman effort by company maintenance personnel and the tank's crew.

The company moved through the berm at approximately 0430 and moved across the Kuwaiti border at 0458. Weather was poor, oil smoke and rain limited visibility. At 0636, the battalion encountered the first minefield and commenced breaching operations, opposed only by light and inaccurate enemy fire. The breaching proceeded slowly. Line charges proved ineffective, and three M60 mine plows and an Amtrac fell victim to the well laid minefield. When a lane finally cleared, Bravo's first platoon pressed forward to exploit. After the entire platoon was committed to the lane, the first tank, **Four Horsemen**, commanded by SGT Robert Trainor, hit a mine. Despite the huge explosion, the crew was uninjured and joined the platoon's other three tanks as they exited the minefield. It was not until 0834 that another lane was cleared, and the company proceeded through the minefield. Once through, the company took up position to support the advancing mechanized infantry, which quickly seized the first objective.

At 1140, Bravo Company reached a second minefield and assumed an overwatch as the engineers breached the field under sporadic sniper fire. At 1445, the company moved through the second minefield in the trace of the two mechanized companies.

At 1605, the company was on the left flank of the two mechanized companies, which reported enemy armor and entrenched infantry to their front. After Bravo Company's right flank platoon opened machine gun fire on the entrenched enemy troops, resistance in front of the mechanized companies collapsed. Iraqis poured from bunkers and weapons pits, hands raised. Bravo Company then surged into the attack, moving up onto a slight rise and taking up a position to take on the enemy armor that had threatened the Amtracs and TOW HMMWVs.

The tank gunners systematically destroyed the outgunned enemy at ranges out to 3800 meters. Beginning at 1650, with the destruction of an Iraqi tank by WO Fritts' **Hot Bitch**, and including a T-55 obliterated at the amazing range of 3750 meters by SGT Glen Carter's **Stepchild**, the tanks ripped apart the enemy position until past dark. In the Battle of the Candy Canes — so-called because of the red and white stripes painted on towers running parallel to the Iraqi positions — the company was credited with the destruction of ten tanks, four jeeps, 12 trucks, and a ZSU-23-4



The Battle of the Candy Canes

The nickname stemmed from one of the few visible features on the desolate battlefield, a row of red-and-white-painted transmission towers. The range from Tank 33, at right, to the cluster of T-55s at top right was approximately 3,750 meters. The map greatly oversimplifies the extensive network of bunkers and fighting holes present on the actual battlefield.

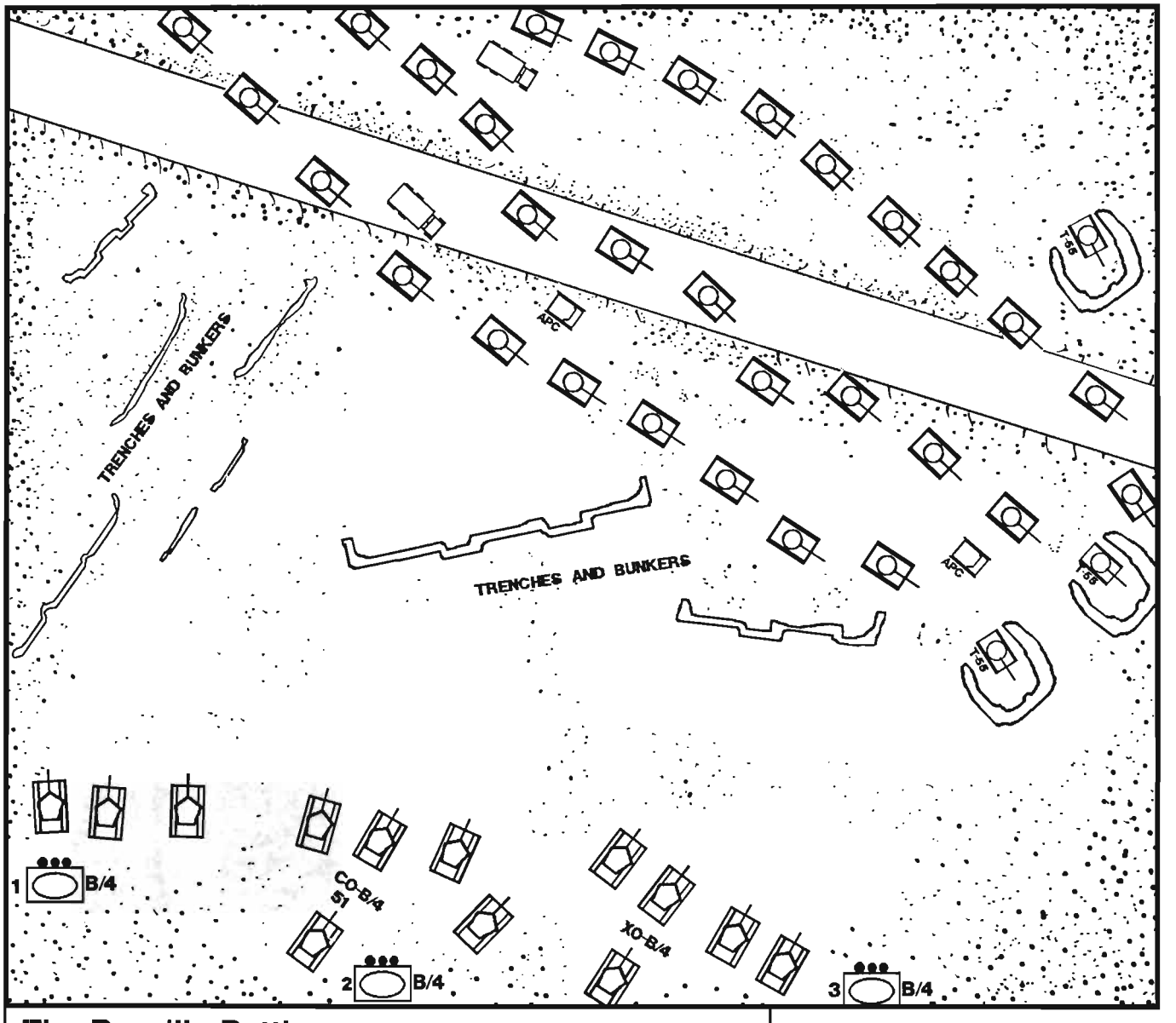
antiaircraft vehicle. Bravo Company received credit for 396 of the nearly one thousand prisoners taken in the battalion area. Enemy return fire, limited by range and lack of observers, was desultory and ineffective. Marine artillery quickly silenced any mortar fire.

The company was withdrawn from this commanding high ground late that evening to take up a position at the head of the battalion column. After a night of confusing movement, including the capture of eight more prisoners, the company formed its coil.

Early the next morning, at approximately 0545, February 25th, several Marines on watch reported hearing the sounds of Soviet-made vehicles to the east of the coil. Due to early morning fog, dust, and oil-smoke, the enemy could not be immediately identified, even with thermal sights. At 0550, CPT Hart spotted enemy vehicles and passed on the alarm to the awakened company. Hart's platoon was already in a position to engage the enemy with frontal fire, and he directed the rest of the company to uncoil and bring 3d Platoon on line to the right of 2d, and 1st on line to the left, slightly refused to the north.

As the first rounds were flying down range from Hart's **Crusader** and SGT Gibbert's **When's Chow**, sleepy-eyed tankers were greeted with the sight of an Iraqi tank battalion boiling up and over a slightly raised, hard-surfaced road running north-south about 1800 meters to the east of Bravo Company's position.

Within 90 seconds, most of Bravo Company had engaged the enemy formation and destroyed it. Within seven minutes, as individual enemy tanks and Chinese-built personnel carriers continued to come into sight out of the dust and smoke, over 30 enemy vehicles were destroyed.



The Reveille Battle

At dawn on February 25th, Bravo Company destroyed 30 Republican Guard T-72s as they tried to counterattack through Iraqi positions that included bunkers and dug-in T-55s. The enemy tanks attempted to move at an oblique angle across a slightly raised roadbed, and

Firing continued until approximately 0630. Single enemy tanks were blown up as the battalion TOW vehicles joined in. Within 30 minutes of the last main gun round going down range, Iraqi survivors and infantry who had been firing rather ineffectively from trenches, began to surrender. Bravo Company suffered no casualties to the enemy's few incoming tank and machine gun rounds. Bravo Company destroyed 30 T-72 tanks, three T-55s, a T-62, and seven personnel carriers from the Iraqi 3d Mechanized Division "Tawakalna," a Republican Guards unit. The company got credit for 72 prisoners in this "Reveille Battle." The corpsmen of Bravo Company handled twelve enemy seriously wounded, performing life-saving care in several instances.

On the afternoon of the 25th, Bravo Company was assigned the base of the battalion vee. It remained in that position until the battalion met retreating Iraqi units, and again Bravo took the point. In increasingly poor visibility due to rain and smog, Bravo engaged the enemy in a running battle, firing on the move at long ranges. Corporal Vern Forenpohar's **Torture Chamber** and SSG Jeff Dacus' **Rockin' Reaper** destroyed a BMP and a T-62, respectively, at a range of 2,000 meters, while travelling at 20 mph. The company settled into its night position at an L formed by the junction of two roads, an east-west hard surface ending in a north-south route. Throughout the evening, enemy mortarmen attempted to harass the Marines, but Marine artillery again silenced the Iraqi supporting arms.

Aftermath of the Reveille Battle

A grim wake-up call for Iraq's Republican Guards

Bravo company had a chance to return to the Reveille battle site a few days later, when these photos were taken by the author. Most of the T-72s had their turrets blown off by secondary explosions. Older T-55s, including one hit five times, retained their turrets, although in some cases KE had passed through both sides of the turret casting.

The T-72s destroyed in the Reveille battle were moving toward allied troops and through a densely bunkered Iraqi position when spotted. This accounts for why some T-55s are dug in while others, and the T-72s, were on the move. T-55 at left was one of the dug-in tanks.

At 0230 on February 26th, the enemy made a concerted attempt to pass the road intersection and retreat farther north. The darkness, and the fleeing Iraqis were ripped apart by the flashes and explosions from Bravo's 120-mm guns. Machine guns mixed in, and tracers burned through the night as individual Iraqis attempted to fight back. The enemy was slaughtered in the "Battle of the L," fought in poor weather and visibility throughout the early morning hours. A count credited Bravo Company with nine T-62s, 12 BMPs, three BTRs, one MT-LB, and four trucks destroyed. The company also captured two prisoners.

Daylight on February 26th found the company moving out in the base of the battalion vee again as the attack pushed toward Kuwait City against dispersed enemy tanks and personnel carriers. Past a radio station, through cultivated fields, open desert, and slum-like built-up areas, Bravo Company went from the tail of the vee up to the tip of the battalion wedge and then back to the tail, engaging a variety of targets. Evening found the company in an ambush position along the southern edge of the 6th Ring Motorway on the edge of Kuwait City, anticipating a column of T-72 tanks that never materialized. During the day, it destroyed six tanks, one BMP, three MT-LBs, and four trucks.

Saudi Arabian and Kuwaiti units arrived late in the morning of the 27th to liberate Kuwait City. Bravo Company remained in place until March 1st. The company then moved approximately one kilometer south to a bermed position amidst the carcasses of some 70 dead cows, horses, and zebras.

The company remained in "Pet Cemetery" until March 10th. The company then moved to a position with its original parent tank battalion. This involved a short move about ten kilometers to a position in the desert southwest of Kuwait City.

The company left Kuwait on March 12th, moving to an ammunition drop point at Al Mishaad, Saudi Arabia. Ammunition was off-loaded, and the tanks were mounted on Army HETS for the trip farther south to Al Jubail. On March 16th, the men of Bravo Company arrived at Camp 15, just outside of Al Jubail. The tanks arrived a day later after spending the night at the port. At Camp 15, Company B completed its plans for return home. The first members of Bravo Company returned to the United States on April 18, the remainder flew to Camp Lejeune the following night. After completing processing, the company flew home to Yakima on April 25th.

Author's tank crew looks over a captured T-55/59 in Kuwait City, March 3d.

High Praise...

"Consider one of my favorite stories, about the Marines of Company B of the 4th Tank Battalion. They're combat reservists from Yakima, Washington, not active duty personnel. They were activated last December and went into battle with their Abrams tanks when ground operations began into Kuwait on the 24th of February. Before dawn, moving north inside Kuwait, Company B discovered a large formation of Iraqi tanks. They saw some of the top-line T-72 tanks heading straight toward them through a large group of dug-in Iraqi armor. All told, the Marine company with 13 tanks faced 35 oncoming Iraqi tanks, outnumbered nearly three to one. But when the encounter was over, the Marine reservists had destroyed or stopped 34 of the 35 enemy tanks. In fact, in a total of four engagements in four days, Company B stopped 59 Iraqi tanks, 30 of them top-line T-72s. What makes it all the more impressive is that Company B had never used those Abrams tanks before they arrived in the desert. That was their first exposure to the new equipment. And they trained on it, acquired the capability to operate it, and then performed superbly in combat."

- Richard B. Cheney, Secretary of Defense

Staff Sergeant Jeffrey R. Dacus served on active duty from 1971 to 1975 in Amtracs. He has been in the Marine Corps Reserve for almost 12 years serving in a helicopter squadron, engineer battalion, and for the last eight years as a tank commander in Bravo Company, 4th Tank Battalion. He holds a Masters Degree in Secondary Education from Lewis and Clark College in Portland, Ore., and in History and Government from the University of Portland. He is currently an 8th Grade U.S. History teacher.

Ar Rumaylah Airfield Succumbs To Hasty Attack

During Operation DESERT STORM, the 2d Squadron, 3d ACR conducted a hasty attack on the Ar Rumaylah Southwest Airfield in southern Iraq. This article is written from the point of view of the cavalry troop executive officer and scout platoon leader.

One of the Iraqi tanks destroyed in the squadron attack on the Ar Rumaylah Southwest Airfield in southern Iraq.

PHOTO: CW2 Gerhard P. Turner

by Captain A. A. Puryear and Lieutenant Gerald R. Haywood, II

Introduction

On 28 February 1991, 2d Squadron, 3d Armored Cavalry Regiment culminated its 400-kilometer assault into Iraq during Operation DESERT STORM with a hasty attack that captured the Ar Rumaylah Southwest Airfield in Southern Iraq, part of a complex that made up the largest ammo supply point in the Kuwaiti Theatre of Operations. In the course of the attack, the squadron captured nearly 300 enemy prisoners of war, destroyed tons of Iraqi equipment, and most important, suffered no friendly casualties.

The following is an account of the hasty attack on the airfield from the point of view of the executive officer of G Troop, 2/3 ACR, and the scout platoon leader of 1st platoon, E Troop, 2/3 ACR.

Background

During Operation DESERT STORM, the 3d Armored Cavalry Regiment had the mission to provide flank security for XVIII Airborne Corps during its assault into Iraq. For hundreds of kilometers, the "Sabre Squadron" traveled side by side with the 24th Infantry Division over treacherous terrain, through rain and driving sandstorms, securing a series of objectives with no enemy contact.

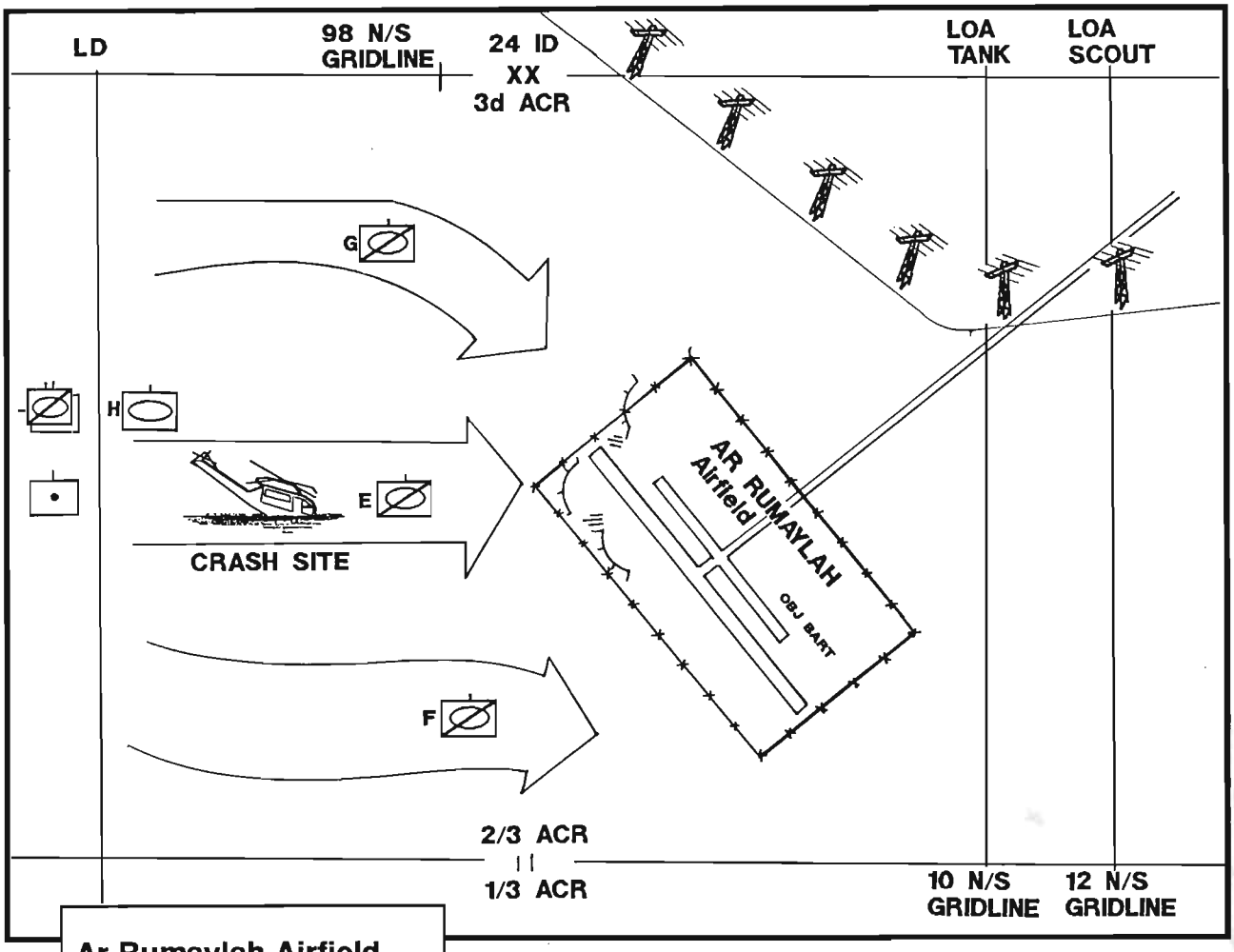
As the squadron pushed farther east toward the city of Basra, it began to encounter small pockets of enemy forces that initially put forth light resistance, but were easily neutralized and captured. The squadron's movement halted on 27 February as the regiment awaited further word on future offensive operations and a possible cease-fire.

At the time of the hasty attack, the squadron organization was that of a TO&E regimental cavalry squadron, with three armored cavalry troops equipped with M1A1 (heavy) tanks and M3A2 Bradley Fighting Vehicles, a tank company, an M109 howitzer battery, and a huge array of combat support and service support assets. The cavalry troop consisted of two scout platoons each with six M3A2s, two tank platoons each with four M1A1s, one 4.2-in. mortar section with two M106A2 mortar carriers, and the troop combat trains.

Timeline — 28 February

At 0515, the squadron conducted stand-to procedures. At the completion of stand-to, the squadron can then issue any orders or stand the troops down to a lower readiness level. At this time, squadron had received no further orders to continue offensive operations, and instructed units to lower their readiness level and await further instructions.

On this morning, G Troop had eight of nine tanks, all Bradleys and one of two mortar vehicles mission-capable. Both inoperative vehicles had been evacuated to the squadron's Unit Maintenance Collection Point (UMCP) for repairs, but the UMCP was still on the move, trying to catch up with the rest of the squadron, and repairs on the vehicles had not been possible.



Ar Rumaylah Airfield
Hasty attack by 2d Sqn, 3d ACR
28 February 1991

First platoon, E Troop had five Bradleys mission-capable, with its sixth Bradley assigned to the troop commander.

At 0730, squadron sent word to the units that a cease-fire would go into effect at 0800 local time. This information was relayed to all the line platoons of both troops, which was followed by a feeling of relief and cautious optimism among soldiers.

At 0922, the cautious optimism came to an end. Squadron informed the troops that the regiment had been alerted and had received orders to move on line to secure a downed helicopter about 20 kilometers east of its current position. Both troops moved to REDCON-1, E Troop taking the center and lead of the squadron formation, and G Troop taking position in the northernmost part of the squadron sector. Departure time was set for 0945.

At 0945, 1st platoon, E Troop initiated movement in a scout platoon "vee" formation, followed by its supporting tank platoon, 2d platoon. In the squadron formation, each scout platoon had about 1.5- to 2-kilometer-wide sectors with the distance between vehicles no more than 500 meters.

G Troop began moving in a standard split-vee formation, two scout platoons abreast, each supported by a tank platoon. The G Troop combat trains moved close behind and centered between the two tank platoons. This location for the combat trains provides maximum security when enemy contact is not expected, and the distance can be increased when contact is possible. If contact is made by the lead scouts, the combat trains can halt their movement or back off if necessary.

At this time, the G Troop combat trains consisted of the troop XO in his M577A2 conmand post vehicle, the troop first sergeant in his M113A2 APC, the medic APC, maintenance APC, M88A2 recovery vehicle, a Ground Surveillance Radar (GSR) APC, two M998 HMMWVs, and two HEMTT fuelers.

About four kilometers beyond the line of departure, E Troop reached the crash site and moved forward to secure it. The helicopter was totaled, with wreckage everywhere, and the

fuselage showed signs of anti-aircraft fire.

At 0951, the squadron received a change of mission from regiment to spread out, cover the entire sector, and move to the 98 North-South (N-S) grid line to establish a screen. At this time, both troops shifted south two kilometers from the planned positions to close the seam between 2d Squadron and 1st Squadron. In addition, the squadron was instructed not to engage in direct fire unless fired upon.

During G Troop's movement east, 2d platoon lost one tank to an engine fire and the mortar section lost one mortar track to a blown engine. The tank was quickly recovered by the troop's M88, the mortar track by the troop maintenance APC. Because the squadron's UMCP was still moving and had not been established, the vehicles were brought along with the rest of the combat trains. The tank's turret was still operational, so the crew manned the weapons system to provide some additional firepower to support the combat trains.

The squadron continued its movement east and began to encounter unoccupied fighting positions and unexploded munitions from Allied bombing. As the squadron moved closer to the airfield, it become very apparent that enemy forces occupied the airfield.

As 1st platoon, E Troop came within three kilometers of the airfield, one of the Bradley commanders spotted a chain-link fence surrounding the airfield. The lead scout sections assumed overwatch positions and a close inspection quickly revealed the fence was not booby-trapped or mined. After inspecting the fence, the platoon visually acquired two tanks and five anti-aircraft positions. It appeared that the crews were running to man them.

Wanting to take advantage of the surprise, 1st platoon called for 2d platoon's mine plow tank to crash the fence. 2d platoon quickly responded, sending the tank at a high rate of speed through the fence, tearing a gaping hole. 2d platoon now took the lead through the fence due to the presence of enemy armor.

At 1027, E Troop responded to live fire from several ZSU 23-4s and quickly destroyed the weapon systems. The troop continued to push through the airfield, 1st platoon engaging the air defense weapons, and 2d platoon dealing with the armored threat. The Bradleys soon came under direct small arms fire. An RPG round streaked just a few feet above a 2d platoon tank, and another passed by within six feet of a 1st platoon Bradley. Scouts reported dug-in machine gun positions in sector, and the platoon quickly massed fires to destroy the positions.

G Troop received its first enemy fire when 3d Platoon was taken under fire by machine gun positions. In a hasty assault of the position, 3d platoon destroyed three air defense guns, three trucks, and captured 12 Iraqi soldiers.

The G troop combat trains moved forward to assist with Iraqi casualties and linked up with 3d platoon, whose combat lifesavers had begun basic first aid on the wounded Iraqis. After the medics and additional combat lifesavers from the troop first sergeant's vehicle arrived on station, they began to treat the wounded prisoners. Once the prisoners were stabilized, a scout section from 3d platoon escorted the medics back to the squadron forward aid station, so the casualties could receive further treatment and be evacuated.

After 1st platoon, E Troop silenced the infantry positions on the airfield, surrendering soldiers began coming out of bunkers and buildings as the platoon moved through the area. 1st platoon members motioned the Iraqis to the center of the airfield where 3d platoon, E Troop had established the troop prisoner collection point.

1st platoon, E Troop then linked up with lst platoon, G Troop to close the seam between the two troops. These two platoons, along with 2d platoon, E Troop, received the mission to destroy some abandoned artillery pieces.

E and G Troops both continued their movement east, destroying more enemy equipment with demolitions and direct fire, and capturing more enemy prisoners. At 1201, regiment set a limit of advance (LOA) for tanks at the 10 N-S grid line, and the 12 N-S for the scouts. Both troops had to pull back slightly to set a screen line on the LOA.

The large number of prisoners created transportation problems. The troops' HMMWVs were filled quickly to maximum capacity, and the troops were reluctant to sacrifice combat power to transport them back to the squadron collection point. The solution came from the enemy himself. Numerous cargo trucks in various states of repair were left by fleeing Iraqis, and the troops were able to hook those up to APCs and tow them back to the EPW collection point filled with Iraqi prisoners.

Once set on the screen-line, the G Troop first sergeant moved to the squadron trains to pick up a cargo HEMTT with a resupply of tank and Bradley ammunition. Platoon sergeants began rotating their platoons back to the troop trains to resupply anmunition expended during the attack and top off their fuel tanks.

Both E and G Troop continued to conduct clearing operations, capturing more Iraqi soldiers and destroying

A G Troop tank loaded with Iraqi prisoners moves to the troop's EPW collection point.
PHOTO: CPT A.A. Puryear

weapons caches filled with hundreds of AK-47s, grenades, and RPGs. The squadron halted its movement about 28 kilometers west of the city of Basra.

Over the next several days, the squadron continued clearing bunkers, rounding up EPWs, and destroying enemy equipment. These operations continued until the regiment received orders to return to Saudi Arabia on 7 March 1991.

Observations

Maneuver

Sustain: The troop combat trains must always stay close to the troop main body. Just as tanks provide direct fire overwatch for scouts, the troop combat trains must provide combat service support overwatch for the line platoons. The trains are always on call to provide fuel to M1A1 tanks, medical support for injured soldiers (friendly and enemy), and maintenance recovery for inoperative vehicles.

For the scout platoon, basic doctrine proved to be extremely successful and easy to control.

Improve: The only way that the combat trains can stay in close proximity to the troop main body is to have vehicles capable of matching speed with M1s and M3s. While the MTOE authorized M113A3 APCs for the first sergeant, medic, and maintenance crews, G Troop was still equipped with older and slower M113A2s. The requirement should also extend to the M106 mortar carrier and the M577 command post vehicle. These vehicles are also required to keep up with the troop, but were unable to accomplish the task.

The troop must have an A3 equivalent chassis for these M113-family vehicles in order for these critical support assets to maintain pace with the rest of the troop.

Fire Support

Sustain: The troop fire support officer controls the movement of the troop mortars, a task that used to be assigned to the troop XO. With the mortars under his control, the FIST can provide mortar fire support more quickly when needed, and the XO is free to perform his command and control missions.

There were no pre-planned artillery targets on the airfield, but the squadron's artillery battery was set and ready to fire on targets of opportunity. Because of the fast pace of the attack and the ease with which the troops were able to defeat the enemy forces, no artillery fire was needed.

Mobility/Countermobility/ Survivability

Sustain: The mine-clearing plow mounted on the M1A1 tank and the blade of the M88 recovery vehicle were invaluable in ensuring mobility of the troop combat trains. During the troop's movement, the G Troop combat trains encountered numerous small berms that would have greatly slowed the movement of fueler HEMTT and the M113-series vehicles. A radio call to either of these vehicles resulted in a quick cut through the berm that greatly aided the ease of movement for these vehicles. For the scout platoon, the mine plow tank also provided quick, responsive breaching capability, as illustrated by the use of the mine plow tank to crash through the airfield fence.

Improve: The troop commander's and maintenance section M998 HMMWVs proved to be critically important to the accomplishment of numerous missions during the course of

At times during the attack it was very difficult to get an accurate location due to the lack of easily identified terrain and the use of operational control measures based only on grid lines. Without question, there is great need for more satellite navigational devices for use during desert operations.

the attack. However, these vehicles, along with the Stinger team vehicle and others, would have been very vulnerable to any type of direct or indirect fire. The argument is that these vehicles belong in rear areas and not up near the front lines, but the reality is that these vehicles are needed forward. These vehicles should be outfitted with Kevlar armor packages similar to the armament carrier model HMMWVs used by the light infantry, battalion scouts, and military police. This addition would provide the needed survivability for these vehicles to operate forward where they are needed.

Air Defense

Thanks to the air superiority enjoyed by the allied forces, the squadron's air defense systems were never put to the test in combat.

Intelligence

Sustain: While enemy intelligence had been sketchy during the assault into Iraq, the intelligence before that attack on the airfield was good. The templated positions on the airfield were very accurate in terms of general location and type of unit, but little was known about the actual percentage strength of enemy forces. The troops also received an accurate estimate of enemy morale and probable course of action when told to expect small pockets of enemy forces that would resist at first, but quickly surrender when pressed.

Improve: If the troops could have had access to any satellite or aerial photography reconnaissance of the area, the attack on the airfield could have been planned in greater detail. Line platoons were forced to stumble their way through the airfield to determine the actual locations of enemy positions.

Combat Service Support

Sustain: The organization of the troop combat trains proved to be very effective. Whenever possible, the fuelers need to be under direct control of the troop first sergeant so he can rapidly bring them forward to refuel the tanks. It became very apparent during constant operations that M1 tanks need to be refueled based on time, not distance covered. The XO and first sergeant have to work together in the planning of combat service support, with the primary execution left in the hands of the first sergeant, while the XO assists the commander in the command and control of the troop and manages the flow of combat information between troop and squadron.

Command and Control

Sustain: In both troops, the scout and tank platoon teams operated on the same platoon radio net. This provided both platoons with immediate information about the battlefield situation, allowing for quicker response times and more efficient cross talk between platoon leaders. Both troops also found that using fixed call signs made for shorter and more efficient radio transmissions.

Improve: At times during the attack it was very difficult to get an accurate location, due to the lack of easily identified terrain and the use of operational control measures based only on grid lines. Without question, there is great need for more satellite navigational devices for use during desert operations. Too often, the troops found themselves in places with barren, featureless terrain that made determining an accurate location nearly impossible, even for the best map-readers. Each troop had three satellite navigational devices, one to the troop commander and one to each scout platoon leader. The rest of the troop relied on them for accurate grid locations. The troops need more of these systems in both the combat and service support elements to aid in the quick and accurate reporting of current location.

Conclusion

2d Squadron conducted a successful movement to contact/hasty attack using rapid movement, teamwork, overwatch, and massed fires. Platoons and troops carried the fight to the enemy, using aggressive cavalry tactics. The Ar Rumaylah battle is probably typical of the future battles cavalry must fight and win.

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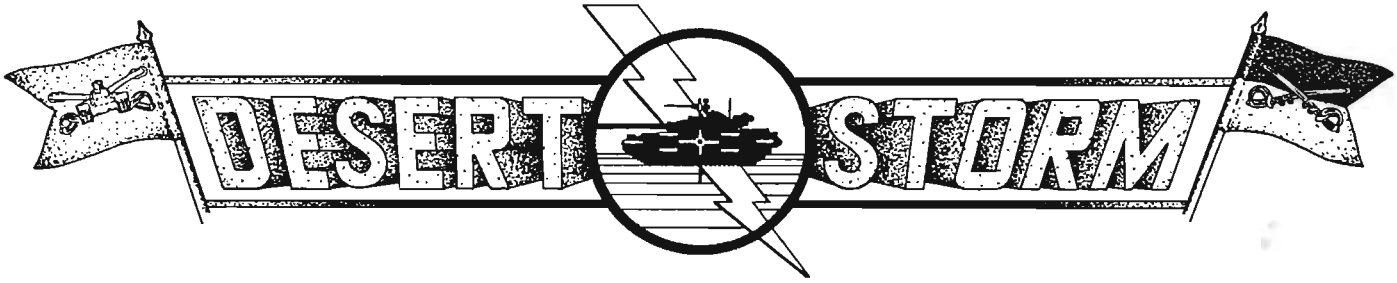


Scout HMMWVs and Bradley CFVs:

Gulf War Provides a Comparison of Scout Vehicles and MTOEs

by First Lieutenant (P) Charles W. Gameros, Jr.

Before the Iraqi invasion of Kuwait on August 2, 1990, the state of the task force scout platoon was in flux. In particular, the MTOE of the task force scout platoon was under intense discussion, development, and analysis. The 24th Infantry Division served as a testing ground for two such organizations one year before the division's deployment to DESERT SHIELD.[1]

I have served as a scout platoon leader for both the J-series M3 Bradley platoon and one of the test M966 HMMWV platoons — the latter in combat. Leading each platoon was a radically different experience from a capability and limitation perspective. DESERT SHIELD and STORM revealed significant differences that warrant discussion, and perhaps point to the direction of future scout MTOE development.

In analyzing these two different organizations, it is appropriate to select a reference point for discussion. Using the six principles of reconnaissance, the general capabilities, and the typical missions of a generic scout platoon, as listed in FM 17-98, the significant distinctions between the two MTOEs will become apparent, and requirements for the Future Scout Vehicle will emerge. From a materiel perspective, the MTOEs are laid out in a vehicle, weapons, radios, and sensors configuration.[2] (See Figure 1.)

When deployed in a variety of missions, the extra two vehicles of the M966 platoon provided a great deal of flexibility not normally available in the six-vehicle M3 platoon. This may seem either obvious or trivial, depending on one's perspective. Having a separate and distinct headquarters section does several things for both the maneuver platoon leader and the battalion that depends on the platoon's information. First, a redundancy of reconnaissance assets either ensures zone coverage or allows screening or recon of a wider zone. Second, it allows the platoon leader to attend orders and perform other functions without as high a cost to the overall mission. Along the same lines, the platoon sergeant can attend to logistic functions — again without the same high cost on the line. When either activity is performed in a J-series M3 platoon, 1/6 or even 1/3 of the platoon is not performing reconnaissance. In the M966 organization, the cost is proportionally lower: 1/8 to 1/4.

As previewed in the Armor School's Directorate of Combat Developments' *Combat Developments White Paper*,[3] the future scout platoon will have 10 vehicles. This recognizes the higher marginal value of each vehicle in the numerically smaller platoon. In other words, the lower marginal value per vehicle equates with mission flexibility. However, this addresses vehicle numbers, not the overall distinctions between the vehicles. Given the stealthier M966, versus the comparatively louder (and therefore easier to detect) M3, it becomes easier to perform those headquarters functions. Whether attending orders, checking positions, or running LOGPAC, the M966 gives a headquarters section much greater capability. Keeping the section distinct, as the experimental MTOE does, serves to magnify this difference.

Principles of Reconnaissance

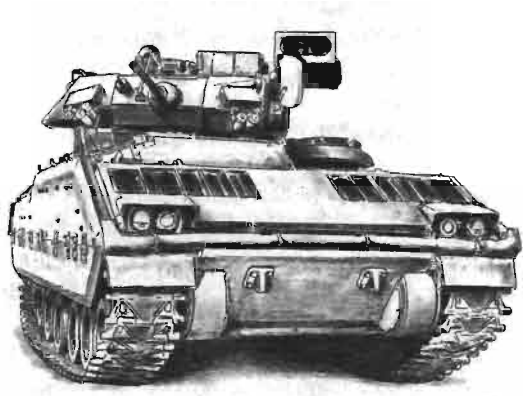
Beyond the flexibility perspective, it is useful to examine the two MTOEs and their vehicles from the point of view of the principles of reconnaissance. Figure 1 shows how the two organizations fared. As stated above, the larger number of vehicles in the M966 platoon allows it to keep more vehicles (and therefore more scouts) forward performing missions. Another key point is that the quieter M966 allows the scout to get closer undetected and remain undetected longer. In either event, more scouts are capa-

Bradley vs. HMMWV

Platoon Organizations

M966 Experimental	J-Series M3
8 M966 "Hard-top" HMMWV	6 M3 CFV
1 Military motorcycle (KD250)	
6 M60 7.62-mm MG	6 M60 7.62-mm MG
4 Mk19 40-mm grenade MG	
32 M16A2	30 M16A2
8 M1911A1	6 1911A1
8 M203	6 M203
AT-4, pryo, demo, grenades	Same
10 Vehicle radios	8 Vehicle radios
8 PRC-77	6 PRC-77
3 PRC-126	
4 AN/VSG-2 (TTS)	6 ISU
	6 AN/VVS-2
32 PVS-7 A/B	12 PVS-7 A/B
8 M911 "Pocket scopes"	
8 PVS-4	6 PVS-4

Principles of Reconnaissance



	Stronger MTOE
Maximum Recon Forward	M966 HMMWV
Orient on Reconnaissance OBJ	Tie
Rapid and Accurate Reporting	M966 HMMWV
Retain Freedom to Maneuver	M3 CFV
Gain/Maintain Enemy Contact	Tie
Develop Situation Rapidly	M966 HMMWV

Missions

	Stronger MTOE
Route Reconnaissance	M966 HMMWV
Area Reconnaissance	Tie
Zone Reconnaissance	M966 HMMWV
Screen Main Body	M3 CFV
Passage of Lines	M966 HMMWV

Capabilities of Scout Platoons

	Stronger MTOE
Conduct Liaison	M966 HMMWV
Perform Quartering Party Duty	Tie
Provide Traffic Control	M966 HMMWV
Chemical and Radiation Survey	M3 CFV
Pioneer and Demolition Work	
Pioneer	M3 CFV
Demolition	M966 HMMWV
Participate in Area Security	M966 HMMWV

Figure 1

ble of performing better reconnaissance from better vantage points.

Information that is not reported is worthless to the battalion, and the greater number of radios makes a big difference. At times, the distance between the scouts and the main body required establishment of a radio retrans to maintain contact. The M966 organization could more easily accomplish this mission. Further, radio maintenance and performance was generally better in the HMMWVs than the Bradleys. While this may be a vehicle-peculiar experience or environmentally influenced, it was generally attributed to the M3 turret by both scout platoons.[4] The speed of the M966 (especially on road surfaces) also gives it a greater ability to develop situations rapidly. Combine this with its greater numbers, and the HMMWV platoon was capable of executing more numerous options once contact had occurred. During the later stages of DESERT STORM, 4-64 Armor pursued a rigorous exploitation that required the scouts to keep many road options open. The comparatively slower and fewer M3s would have not performed this as well.

Applying the principles of reconnaissance, the M3's strength is its ability to retain freedom of maneuver. Because scouts are often deployed as single vehicles within sections, the M3 can take a great deal more punishment than the M966. That punishment may range from artillery to small arms — even friendly submunitions.[5] The M966 was inadequate in dealing with these threats. In short, the M966 is better at avoiding engagement, but suffers more when engaged. The M3 stands a greater chance of detection and subsequent engagement, but suffers comparatively less. From an MTOE perspective, the M3 delivers much greater firepower with its 25mm, coax 7.62, and TOW. This in turn gives it a greater chance of breaking out of engagement. The M966 organization pairs Mk 19s with M60s in sections, but this firepower does not compare favorably with the 25mm.

Capabilities of Scout Platoons

In general, the M966's versatility is brought out in Figure 1. The long-distance staging movements through DESERT SHIELD and STORM tested the scouts' abilities as liaisons and traffic control points. In both cases, an M3-equipped platoon could not have fulfilled these missions. Even on the return through Iraq, the M3 would not have been as flexible. As a rule, road situations dramatically favor the HMMWV, while their cross-country performances are comparable. This doesn't mean that the M3 doesn't outshine the M966 in certain missions and situations. Its heavier armor (and subsequently better relative effectiveness (RE) factor) and NBC system make it a much more survivable platform in NBC survey missions and other related situations. The M966 offers little in this role. In a pioneer role, the heavier vehicle, with its much more powerful engine, makes the M3 extremely useful for felling trees, moving wrecks, and so forth. Again, the M966's capabilities are limited here. Yet in the demolition field, the M966 organization was better suited for our destruction missions. During DESERT STORM, flexibility through numbers and a speedy, nimble, and light vehicle to move through the cluttered battlefield made for an efficient execution of a long and complicated destruction mission.[6] Further, the use of add-on racks to the rear of the vehicle made the storage of the demolition kits and C-4 more accessible for the crew, yet safer as well.

In area security missions, the M966 offers distinct advantages. First, it's much harder to detect. Overall smaller size, a much quieter engine, and its ability to use terrain that would be useless to an M3 give the M966 a positional advantage that the M3 could never enjoy. Second, the M966 MTOE brings with it a better night observation capability than the Bradley platoon. This is true for both image intensification and thermal viewing. As a rule, the tank thermal sight (TTS) was generally superior to the integrated sight unit (ISU) in target acquisition (range to target) and identification (clarity of the picture at a given range). Further, the higher number of night observation devices ensured a better chance of the platoon's dismounts acquiring an enemy first. Last, the military motorcycle (MILMO) was a valuable asset because it allowed the checking of positions and running of messages much more discreetly than even a HMMWV.[7] In short, the HMMWV platoon strength in this capacity is its stealth and redundancy of vehicles.

Task Force Scout Missions

Looking at the missions of the task force scout platoon, one sees a clear emphasis on reconnaissance. Here again, the advantages fall primarily to the M966 organization. In Figure 1, we see the task force scout platoon missions as laid out in FC 17-98. While it would be simple to generalize here and point to stealth and flexibility as reasons why the M966 platoon is better, it would miss highlighting certain strengths within these missions. These strengths (as well as weaknesses) invite a discussion as to where the future scout platoon might be headed, as we will see.

Any mission requires a METT-T analysis. Scout missions are no different. In this discussion, generalizations must be made about each mission type. There are situations in all missions in which the opposite MTOE/vehicle would be superior. As with most cases, the choices are not always so clear cut. Route reconnaissance missions are generally conducted in the interests of moving the main body,

the trains, or both. Usually, the threat is fairly low, and these missions also frequently entail large amounts of time on roads. The M966 can take advantage of its speed here. Even if contact is expected, the M966's stealth may allow it to conduct its reconnaissance undetected (and/or take advantage of its standoff thermal optics). The M3 has neither the stealth nor the speed and (because it also leaves clear tracks where it has been) may attract unwanted attention to the route to be used later. Neither vehicle nor MTOE proved better than the other at area reconnaissance. Perhaps in a more built-up or heavily vegetated environment, the Bradley would be superior, due to its advantage in firepower and ability to break away from engagement. Zone reconnaissance clearly favored the HMMWV — day and night. The multitude of capable optic systems (thermal and image intensification), and scouts who could effectively see, gives this vehicle a tremendous advantage. The two observers in the rear of an M3 spend much more time just hanging on, rather than scouting — their eyes are wasted. Add to this the strength of numbers and other systemic advantages, and the wider frontage requirements of a zone reconnaissance brings out the advantages of the HMMWV organization and vehicle.

Before DESERT STORM, we spent a lot of time training for passage of lines. While we did not conduct one during the war, training for it pointed to several advantages of the M966 over the M3. Most important, it is a **dissimilar** vehicle to those conducting the passage. This is a greater advantage than it may appear at first glance. In the heat of the moment, it is less likely to be confused with a tank or BMP. This is key, whether the unit is to be passed through or is the passing unit. Typically, the scouts effect the initial link-up. A nighttime approach by a turreted-tracked vehicle can only be acquired in thermal.... (Without a thermal IFF system, the only safeguard is the skill or nerve of a tank/IFV gunner.) A HMMWV is very difficult to confuse in thermal sights and is a less threatening vehicle for all parties concerned.

As a distinctive vehicle, it also facilitates command and control. The unit to pass knows where to find its passage point and/or guide more easily. Instead of searching for a particular tank or Bradley, go to the "hard top HMMWV." This doesn't preclude a detailed plan for a passage of lines; it just makes it easier to execute. The KISS principle is a good guide here.

Of the five scout missions, the Bradley is clearly superior to screen for the main body. While the M966 is capable of doing so, it accomplishes this mission strictly as a reconnaissance organization. The M3 is very capable of defeating an enemy mounted reconnaissance threat. The M966 is better off vectoring in a tank or Bradley. Against a dismounted threat, the M3 is favored, but not so pointedly. During DESERT STORM, the M966 platoon conducted continual forward screens of the task force. Initial contact started the handover process to the task force, while heavy contact generally necessitated going to ground, because cover was scarce.[8] Because the M3 is not as vulnerable to enemy fire, the Bradley can serve as a fighting screen, the HMMWV cannot.

Conclusions

The clearest distinction between the performance characteristics of the M3 and the M966 platoons is that the M966 organization is a better enemy **finder**, while the M3 is a better enemy **fighter**. The M966 experimental MTOE has pushed the task force scout platoon into what is primarily a reconnaissance role. To accomplish this, it is heavy in night observation devices and stealthy vehicles; our vehicles were even modified to mount thermal sights. Flexibility, redundancy, and stealth mark this organization. The M3 offers survivability and firepower as its strengths. Unfortunately, by comparison, certain vehicle and MTOE shortcomings limit its utility as a reconnaissance platform. The interesting question is, "Where do we go from here?"

Recognizing that there are problems with the M3 CFV organization, the new MTOE calls for 10 HMMWVs (later to be replaced with the Future Scout Vehicle (FSV) when it comes on line).[9] This points to the value of a larger number of vehicles in a scout platoon. With those advantages discussed above, what should be in the new FSV? The FSV needs to be a mix of both vehicles. Some of the capabilities should be:

- Thermal sight — It made the HMMWV a viable reconnaissance platform.

- Survivable — Be able to withstand 7.62mm and below, artillery fragmentation, and maybe even .50 cal. and some submunitions. NBC protection should be there as well.

- Thermal IFF — The scouts are out front and so is the enemy. We need a better way to discriminate between them in thermal view.

- Amphibious — The HMMWV can't swim, and the M3 requires time to prepare for an awkward one.

- LASER Rangefinder — The LRF needs to be mounted within the thermal viewer. The GVS-5 is difficult to use at extended ranges and is a poor performer in limited visibility.

- Low Maintenance — This criteria heavily favors wheels, which are stealthier anyway.

- Quiet engine — Whatever power plant is eventually selected, it needs to

be quiet. Because tires are significantly quieter than tracks, a wheeled scout may be the way to go.

•Use the whole crew — The M3's two observers can barely see, and they can only see to the sides and rear. Greater attention needs to be paid to the observation ability of the entire crew.

•Dual radio net and secure for everybody — This serves many purposes: liaison, call for fire (with internal FIST on digital), internal replacements for destroyed vehicles, cross attachment, monitoring adjacent companies, and so on.

•Turret-mounted weapons — 25mm, 20mm, .50 cal., 7.62mm, Mk 19. Anything like this is a viable option. The scout does not need to be a tank killer; he has a whole battalion of those folks behind him.

•Night Observation Devices — Every scout has to have one.

•Navigation system — GPS, LORAN, or something similar. Accurate location, even in unfamiliar terrain, is a must. Compatibility with other deployed systems is also vital.[10]

•Keep it small — Undetectability is the name of the game, so don't give the FSV a large profile.

That's a tall order for any vehicle, but it's one that neither the M966 HMMWV, nor the M3 CFV can totally fill today or in the foreseeable future. The scouts of tomorrow will fight on an information intensive battlefield. The FSV is going to have to be a capable, versatile vehicle fielded in a flexible, reconnaissance oriented organization. The HMMWV and CFV MTOEs offer many strengths, but their respective weaknesses point the way for future development. Hopefully, a survivable but stealthy vehicle is the shape of things to come.

Endnotes

[1]Numerous *ARMOR* magazine articles and letters to the editor have addressed this debate, in addition to Department of Army projects working on the platoon's organization. The 24th Infantry Division fielded two such test platoons. One consisted of eight M966 HMMWVs with four motorcycles (Kawasaki KD 250s) and a variety of experimental night vision equipment. The other was composed of four M3 Bradleys, six M966 HMMWVs, and four motorcycles (Kawasaki KD 250s). See Scribner, "HMMWVs and Scouts, Do they Mix?" ARMOR, Jul-Aug 89.

[2]Although both platoons had Platoon Early Warning System (PEWS) on their property books, neither considered them useful. The 4-64 Armor scouts never deployed them in DESERT SHIELD or STORM. They were quickly relegated to storage as non-critical equipment in favor of supplies or other mission-essential gear.

[3]The USAARMS Directorate of Combat Developments released *Combat Developments* at the May '91 Armor Conference at Fort Knox.

[4]The scouts of the M966 platoon had M3 experience, but the reverse was not true. As a rule, the M966 radio systems held up better than their Bradley counterparts throughout DESERT SHIELD/DESERT STORM. In either platoon, the AN/VRC-46, AN/VRC-12, and AN/VRC-160s were the systems in use. Neither platoon had the necessary kits to provide secure radio below the vehicle radio level. Thus, dismounted operations could not be conducted in a secure mode.

[5]In the attack on BP102 (Initial break of Iraqi LOC), one of the M966s struck a single DPICM dud. It damaged the transmission and blew both rear tires. The vehicle was out of action for approximately 8-12 hours for repairs. The crew suffered no casualties.

[6]During the battle of the Rumaila oilfield, TF 4-64 Armor was responsible for an area approximately 10 x 20 km. Within this area, the task force was directed to destroy all military equipment. In pursuit of this objective, the scouts destroyed 60 trucks, 10 artillery pieces, large ammunition stocks, and other military vehicles. This often required the platoon to operate in areas that would have been clearly impassable to M3s.

[7]Before crossing into Iraq, the platoon conducted a screening mission to the front of the task force. This was a semi-static screen line composed of section outposts. It was also conducted under radio listening silence. The MILMO was a very useful means of checking the various positions, as well as running reports to the nearest land line.

[8]As the task force passed through the platoon, it would pick up the rear, taking EPWs, scouting the flanks, executing demolitions, and conducting MEDEVACs. Throughout DESERT STORM, the platoon itself took more than 100 EPWs and worked with more than 30 Iraqi MEDEVACs. A medic was assigned to the platoon, and this proved to be very beneficial. For our own medical needs, our greatest concern was evacuation; the medic did assessment and stabilization. Working with Iraqi soldiers and civilians alike (we found some civilians in the Euphrates River Valley who had been robbed and mistreated by Iraqi soldiers), the medic helped win their confidence and trust. This in turn netted us even more EPWs.

[9]*Combat Developments White Paper*, Armor Conference, May 1991.

[10]Throughout DESERT SHIELD and DESERT STORM, TF 4-64 Armor deployed a variety of navigational aids. These included Global Positioning System (GPS-preferred), LORAN, and "converted" grid-LORANs. In each case, the operator needs to be trained differently for each system because they had their own peculiarities. Further, standard LORAN deals in longitude and latitude — not military grids.

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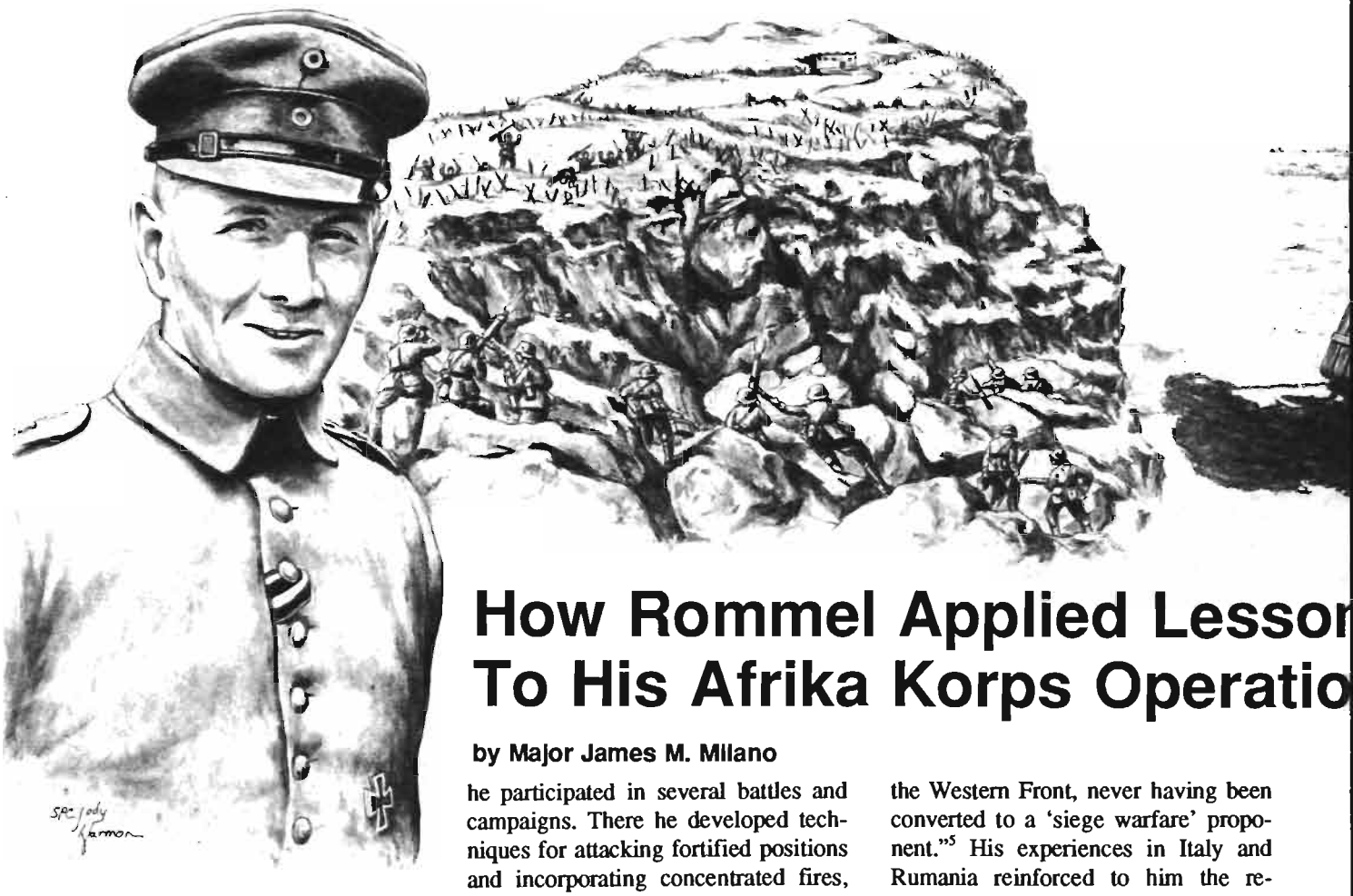


How Rommel Applied Lesson To His Afrika Korps Operatio

by Major James M. Milano

During World War I, Erwin Rommel demonstrated and refined many of the tactics he would later use in North Africa during World War II. Rommel's skillful use of terrain, intense reconnaissance activities, reliance on deception and surprise, thorough preparation for battle, command and control, clever methods of attack, and rapid transition from offense to defense were common characteristics of his operations in both world wars.[1] His tactics in each "relied basically on deep penetration behind enemy lines, and unhesitating decisions to attack in the [enemy's] rear."[2] Rommel's methods of warfare were so successful in World War II that the British were only able to defeat the Afrika Korps with overwhelming odds in men and materiel.[3]

Rommel's first combat actions of World War I were in 1914-15 as a platoon and company commander in northern France and Belgium, where he participated in several battles and campaigns. There he developed techniques for attacking fortified positions and incorporating concentrated fires, deception measures, reconnaissance, and detailed organization for combat into his plans. *Infantry Attacks,* Rommel's personal account of his World War I experiences, is replete with examples of successful application of these tactics in a variety of situations.[4]

In October 1915, Rommel assumed command of a company in the recently activated Wurttemberg Mountain Battalion, part of the elite *Alpen Korps.* Assigned in December 1915 to a relatively quiet sector in the Vosges Mountains of France, the battalion had limited and infrequent enemy contact. In October 1916, Rommel's battalion deployed to the Italian-Rumanian Front, where he was to spend the remainder of the war and fight the majority of his combat actions. This was to have particular significance for his experiences during World War II, for Rommel in effect "escaped the wholesale bloodletting of the Western Front, never having been converted to a 'siege warfare' proponent."[5] His experiences in Italy and Rumania reinforced to him the requirement for mobility, deception, reconnaissance, preparation and organization for combat, and direct leadership as integral components of all operations. These components were particularly prominent in his actions during the Battle of Caporetto.

As part of the Wurttemberg Mountain Battalion during this battle, the Rommel Detachment consisted of three mountain companies and one machine gun company. Its mission was to protect the right flank of the Bavarian Infantry Life Guards, take the hostile batteries near Foni, and follow the Life Guards to the Matajur.[6]

At the end of the 52-hour offensive, the Rommel Detachment had captured 150 officers, 9,000 men, and 81 artillery pieces. Rommel repeatedly surprised and deceived his enemy with outflanking maneuvers, tirelessly performed personal reconnaissance —

s Learned in WWI
ns in WWII

most often while his soldiers rested — before attacking, and rapidly switched to the defensive to thwart enemy counterattacks. Always leading from the front, Rommel "from time to time... called a halt so that [he] could personally survey the possibilities of a closer approach to the enemy lines."[7] Furthermore, his attacks were well synchronized and prepared. For example, in the attack of Hill 1192, "while the first heavy machine gun opened up a steady fire on the enemy from its concealed position on the right, where it was soon joined by the second, the mountain troops on the left stormed the enemy flank and rear with savage resolution."[8] Assault teams were used to "feel out the hostile position," while concealed reserves outflanked and attacked deep."[9]

Officer scout squads reconnoitered key terrain, avenues, obstacles, and enemy dispositions, and Rommel used this information as the basis of his plans. Additionally, to maintain his momentum and initiative, his detachment attacked readily whenever it met the enemy. Even when ordered to withdraw just before his attack on Mt. Matajur, Rommel disregarded the order, continued his attack, and seized the summit. His reasoning for not obeying the order was that he felt it was issued without adequate knowledge of the situation on the front, and, therefore, could not be obeyed.[10] This undoubtedly reinforced his conviction that leaders must be well forward in combat to make accurate, timely decisions.

Rommel's extensive preparations and efforts to ensure synchronization were best illustrated in his attack against Kuk, a fortified mountaintop stronghold held by the Italians. His plan was to attack first with only two assault teams, as a reconnaissance-in-force element, each under the fire support of one machine gun company, six light machine guns, and two heavy artillery battalions. The main body would then encircle the entire Kuk garrison. "In the attack, the effects of the machine gun and heavy artillery fire against the hastily entrenched enemy proved to be especially strong."[11] The following account of the opening moments of his attack indicated his understanding of the synergistic benefits of the synchronized application of combat power: "Punctually at 1115 the first heavy shells... burst in the midst of the... Italian lines... A fitting prelude to the attack! Now the machine gun fire units on Hill 1192 went into action, and the assault teams on the north and south slopes of the height got under way."[12]

Rommel, nearly 25 years later, used many of these tactics and techniques with great success in North Africa as commander of the renowned Afrika Korps. He himself personally reconnoitered the battlefield, using either a station wagon, armored car, or plane, sharing the resultant information with

his subordinates over the radio, rather than face-to-face as he did in World War I. He developed detailed fire plans to support his scheme of maneuver. His transition from offense to defense was swift, digging in men and guns and emplacing minefields. Furthermore, Rommel attacked whenever possible, making maximum use of surprise and deception against invariably superior forces.

Rommel's leadership techniques as well remained largely unchanged in World War II from those of World War I. "[His] lengthy and frequent visits to the front enabled him to make instant decisions about tactics, forcing subordinate commanders to show similar energy and initiative with their units and inspiring lower ranks to extraordinary feats."[13] He kept his staff in the rear and remained out of contact, often for days. When Rommel did return to his headquarters, it was for a quick (five-minute) summary of the situation from his staff, followed by his issuing guidance and orders.[14] His leadership style was hard, uncompromising, and impersonal, yet he enjoyed joking with the troops and understood the incalculable value of a leader to whom lower-ranking soldiers could relate.[15]

Rommel's Gazala and Tobruk campaign, the high point of the desert war for the Afrika Korps,[16] most clearly illustrated the essence of his tactics and their similarity to those of World War I. By striking first and seizing the port of Tobruk, Rommel could prevent the further build-up of British forces in North Africa. To seize Tobruk, he had to first defeat the British defensive line vicinity Gazala, a line that was heavily mined and fortified to cover the approaches to Tobruk. "The entire line was remarkable for the extraordinary degree of technical skill which had gone into its construction."[17]

Believing that "bold decisions give the best promise of success,"[18] Rommel planned to outflank the Gazala line to the south and then attack north-northeast to seize Tobruk.[19] The opening move of the attack was to be a frontal attack by Italian infantry divisions, with strong artillery support, to lead the British into thinking that Rommel's main attack was in the north and center of the Gazala line. "The idea of a German frontal attack against the Gazala position could not appear so very far-fetched to the British command, as it was quite within the bounds of possibility that we would prefer it to the risky right hook round Bir Hacheim [at the southern end of the Gazala line]."[20] All movement during daylight was to be directed toward the point of the Italian infantry's attack, and dust-raising vehicles — trucks carrying airplane engines and propellers — were used by other units to suggest the approach of large armored forces. The assault or flanking element was to demonstrate toward the Gazala line, and then reposition at night to its actual assembly area farther south. Rommel executed this same type of outflanking movement in conjunction with a frontal attack demonstration several times during the Battle of Caporetto.

Though Rommel lost one-third of his tanks on the first day of the Gazala battle, largely to superior technology (British forces had recently received the U.S.-made Grant tank), he nonetheless had significantly "unhinged" the British defense. More important, he caused the British commander, General Ritchie, to commit his armor reserves piecemeal into battle. Forced to temporarily assume the defense to reorganize, Rommel was able to wear down the British superiority of numbers through his skillful defense while simultaneously preparing for another offensive stroke.

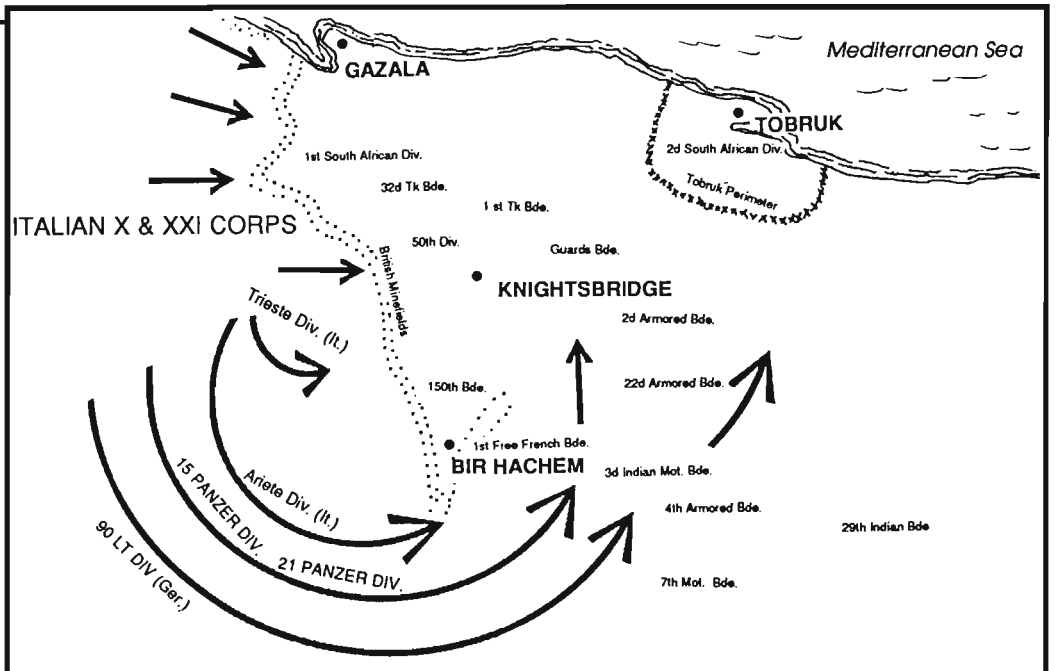
The next three days of the battle constituted the critical phase of the campaign, for Rommel's lines of supply around the southern end of the Gazala line had been cut. Rommel, in a surprise move, decided to attack the Gazala line from the east with a portion of his force to secure a more direct line of supply for his striking force. Though hard-fought, the move was successful, completely taking the British command by surprise. During this particular action, as with others, Rommel was characteristically up front, often personally leading assault elements, for he firmly believed that "it is... in the commander's own interest to have a personal picture of the front and a clear idea of the problems his subordinates are having to face."[21]

It took Rommel another two weeks to secure the entire Gazala line, the fortified French position at Bir Hacheim resisted the longest. With this line now under his control, he could direct his efforts toward the fortress of Tobruk. His plan relied on the synchronization of many elements of combat power as well as the customary guile, cunning and deception plans. Because Tobruk was protected on its eastern and western sides by rocky, trackless country, Rommel could not outflank it deep and to the rear. He had to penetrate the garrison defenses, with all available combat power focused at the point of penetration. This was another tactic perfected by Rommel during his World War I experiences, where his machine guns and artillery, when available, focused their suppressive firepower against his assault teams' point of penetration.

He launched a feint attack from the southwest to conceal his true intentions and pin down the garrison at that point. After a deceptive maneuver, the main assault force was to advance on the fortress from the southeast, deploy for the assault during the night and, after a heavy divebomber and artillery bombardment, launch its assault at dawn and overrun the surprised enemy. Lanes through the extensive minefields were to be cleared for the assault forces during the night.[22] The plan worked exceedingly well, and the Germans seized Tobruk in approximately 24 hours.

Erwin Rommel was a brilliant tactical commander whose experiences

during World War I, principally as a leader in an elite mountain battalion, taught him many of the tactics and techniques he would later use as commander of the Afrika Korps during World War II. He realized mechanization had significantly altered warfare in that "speed of maneuver in operations and quick reaction in command are decisive," and that "troops must be able to carry out operations at top speed and in complete coordination."[23] Yet, these same parameters characterized his operations as an Alpine infantry unit commander during World War I. Furthermore, his use of surprise and deception, his tireless efforts to personally reconnoiter the battlefield, his rapid transition, when required, from offense to defense, his thorough preparations to synchronize combat power, his personal influence on events on the battlefield, and his relentless attack and pursuit of the enemy were all characteristic of his actions in both world wars.



Rommel's Attack at Gazala
May, 1942

Rommel's "...early experiences of war left their mark on him, for he always seemed to think of battle as a kind of wild dance, an adventure, in which he had to pit his imagination — actually his genius — against improbable odds."[24] His legendary success using similar tactics in two severely different environments of war, one in which he commanded a mountain infantry detachment and in the other an armored corps, are proof of that genius and imagination.

Notes

[1]Field Marshal Erwin Rommel, *Infantry Attacks,* (Washington: The Infantry Journal, 1944), p. ii.

[2]Charles Douglas-Home, *Rommel,* (New York: Saturday Press Review, 1973), p. 29.

[3]Major K. J. Macksey, *Afrika Corps,* (New York: Ballantine Books, 1968), p. 44. Macksey indicates these odds were approximately a 6-to-1 advantage in tanks, amassed in 20 British divisions.

[4]Chapter II, "Combat in the Argonne," provides several illustrative examples.

[5]Truman R. Stobridge, "Old Blood and Guts and the Desert Fox," *Military Review,* (June 1984), p. 35.

[6]Field Marshal Erwin Rommel, *Attacks,* 1937. (Vienna: Athena Press, 1979), pp. 206-7.

[7]*Ibid.,* p. 223.

[8]*Ibid.,* p. 230.

[9]*Ibid.,* p. 236.

[10]*Ibid.,* p. 271.

[11]*Ibid.,* pp. 249-50.

[12]*Ibid.,* p. 237.

[13]Len Deighton, *Blitzkrieg.* (London: Jonathan Cape, 1979), p. 238.

[14]Verner R. Carlson, "Portrait of a German General Staff Officer," *Military Review,* (April 1990), pp. 74-5.

[15]Desmond Young, *Rommel, The Desert Fox.* 1950. (New York: Quill, 1978), p. 25.

[16]Field Marshal Erwin Rommel, *The Rommel Papers.* 1953. Ed. B. H. Liddell-Hart. (New York: Da Capo Press, 1985), p. 232.

[17]*Ibid.,* p. 195.

[18]*Ibid.,* p. 201.

[19]*Ibid.,* p. 205.

[20]*Ibid.,* p. 202.

[21]*Ibid.,* p. 224.

[22]*Ibid.,* p. 225.

[23]*Ibid.*

[24]Douglas-Home, p. 29.

Major James M. Milano received his commission in 1979 from Lafayette College. He has had a variety of assignments in tank and cavalry units, to include combat support company and tank company command in 2-72 Armor, Republic of Korea, and armored cavalry troop command in the 11th Armored Cavalry Regiment, FRG. He has also served as S3, 1st Squadron, and regimental adjutant, 11th ACR. A 1991 graduate of the Command and General Staff College, he is currently attending the School of Advanced Military Studies, Fort Leavenworth, Kan.

50th Anniversary - 5th Armored Division

5th AD, the "Victory Division," Was First to Fight on German Soil

MG Lunsford E. Oliver, 5th AD commander, gave his division a unique combat edge by marrying tank and infantry companies while training for the Normandy invasion.

World War II Campaigns

- Normandy
- Northern France
- Rhineland
- Ardennes-Alsace
- Central Europe

Exploiting success with its mobility, the 5th AD advanced more than 500 miles in its first month in combat. It's 85th Recon Squadron was the first Allied unit to enter Germany from the west.

The 5th Armored Division was formed as part of the expansion of the Armored Forces during World War II. The 5th played a major role in the fighting in Europe, and it was the first division to fight on German soil. Its outstanding combat record justifies its nickname — "Victory Division."

General Orders, Headquarters, Armored Force, activated the 5th Armored Division on 1 October 1941, at Fort Knox, Kentucky. Men from the 3rd and 4th Armored Divisions formed the initial cadre. Slowly, the skeleton unit began training, and new men and equipment arrived. In mid-October 1941, the first medium tanks arrived: five M-3s. The declaration of war in December 1941 quickened the pace of training. The "Victory Division" spent January 1942 reorganizing from a heavy to a light armored division table of organization. Then in February 1942, the 5th moved by rail to Camp Cooke, California. A cadre of men remained at Fort Knox to help form the 8th Armored Division.

During the train ride, the soldiers received .50 caliber machine guns for anti-aircraft defense. Nine days after the 5th arrived, a Japanese submarine shelled the coast about 50 miles away. Soldiers from the 5th responded by patrolling the beaches. As part of the Western Defense Command, the division held "vacate camp alerts." When a Japanese fleet cruised through the North Pacific in May 1942, the 5th deployed to defend the coastline and Los Angeles. New men and equipment continued to arrive, and the Mobilization Training Program went on. By mid-summer, the 5th reached a full strength of 15,000. In August 1942, a group of officers and men left for Camp Beale California, where they became the cadre for the 13th Armored Division. At the same time, the rest of the 5th moved to California's Mojave Desert.

For three months, the 5th lived tactically in the field and participated in corps-level maneuvers. In September 1942, two artillery battalions left the 5th for the fighting in North Africa. Soon, two new battalions from Fort Sill replaced them. During this desert training, over 100 new officers arrived from Fort Knox and Fort Benning. In November 1942, the division assembled at Needles, California. It spent a month refitting with new equipment, then returned to Camp Cooke. Then, in March 1943, the 5th turned over all equipment and vehicles to the 6th Armored Division. The "Victory Division" loaded on trains and moved to bivouac areas in Tennessee. For three months, the 5th drew new equipment and maneuvered in the field. Then in July 1943, the division moved to Pine Camp, New York. Here, the "Victory Division" began a new intensive training program. Once again, the table of organization went through a reorganization. The 5th would retain this final organization for the remainder of the war.

In December 1943, the division moved to Indiantown Gap Military Reservation in Pennsylvania for preparation for overseas deployment. In February 1944, the division moved to Camp Kilmer, New Jersey, for final preparations. Finally, on 9 February 1943, the "Victory Division" sailed for England aboard the *U.S.A.T. Edmund B. Alexander* and *H.M.S. Athlone Castle*. The division spent five months in England, both training and operating marshalling camps for the assault forces. Also, MG Oliver, the 5th's commander, implemented the concept of marrying tank and infantry companies for training. The en-

hanced teamwork paid great dividends in battle.

On 25 July 1944, the 5th landed across Utah Beach, France. That same day Allied bombers blasted a breach into the enemy defense at St. Lo. Initially, the division was in corps reserve. Then on 6 August 1944, the "Victory Division" received orders to push forward and seize Le Mans. Swiftly, the 5th drove through Coutances, Avranches, and Vitre, crossed the Mayenne River, and took Le Mans on 8 August 1944. Now, LTG Patton's Third Army cut down and around the German Seventh Army. The "Victory Division" led the advance. Once the Germans realized the threat, they desperately tried to prevent the encirclement, but the 5th quickly burst through roadblocks, bypassed strong resistance, and drove deeper into the German rear. Once the division reached Argentan, it turned its positions over to the 90th Infantry Division and attacked toward the Seine River. Before the enemy could react, the 5th captured Dreux, bisected the Eure-Seine Triangle, and reached the Seine. This action trapped the German units that had escaped from Normandy. During its first month in combat, the "Victory Division" had advanced more than 500 miles.

WWII Commanders

MG Jack W. Heard
October 1941-March 1943

MG Lunsford E. Oliver
March 1943-July 1945

BG Morrill Ross
July 1945-September 1945

MG Holmes E. Dager
September 1945-October 1945

On 26 August 1944, the 5th joined LTG Hodges' First Army. Four days later, it moved through Paris to spearhead the V Corps' drive east. The "Victory Division" never allowed the enemy to establish a coherent defense. By 2 September 1944, the 5th had crossed the Oise River, penetrated the Compiegne Forest, and reached the Belgian border. Retreating Germans were aghast to find the "Victory Division" in their rear blocking the roads back to Germany. More than 50,000 surrendered to the advancing 1st Infantry and 3rd Armored Divisions. Once again, the 5th attacked east. It crossed the Meuse River and took Sedan. Five days later, the division overran the City of Luxembourg and captured the transmitting facilities of Radio Luxembourg intact. On 11 September 1944, the "Victory Division's" 85th Recon Squadron became the first Allied unit to enter Germany from the west. By 20 September 1944, the 5th had reached Bettingen, Germany, and forced a salient into the "West Wall."

In November 1944, the 5th moved into the Huertgen Forest. For more than a month, the "Victory Division" battled fierce resistance to penetrate this natural obstacle. Despite heavy casualties, the division took Kleinhau, Brandenburg, and Bergstein. The Germans contested every ridge and village in the rugged terrain. Finally, the 5th reached the Roer River on 20 December 1944. The 8th and 83rd Infantry Divisions came up in relief; the 5th moved into reserve for a well deserved rest.

For most of January 1945, the 5th remained in Belgium in reserve. New men and equipment replaced losses from the Huertgen Forest. The "Victory Division" then joined LTG Simpson's Ninth Army. The refreshed "Victory Division" captured Eicherscheid and Colmar. On 25 February 1945, the division crossed the Roer River, where open terrain allowed more maneuver. Once again, the 5th used superior mobility to prevent the enemy from organizing a strong defense. The "Victory Division" exploited into the enemy rear and used roadblocks to destroy or capture large numbers of troops. The 5th reached the Rhine River on 5 March 1945, and the 75th Infantry Division came up to relieve it.

On 31 March 1945, the 5th crossed the Rhine near Wessel. The following day, it attacked east and once again broke into the German rear. In 13 days, the "Victory Division" penetrated 260 miles into Germany. The division isolated pockets of resistance, destroyed communications centers, and overran defensive positions before the enemy could man them. Before it received word to stop, the 5th had reached the Elbe River in three places. The lead elements had advanced to within 45 miles of Berlin. No other American unit fought closer to the German capital. The 5th was still on the Elbe when hostilities ceased on 7 May 1945.

After the war, the "Victory Division" remained in occupation in Germany. The points system rotated men in and out of the division. Then in September 1945, the entire division moved to France to prepare for the journey home. Units turned in equipment and loaded onto ships bound for New York. On 11 October 1945, the 5th Armored Division was deactivated at Camp Kilmer, New Jersey. Today, members of the unit maintain an active veterans organization.

This unit history was researched and prepared by Captain John Buckheit during his temporary assignment to ARMOR Magazine in Summer 1990.

In addition to Bradleys and HMMWVs, the Gulf War also showed the Army what the LAV-25 could do in the scout role.

The LAV-25 in the Scout Role

by First Lieutenant (P) John Alan Hyatt

This article will address the deployment to Saudi Arabia and the combat employment of the LAV-25 in the scout role. I will also address the benefits and problems associated with the LAV-25 in its first U.S. Army overseas rapid deployment.

The Army obtained some LAV-25s in December 1989 to assess its possible use as a rapidly deployable armor system. Sixteen LAV-25s were obtained from the USMC in a trade agreement for MLRS systems.

At this time, the LAV was supposed to achieve a Mean Miles Between Major Failure of 4,000 miles. A fast, strategically and tactically mobile vehicle, it is armed with an M242 25-mm main gun and two M240 machine guns. Because the Army wanted to test it as a rapid deployment type vehicle, the LAV-25s were assigned to the scout platoon of 3-73 Armor at Ft. Bragg.

The LAV-25 consistently exceeded expectations. Automotively, the LAV is extremely reliable. Throughout the course of our ownership of the LAV, we have had only two engine failures, one caused by a mechanic. The weapon systems have consistently operated with complete reliability.

In August 1990, one element of the scout platoon was at Ft. Chaffee for a JRTC rotation, training for a low- to mid-intensity conflict. Within two weeks of notification, the scout platoon was on the ground in Saudi Arabia preparing for a high-intensity conflict. The actual deployment was simplified because the LAV is wheeled and light. It can be carried by C-130, C-141, and C-5 with one, two, and four vehicles per airplane respectively. Although the LAV-25 is not airdroppable, (the U.S. Army has recently funded a $2 million contract to modify all 16 LAVs for this purpose), it can be airlanded easily.

In early August 1990, elements of the scout platoon of 3-73 Armor were at Ft. Chaffee and in the field at Ft. Bragg. The rapid assembly and deployment of the platoon was due mainly to the extreme reliability of the LAV-25. No maintenance problems were severe enough to prevent the platoon from coming together and deploying to Saudi Arabia. Another key reason that the LAV-25s were able to be deployed easily was the ability of four LAV-25s to fit on a single C-5. In fact, in addition to the four LAV-25s on my plane, a first sergeant's HMMWV was also loaded. This demonstrates the ability of the LAV-25 to be deployed rapidly in the critical first phase of a force buildup.

The LAV-25 is uniquely suited for the role of a scout vehicle. Its engine produces very little noise, and what noise there is disperses well. This is accomplished in part by the muffler, which directs the exhaust to the

ground. It is extremely difficult to pinpoint the location of the LAV-25 by engine noise. This naturally increases the survivability of the scouts.

The LAV-25 has exceptional off-road and on-road mobility. On improved surfaces, the LAV can attain speeds in excess of 60 mph. Off-road, the LAV can traverse nearly all of the terrain that a tank can. Its off-road mobility is far better than that of the HMMWV. The excellent transmission can handle the abuse of rapid gear shifting and high RPMs that are required when traversing deep sand or mud, similar to the terrain we faced in Saudi Arabia and Iraq. Although scouts are best employed in a slow, deliberate fashion, speed is critical at those times when scouts are unable to bypass and must cross large open danger areas, like those in the deserts of Saudi Arabia and southern Iraq. The speed also allows the rapid creation of a screen line to allow tanks time to arrive at their battle positions. Another tremendous mobility advantage is the LAV-25's ability to swim large bodies of water without preparation. Although this capability went unused during Operations DESERT SHIELD and DESERT STORM for obvious reasons, this capability greatly enhances the ability of the scouts to accomplish their mission.

The LAV-25 is well equipped with weapons for a scout vehicle. Individuals who claim that scouts should not be armed are invariably not the scouts out there on the screen line or zone recon. The simple fact is that scouts need some type of self-defense against lightly armored vehicles.

The 25-mm is an excellent weapon for scouts. It is not so big that scouts are tempted to engage tanks, but it is big enough to give the scouts the ability to break contact with thin-skinned vehicles. Scouts must be armed with some type of gun like the 25-mm when time is critical, and bold, aggressive reconnaissance is required. We found that the flat expanses of the desert greatly aided our ability to see and accurately engage enemy vehicles. In the event that we would have to use the Bushmaster, we were confident that with the new and improved ammunition we could execute guard missions or counterreconnaissance missions.

The large distances covered during Operation DESERT STORM made it necessary to put the tanks on flatbeds. For this reason, they would not have been able to reinforce the scouts if needed. Situations like that demonstrate clearly why scouts absolutely must have some type of firepower or they will surely be lost. In future conflicts, I sincerely doubt that the enemy is going to wait for the American tanks to arrive to reinforce their scout platoons. Without such a gun in similar circumstances, the armor battalion will lose its most valuable asset. The other weapons on the LAV-25 are the M240 coax machine gun and the M240E1 machine gun. Both of these weapons are 7.62 mm, which is a good size for their purposes. The smaller size of the ammunition allows scouts to carry other equipment.

Perhaps the one thing that sours some about the LAV-25 is its size. Although some people claim that it is too big for stealthy scouting, I maintain that it is not a vehicle problem, but a problem with training. With the LAV-25, scouts must be trained to be more selective in the terrain that they choose to traverse. In fact, the size of the LAV-25 is a benefit in several cases. First, the height of the LAV allows the vehicle commander to have a far greater line of sight, enhancing his scouting ability. Another benefit of its size is that the LAV can carry four dismounts with equipment under armor in the back. This is far superior to the HMMWV. Additionally, the large storage capability allows scouts to carry more equipment necessary to their missions, such as bangalore torpedoes. Through DESERT SHIELD/STORM, my scouts had little problem finding terrain features to hide behind.

Another misconceived argument is that a wheeled vehicle cannot scout for tanks. This is patently wrong, as we proved in Saudi Arabia. The few places that the LAV cannot traverse could be scouted by dismounts. Additionally, most modern armies use wheeled vehicles for scouting purposes.

In conclusion, the LAV-25 is a vehicle uniquely suited for scouting. Its problems are outweighed by its capabilities. My scouts and I have learned to use the LAV-25 and, to a man we prefer it to both the Bradley and the HMMWV as a scout vehicle. The LAV-25 is already in production, and will require no additional R&D or other costs. In this time of budget constraints, the LAV-25 is ready for use now. The U.S. Army should make the LAV-25 a replacement for the HMMWV.

First Lieutenant John Alan Hyatt received his Regular Army Commission from Texas A&M University in 1987. After AOBC, he served as a tank platoon leader in 3-73 Armor, Ft. Bragg, N.C. He was then assigned to the scout platoon with the additional responsibility of fielding the LAV-25. He served as the scout platoon leader until the unit returned from DESERT SHIELD/STORM, then was assigned as an assistant S3. He is scheduled to attend AOAC this fall.

The Mk 19 MOD 3 Grenade Machine Gun on the M1 and M3

by Captain Andrew Harvey and Sergeant First Class Robert Firkins

The U.S. Army Armor Force needs the capability to engage dismounted infantry with an area-fire weapon beyond the effective range of machine gun fire. The need for this capability was outlined in a speech by Brigadier General Rabin, the commander of the Israeli Defense Force (IDF) Armor School, when he spoke to the U.S. Army Armor School on 14 November 1990. In that speech, he described how a 60-mm mortar had been incorporated internally into the Merkava Mk 3 tank. He then outlined the reasons why the IDF felt it needed this type of weapon on its tanks.

IDF combat experience demonstrated that large expenditures of machine gun ammunition against enemy troops produced remarkably few enemy casualties. Direct machine gun fire against infantry in dug-in positions or behind berms was not effective. Infantry in positions beyond effective machine gun range of 800 to 900 meters can still effectively engage armor with antitank weapons up to 3000 meters. The Israeli tank's internally mounted mortar can effectively engage infantry in trenches and fighting positions with high-angle fire out to 3000 meters.

Current Bradley and tank weapons cannot accomplish this task. The M1 Abrams' main gun, .50 caliber machine gun, and two 7.62-mm machine guns cannot place high-angle fire on a dug-in troop target. The M3/M2 Bradley Fighting Vehicle (BFV) has a 7.62-mm machine gun, TOW missile launcher, and 25-mm chain gun. While the 25-mm chain gun has a High Explosive Incendiary Tracer (HEI-T) round with a five-meter bursting radius, it cannot be used to deliver high-angle fire because the fire control system of the BFV is not set up for it, and the HEI-T ammo self-destructs at 3000 meters. Because of this, the HEI-T round would detonate in the air if high-angle fire was attempted. Another problem is that the M3/M2 is vulnerable during reloading. All present weapons systems are unable to fire while any one of them is being reloaded. Finally, the M3/M2 BFV cannot conduct simultaneous engagements because only one of its weapons can be fired at a time.

In the U.S. Army inventory, we possess a weapon that can be mounted easily, quickly, and cheaply on both the M1 and M3/M2, and which will meet the need to engage dismounted troops beyond 800-900 meters with high angle fire. That weapon is the Mk 19 MOD 3 grenade machine gun. The capabilities of this weapon firing the M430 High Explosive Dual Purpose (HEDP) round are:[1]

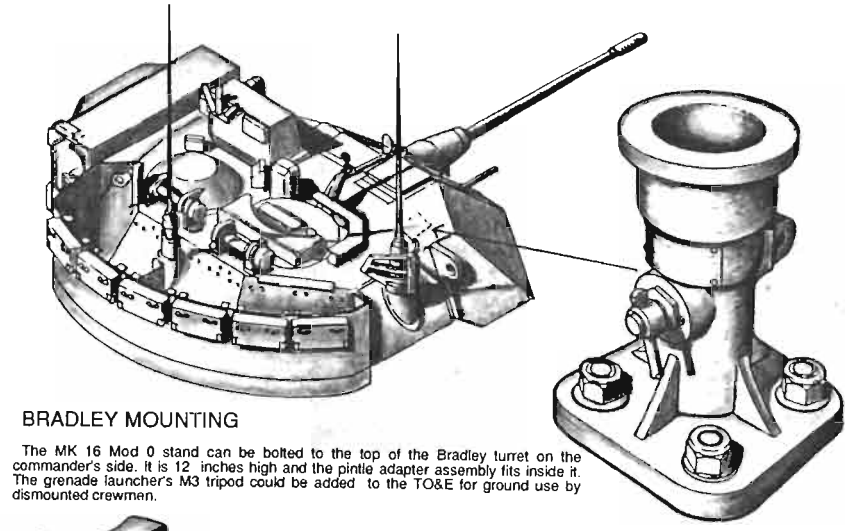
Max effective range area targets	2212m
Max effective range point targets	1500m
Bursting radius	60m
Casualty radius	15m
Kill radius	5m
Armor penetration (high hardness steel)	51mm
Cyclic rate (rounds per minute)	325-375

The Mk 19 MOD 3 grenade machine gun has several advantages. The HEDP round is effective against both personnel and light armored vehicles. With its high rate of fire, it can place a heavy volume of fire on target quickly. Another advantage is that the Mk 19 can be fired with a regular ballistic trajectory, or can be walked onto a target firing high-angle from max elevation. Also, the Mk 19 could be adapted easily for mounting on the M1 or M3/M2. A final advantage is that the Mk 19 is in production.

The diagram illustrates how the Mk 19 can be modified to the M1 and M3. These modifications are minor and use components already in the Army inventory (see Figure 1).

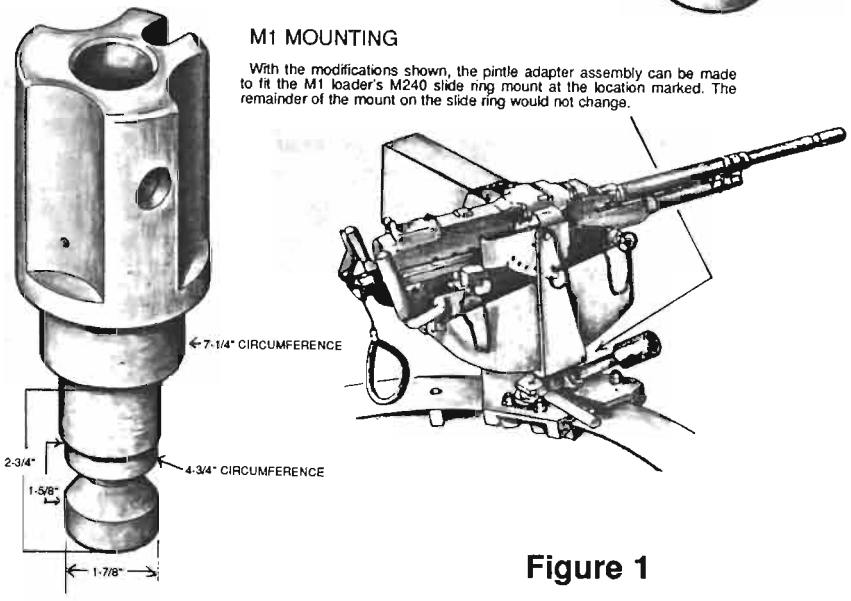
On the M1, the Mk 19 Pintle Adapter Assembly can be adapted to fit in place of the loader's M240 mount.

Modifying the M1 and M3 for the Mk 19 Grenade Machine Gun



BRADLEY MOUNTING

The MK 16 Mod 0 stand can be bolted to the top of the Bradley turret on the commander's side. It is 12 inches high and the pintle adapter assembly fits inside it. The grenade launcher's M3 tripod could be added to the TO&E for ground use by dismounted crewmen.



M1 MOUNTING

With the modifications shown, the pintle adapter assembly can be made to fit the M1 loader's M240 slide ring mount at the location marked. The remainder of the mount on the slide ring would not change.

Figure 1

The Mk 19 system should be issued two per tank platoon. This would allow for redundant capability in the platoon while retaining two M240s as coax spares. Maximum recoil for the Mk 19 is only 500 lbs, which should be no problem for the M1 loader's mount.

On the M3, a Mk 16 MOD 0 stand can be bolted on top of the turret on the commander's side.

The Mk 19 system should be issued three per scout platoon. That would give one to each section of an M3 CFV scout platoon. The M3 then could conduct simultaneous engagements and defend itself while reloading.

The U.S. Army Armor Force needs to be able to engage enemy troops who are beyond effective machine gun range and in fighting positions with a weapon system that is organic to its vehicles. The Mk 19 MOD 3 grenade machine gun, which is in production, with its high rate of fire, HEDP round characteristics, and capability for high angle fire fills this need.

Notes

[1]TM 9-1010-230-10, January 1989, p. 112, and FM 23-27, December 1988, p. 1-8.

Captain Andrew S. Harvey is a 1985 Distinguished Military Graduate of Appalachian State University and holds a Masters Degree in Political Science. He served with the 3d Squadron, 2d ACR as a tank platoon leader, scout platoon leader, and troop XO. After completion of AOAC, he served as chief, Cavalry Weapons Division, U.S. Army Armor School. He is currently commander, F Troop, 1/12th Cavalry.

Sergeant First Class Robert M. Firkins is a cavalry scout assigned as an instructor/writer in the Weapons Department, U.S. Army Armor School. He has served as a platoon sergeant in 3d AD and 194th Armored Brigade; and as section sergeant in the 10th and 11th Cavalry. He is a graduate of the Bradley Master Gunner Course.

The Company XO's Role In Tactical Operations

by Major John W. Faulconbridge

What is the best role for the XO in the company/team? What does the doctrine mean? Am I wrong if my XO isn't moving with one of the platoons?

There may be as many answers to these questions as there are companies in armor and infantry battalions. In the early 1980s, the Army conducted a series of organizational changes, which came to be known as "Division 86." Perhaps the most radical change at the company level was not in its structure, but in the roles of the company executive officer (XO) and first sergeant (1SG). The XO's role shifted from that of "chief logistician" to one as the key communications link between the company and battalion and as a second in command (2IC). The first sergeant became the company's logistic operator. The XO is still involved in the planning of logistics and in coordinating support, but the first sergeant has become the primary executor of CSS for the company.

The intent of this shift of roles was to allow the company commander to focus on maneuvering the company without a simultaneous requirement to keep the battalion informed of the company's situation. FM 17-16 (Test), *The Division '86 Tank Company*, was clear when it stated, "The XO must be well forward in a tank. He does not normally engage in the actual fight but positions himself in the nearest available overwatch position where he can both see what is going on and communicate with the battalion TOC and lateral units."[1] This was expanded into the "fighting XO" concept, in which the XO became an active player in the maneuver of the company.

Current doctrine further develops this earlier concept and expands on the role of the XO. FM 71-1 *Tank and Mechanized Infantry Company Team*, 22 Nov 88, explains, "The XO is second in command. Acting as net control station (NCS), he helps command and control the maneuver of the company team. He receives and consolidates the tactical reports from the platoons, then submits them to the battalion task force tactical operations center (TOC). Therefore, the XO must locate where he can maintain communications with the company team commander and the battalion task force TOC. He needs a position with good observation and fields of fire. The XO assumes command of the company team as required. Before the battle, the XO (with the first sergeant) plans and supervises the company CSS. During preparation for movement, the XO and the first sergeant make sure precombat inspections are complete. Before the battle, the XO makes tactical coordination with higher, adjacent, and supporting units. He may aid in control of a phase of the battle such as passage of lines, bridging a gap, breaching an obstacle, or assumption of control of a platoon attached on the move."[2]

Recently, this doctrine has received attention as we seek to clarify just what it means. It would be simple to say that the commander is responsible for assigning missions to his subordinates to ensure that all aspects of the company's missions are accomplished. However, before the commander can make an appropriate decision, he needs to understand the functions that need to be accomplished. The company commander has two leaders in the company headquarters to cover three functions. These functions are: NCS and communications link to higher headquarters, coordination of CSS, and assistance with maneuver. Who accomplishes what function and what function is most important becomes a matter of METT-T and the personalities and capabilities of the XO and first sergeant.

The remainder of this article will provide some thoughts on what current doctrine means and some techniques to assist the company commander in making informed decisions concerning which roles he assigns to the XO and the first sergeant. First, an assumption concerning the role of doctrine must be made. Doctrine is not regulation. Doctrine is a set of guidelines, which provides a point of departure for the application of

METT-T. Thorough understanding of doctrine provides a reference for subordinates and peers and assists units in accomplishing synchronization because plans will be developed from the same baseline.

Just what does "assist the maneuver of the company" mean? Clearly, it does not mean that the XO sits, looking over the commander's shoulder, like a vulture waiting for his chance to be in charge. Neither does it mean that the XO routinely controls one of the platoons to ease the strain on the commander. The intent is that the XO is available to help where needed; perhaps as the liaison between units during passage of lines or to conduct flank coordination. Perhaps he is positioned to overwatch a maneuver during limited visibility and to direct the unit onto the objective; or perhaps he coordinates with the TOC to ensure that a critical combat support asset is available for the commander to employ.

The XO may be placed where he can overwatch the actions of a platoon that has a new platoon leader or an NCO platoon leader. The intent here is not to have him command the platoon; rather it is to allow the XO to keep the commander informed, while the platoon leader concentrates on controlling his unit. These actions may be accomplished concurrently with the function of serving as the communications link to the higher headquarters and will free the company commander to focus on maneuvering the company, rather than on answering battalion's requests for information. The XO who is fully aware of the tactical situation is the ideal person to link up with and brief a platoon that is attached to the company team. Likewise, the XO is in a position to pass information to the first sergeant concerning the status of the company and to direct the assignment of medics and maintenance support. His in-depth awareness of the situation of the company will allow him to anticipate the needs of the unit and to initiate coordination early enough to ensure continuous support.

Where should the XO be during the fight? This simple question may cause the most controversy within the 2IC concept. Because the XO's role is defined as the NCS for the company and the primary link between the company and battalion, good communication is a key factor in the XO's position. There may be times when the XO locates beside the company commander, others when he is one or two terrain features back, or still others when he is located along one flank. Once again, we find that the commander must make the decision concerning location based on the factors of METT-T. The 2IC must have commo up and down to be effective. Communication is how the XO stays informed about the actions of the company and remains prepared to take command if he is needed. Communication is also the reason that the XO may be the best choice for the company commander to send for coordination of passage of lines or with units on an extended flank. This use of the XO will preserve the combat power of the platoons.

What if the first sergeant is overloaded with the logistics support? Does the XO have responsibilities in execution of CSS during the fight? The commander should assign the XO to cover the second most critical aspect of the operation. This may mean that the XO assumes control of the company combat trains, freeing the first sergeant to move to the rear to correct supply deficiencies. The ability to move the XO to cover this task assumes that he has developed the knowledge of CSS during garrison training or during earlier field problems. Another circumstance in which the XO might have to command the combat trains is when there is a significant threat, and the first sergeant would be at undue risk operating from his HMMWV. This second situation will be corrected when we field a hard vehicle for the first sergeant; until that time, the XO may need to supervise the tracked vehicles of the company combat trains, while the first sergeant controls any wheels that are in the area.

There are those who would keep the second tank from the headquarters section to function as the company commander's wingman, while the XO assumes control of the commander's HMMWV and operates the NCS from there. This is certainly not the preferred method because, if the XO is required to assume command of the company, he will need to have the tank sent to him and will be required to transition not only to command but also to a different type of vehicle. Depending on the situation that triggered this shift of command, the XO may transition from one vehicle to the next at a time when the company is in critical need of a guiding hand. In this situation, the senior platoon leader would likely be better prepared to assume the immediate command of the company and ensure that mission focus is maintained.

Before and after the battle, the XO and the first sergeant work together to support the company. The XO plans the company's logistics, coordinates with the various staff officers if the commander wants to modify the battalion plan for logistic support, and ensures that the company commander's plan can be supported. While the XO concentrates on coordination with the S2 for attachments and the S4 and BMO for supply and maintenance, the first sergeant focuses on support within the company. The first sergeant supervises resupply and preparations and conducts inspections. The XO coordinates with the first sergeant to ensure that preparations for the operation are completed. During consolidation and reorganization, the XO determines the sites for the elements of the trains and informs the first sergeant of the priority of effort if it has changed

from the plan. Again, the XO concentrates on informing the battalion staff about the status of the company and directs the first sergeant while he executes the actions within the company.

As we have discussed, the location of the XO on the battlefield is not tied to a physical point as much as to a set of tasks. The status of the company and the specifics of the mission will guide the commander as he tasks the XO. Those tasks will guide the XO as he chooses his position. During the battle, the role of the XO will shift back and forth between focusing on logistics and maneuver. To use the XO as 2IC allows the company commander to concentrate his attention on the maneuver of his platoons. The division of tasks between the XO and first sergeant ensures that all aspects of the battle are covered efficiently. The XO focuses from the company trains forward, while the first sergeant coordinates with the battalion staff for CSS actions. The structure of the command in the battalion may affect the tasks; if the battalion commander always wants to speak to the company commander, then the XO may be better used working the CS and CSS aspects of the operation. As with all operations, the specific situation will drive the company commander to a solution regarding the role of his XO. "Green tabbers" must be ready to make decisions based on the guidance of doctrine and analysis of METT-T.

The doctrine addressing the company XO's role is clear. It establishes that the XO is second in command, but not a deputy commander. He must concern himself with all aspects of the operation; that is, he serves as NCS, communicating to the battalion; he serves as the logistics coordinator, providing guidance to the first sergeant; he assists with external coordination of the company's actions; and he must also be prepared to assume command of the unit if the commander is incapacitated. The XO's role will be more akin to that of a rheostat than a switch as he balances his efforts between concentrating on logistics and operations, because both are essential to success of the operation. Commanders must address all elements of METT-T as they assign tasks to the XO and should place the XO at the second most critical area of the operation. The tasks assigned will determine the roles assumed by the XO and first sergeant as well as their locations. The doctrine outlining the duties of the executive officer is sound and should be retained as the foundation upon which we base his warfighting responsibilities.

Notes

[1]FM 17-16 (Test) *The Division 86 Tank Company*, p. 1-5.

[2]FM 71-1, *Tank and Mechanized Infantry Company Team*, p. 2-1.

Major John W. Faulconbridge was commissioned from the United States Military Academy in 1978. He served as a tank platoon leader, scout platoon leader, and company XO at Ft. Carson; as company commander and in battalion staff positions in Germany; and as an instructor and doctrine writer at the Armor School and S3, 5-12 Cav, both at Fort Knox. He is currently OIC, ROTC, Salisbury State University, Salisbury, Md.

The Soul of Armor

I have seen the dust of 58 tanks
Ghost-like, illuminated
By the blood-red predawn sky
And I've felt the rumbling of their tracks
Reverberating in my bones.
The clang of steel on steel, and the
anticipation
Of upcoming contact.
A clash of voices guiding me, as I guide
others
To the rhythm of the turret's whine.

I've coughed and choked on diesel fumes
Acrid in the morning air
And I've smelled the unwashed bodies of
my crew,
The weariness etched in dusty lines
Around their tired eyes.
Yet I've been thrilled with the tracer arcs
As they danced across the starlit night
And I've gloried in every main gun round
That tore apart the very sky.

The soul of Armor lies within
The crews of these leviathans
Who work and sweat and struggle on
All day, all night, 'till the bitter dawn.

—Captain Gregory M. Smith

(1st Place Winner, Short Poem Division, The DESERT SHIELD/STORM Army Creative Writing Contest)

The Muzzle Boresight Device Where Have We Gone?

by Staff Sergeant Michael G. Cover

There is a need for an accurate, yet simple, Muzzle Boresight Device (MBD) to satisfy the need of armor units. Reported discrepancies and complaints by soldiers in the field suggest that the current MBD does not completely fill the needs of armor crewmen.

Following the adoption of the fleet zero method in 1982, which requires an MBD to calibrate the tank main gun fire control system, the Army attempted to provide an MBD for each fielded tank. The fleet zero method requires the use of an MBD, crew maintenance checks, and the application of computer correction factors (CCFs), to develop the proper ballistic information for the round to strike the desired target.

Once fielding of the current M26A1/M27A1 Lenzar began, user evaluations and reports from the field indicated that the device had some hardware reliability and performance problems. Additionally, the manual required some interpretation.

From 1988-90, action was taken to correct some of the inherent deficiencies. However, unmodified devices still remain in use.[1]

The M26A1/M27A1 MBDs have detractors due in part to:

•poor performance of "initial" devices and the inadequacies of the accompanying manuals

•several moving parts compared to its predecessor, M26/M27 Pye Watson

•the inability of DS/GS maintenance to collimate the devices accurately with existing equipment

•and the devices' inability to maintain collimation.

In May 1991, a user evaluation was conducted to compare the reliability and overall performance of the M27A1 Lenzar, M27 Pye Watson, and another non-standard device. The M27 MBD was the predecessor of the M27A1. The non-standard device was used simply for comparison.[2]

The evaluation consisted of using five tanks with crews, and two each of the above mentioned MBDs. Over a three-day period, numerous boresight readings were collected under various weather conditions, to obtain realistic data. Additionally, boresighting was conducted at night, primarily as a demonstration to compare which device provided the most accurate night boresight.

During the evaluation, all three devices demonstrated both good and bad points. None of the devices, however, proved to be the ultimate MBD. One of the most important points from the test (also mentioned by soldiers in the field), is the need for a device that is easily collimated to gun tubes, for a more accurate boresight.

The night phase proved the following for all three devices. This procedure is recommended for use by crews in the field!

(1) A blue-filtered flashlight was taped on a panel 1200 meters from the tank. The light was barely visible through the Gunner's Primary Sight (GPS) and through all three devices. With this setup, the tank could not be boresighted using either the non-standard device or the Pye Watson device. When enough light shone through the light port of the non-standard device or through the front of the M27 Pye Watson to see the reticle in the MBD, the blue light on the target was not visible. Various combinations of intensity and color of light were used with no success. By shining a low-level red light through the light port of the M27A1 Lenzar, both the MBD reticle and the blue light were visible. Thus, if only a very low light source is available at the target, only the M27A1 Lenzar can be used to boresight the tank.

(2) Without the blue filter on the flashlight at the target, it was possible to boresight the tank with all three devices.

A question that needs to be addressed is: What are the device collimation errors as measured by DS/GS maintenance?

(1) While the test devices had collimation errors ranging from 0.1 to more than 0.5 mil, all could be collimated by DS/GS maintenance to essentially no error. The M27A1 Lenzars took about 10-20 minutes each, primarily due to the ease of throwing the collimation off by moving the optical head sideways. The M27 Pye Watson took even longer, about 30-45 minutes, because the reticle adjustments do not move in straight lines, and to tighten the locking nuts often causes the collimation to be thrown off.

(2) The procedures used to collimate the M26A1/M27A1 Lenzars by DS/GS maintenance are different than those used by crews (boresighting) to check device collimation. The problem stems from the fact that the optical head of the M26A1/M27A1

Lenzar can be rotated independently of the device's main body. In the field, the entire device, including optics, is rotated 180 degrees when boresighting the tank. In the maintenance manual, however, the collimation instructions for the DS/GS technician are not clear, but the pictures infer that once the device alignment is established at one position, then the device body (not the optics) is rotated 180 degrees for a second reading. Given that the optics head itself may have some collimation error in reference to the MBD main body, it would seem the technique of rotating only the MBD main body, and not the optics, could induce an error. This is supported by DESERT STORM feedback that, more often than not, the M27A1 Lenzars sent in to be collimated came back worse than when they were sent in. Feedback also indicated that when crews collimated the device to their "tube," the device worked well.

(3) When viewing the MBD reticle overlaid on the reticle in the optical bench, the DS/GS technician must estimate distances using reticle line widths or dots. The reticle in the optical bench is graduated in 0.5-mil increments, which is not very useful to provide precise measurements. On the other hand, the crew using the GPS reticle is capable of measuring angles from 0.1 to 0.01 mil using the Computer Control Panel (CCP). The DS/GS technician needs a device with similar capability. On the other hand, to afford crew members or master gunners the opportunity to collimate the device to gun tubes would alleviate this problem.

Recent evaluations have shown that the characteristics of the various devices provide either good performance or ease of use. To develop a device that provides both good performance and ease of use will provide tankers with a durable device with excellent optics that the crew can inbore collimate in the bore. The net effect is an increase in crew confidence and an accurate device for that particular gun tube, which in turn leaves support maintenance free for other missions.

These points prove there is a need to develop an MBD that includes the following characteristics:

•an internal eyepiece that does not move independently of the body.

•a durable body with minimal moving parts.

•a storage case that provides ease of storage on the vehicle, i.e., tubular shape, instead of a box.

•10X magnification to allow accurate sighting of small targets. Additionally, an adapter lens to allow boresighting at shorter ranges, reducing parallax.

•a diopter that allows the eyepiece to be focused to one's eye.

•an aiming reticle, designed in the shape of an aiming cross, which helps to ensure accuracy during each lay.

•a light port (window), to allow for night boresighting.

•and most important of all, external adjustments that afford crew members or master gunners the opportunity to collimate the device to gun tubes, thereby alleviating the need to evacuate the device to DS/GS maintenance for collimation.

However, as an interim fix, modifications can be made to existing devices or procedures so tankers have the opportunity to collimate the device to their gun tube with ease. Additionally, crew training in this area would solve the following problems:

•the need to evacuate the MBDs to DS/GS maintenance for collimation and reduce the number of MBDs exchanged for new ones when the collimation criteria of (+/- 0.1 mil) cannot be met.

•reduce the need to split boresight readings in order to determine a mean reading, thereby reducing, in some instances, ammunition expended due to an improper boresight caused by a faulty device or by improper calculation of the mean boresight reading.

While serving as a master gunner with duties as an instructor/writer with the Weapons Department, U.S. Army Armor School, Ft. Knox, Ky., I have had the opportunity to participate in evaluations using various MBDs. Additionally, working with lessons learned from (DESERT STORM), hearing and understanding soldier preferences, it's apparent that a soldier-proof MBD is desired. Therefore, from the tanker perspective, I feel the MBD situation needs to be re-evaluated. The solution I have suggested may be a viable alternative.[3]

Notes

[1]Devices with serial numbers below 9000 should be turned in to be replaced with a modified device.

[2]The non-standard device could be collimated to the gun tube with ease by turning two external hexagon screws independently of each other to align the reticle in azimuth and elevation. In order to collimate the M26A1/M27A1 Lenzar, one must use two screwdrivers at the same time or, depending on the user preference, one screwdriver to align the reticle for collimation. The M26A1/M27A1 Lenzar is not as simple to collimate as the non-standard device. The M26/M27 Pye Watson can be collimated to the gun tube, however this is more difficult than with the other devices.

[3]Some information in this article is from Preliminary Report, Muzzle Boresight Device (MBD) Test, 21-23 May 1991, dated 3 Jun 91.

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Ruminations of a Branch Chief

by Colonel Stephen E. Wilson

In command of your company for 12 months now, you're beginning to feel like a seasoned veteran. You've been in the motor pool for two hours and the wet bulb index is 92 degrees and climbing. The motor officer has just finished a spiel about why HQ65 got the 02-priority part for which your tank has been deadlined longer — and no more parts are available for at least another week. The "S" service for your 3d platoon is behind schedule, and the semiannual gunnery period begins in two weeks. Your gunner's wife is pregnant with their first child, which is due in the middle of gunnery (even though your gunner insists that "she's a trooper," and he'll make it through tank table X). You're scheduled for the UCOFT at 0200 tomorrow, and you've been having problems getting past the matrix "gate" for moving tank, multiple moving targets under NBC and degraded mode conditions. All in all, it's been a pretty normal day when, suddenly, your first sergeant approaches with a grin and says, "Sir, you just got a call from some captain in Armor Branch and he wants to discuss your next assignment with you."

Armor Branch — the name invokes different images for different people. Those who have never visited our habitat in Hoffman II may envision it as a modern ivory tower equipped with new furniture, plush rugs, high-backed leather chairs, dependable and instantaneous worldwide communications, and powerful computers capable of error-free data queries in nanoseconds. Those who have visited Hoffman II know better. Regardless of the equipment's state, one thing remains constant — Branch's commitment to doing the best personnel management job possible for the Army's finest — the officers of Armor and Cavalry.

As a "customer" for many years, I always wondered about the assignment process and how Branch functioned. I believed some of the myths about Branch that circulated in the field and often discussed professional development issues with other officers, based on my experiences instead of the requirements outlined in DA Pamphlet 600-3, *Commissioned Officer Professional Development and Utilization.* I've learned a lot about personnel management since then, and I wanted to share what I've learned with you as I depart one of the most rewarding jobs an officer can ever hold — that of Armor Branch Chief.

Mission

Armor Branch has a twofold mission: to make assignments that meet Army requirements (while matching officers' desires), and to allow for the professional development of armor officers in accordance with DA Pamphlet 600-3. These two missions go hand-in-glove; for example, we assign officers who need "branch qualification" to troop units to acquire that qualification, after which, they are reassigned to non-troop locations to continue their development, allowing others the chance to become "branch qualified." DA Pam 600-3 is the "bible" that everyone should use to plot their own professional development throughout their career.

Organization

To accomplish our missions, we are task organized into six areas (See Figure 1). The lieutenants' desk handles all personnel actions from accession to active duty as a second lieutenant through the first troop assignment after officer advanced course. Once a captain is branch qualified under the provisions of DA Pam 600-3, his ca-

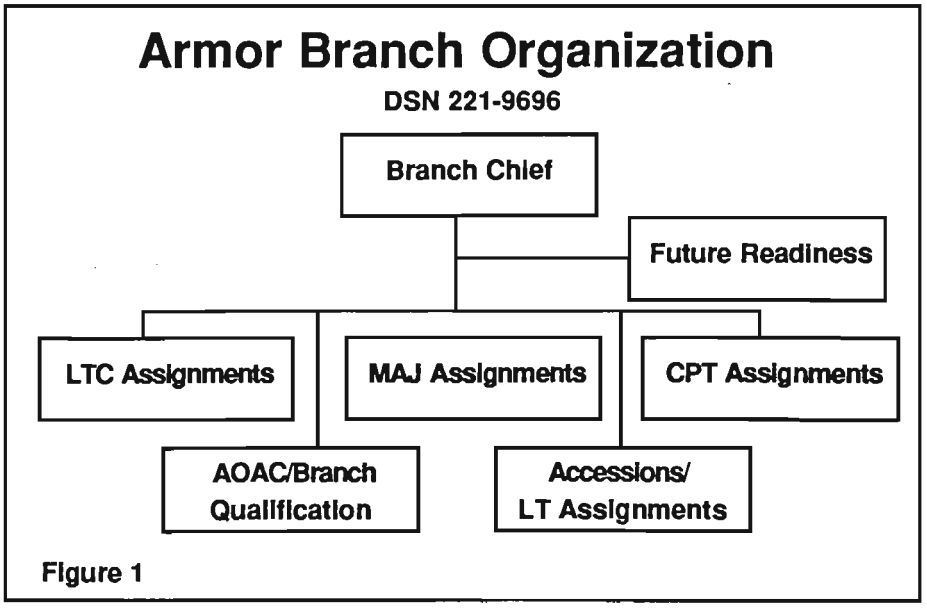


Figure 1

reer management information file (CMIF) is passed to the captains' desk.

The captains' desk handles all personnel actions affecting branch qualified captains, from nominative assignments and advanced civil schooling to functional area designation. When a captain is selected for promotion, his CMIF is transferred to the majors' desk, which handles all CPT(P) and majors' assignments from CGSC slating to troop/non-troop/nominative assignments. After a major is selected for promotion, his CMIF is transferred to the lieutenant colonels' desk, which, like the majors' desk, handles all MAJ(P) and LTC assignments, such as senior service college, battalion/squadron command slating, and assignments.

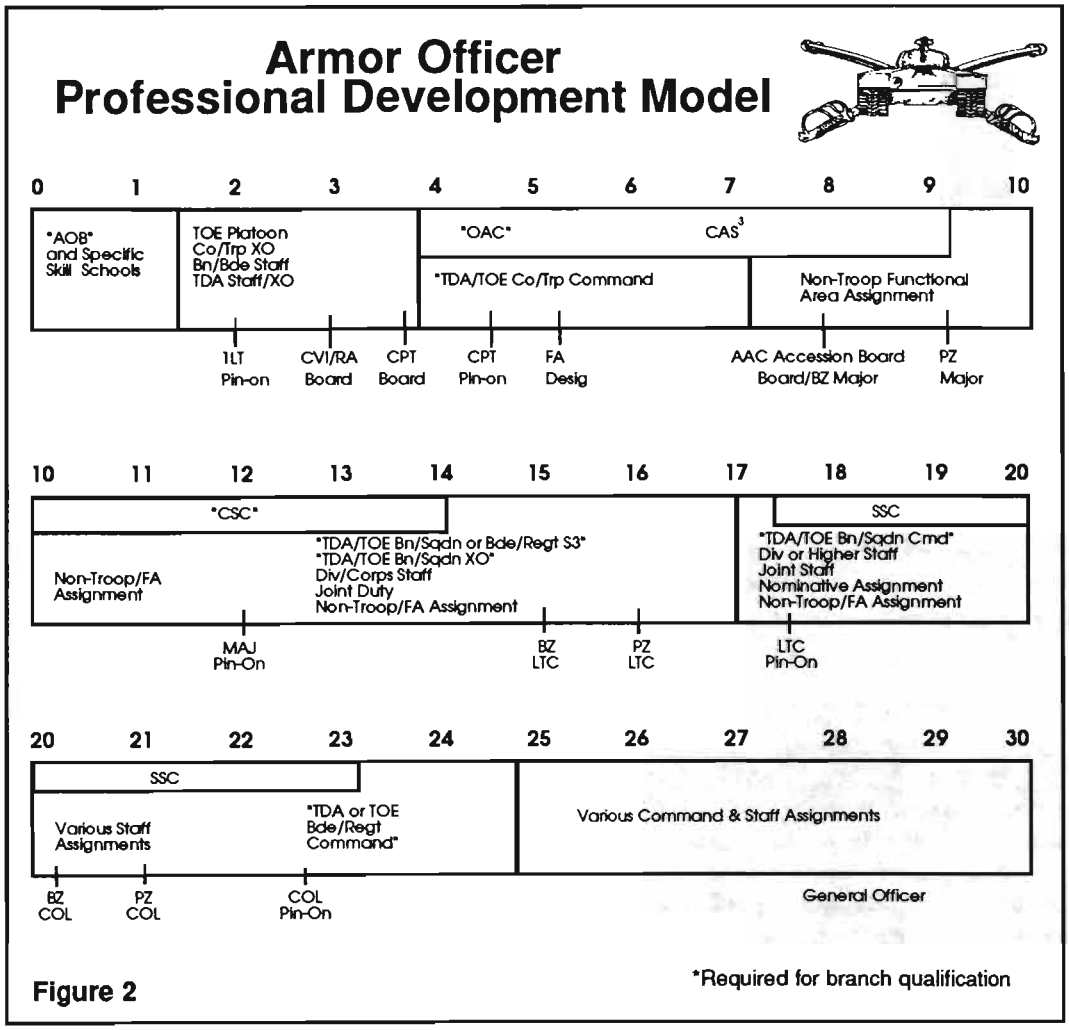


Figure 2

Each desk also works overtime to ensure that every file going before a DA selection board is as complete and accurate as humanly possible — an herculean task. The Future Readiness Officer (FRO) is Branch's key link between PERSCOM and the Armor proponency office at Fort Knox, the Directorate of Total Armor Force Readiness (DTAFR). He handles a large number of data queries and backs up the assignment officers by conducting field trips and interviews. The Chief of Armor Branch is located in the headquarters.

Armor Branch is one of six branches in the Combat Arms Division (CAD), Officer Personnel Management Directorate (OPMD), PERSCOM. The other CAD branches are Infantry, Field Artillery, Air Defense Artillery, Aviation, and Special Forces. OPMD has eight divisions and a headquarters. In addition to CAD, OPMD includes a Colonels' Division, Functional Area Management and Development Division (FAMD), Combat Support Arms Division, Combat Service Support Division, Health Services Division, Accession, Reserve Appointments and Management Division, Warrant Officers Division, and Officer Distribution Division (the G3 of OPMD).

Professional Development

As mentioned earlier, DA Pam 600-3 is the "bible" for charting/forecasting the professional development needs of our officers. Currently under doctrinal review, DA Pam 600-3 may undergo some significant changes in what constitutes branch qualification, especially for majors, by next year. However, this article reflects the current professional development model. The Armor Center's *Armor Officer Professional Development Guide* is another good source of information. The input for both references is the responsibility of DTAFR and is developed in coordination with Armor Branch and FAMD. DA PAM 600-3 contains the timelines and important events/schools that constitute the professional development "gates" through which each officer must pass to qualify for the next professional development step (see Figure 2). Armor Branch uses DA Pam 600-3 as its guide or template to program your next assignment, based on where you are in your professional development. Because of its importance, DA Pam 600-3 should be mandatory reading for each officer.

For lieutenants within four to four and a half years, the key professional development gates for branch qualification are AOB (MEL 7) and a minimum of 12 months TOE platoon leader time. Captains, to become branch qualified within a period of seven and one-half to eight years, must complete a resident OAC (MEL 6), successfully command 18 months (plus or minus six months; 12 months at Fort Bragg and Korea), complete CAS^3 (MEL N) before the ninth year of active Federal commissioned service (AFCS), and have a baccalaureate degree from an accredited college or university before the end of the eighth year of AFCS (CEL 5).

Majors have a five to five and one-half year "window" to acquire branch qualification, which is defined currently as a minimum of 12 months as a battalion/squadron S3 or XO, or brigade/regiment S3, and completion of CGSC-level schooling (MEL 4). DA Pam 600-3's doctrinal review may result in the deletion of the mandatory S3/XO assignment. If that decision is made, MEL 4 may be the only mandatory criterion. From those selected for promotion to lieutenant colonel, approximately 25 percent from any one year group will have the opportunity to command at the battalion/squadron level. The others will serve in key duty positions, such as school branch/division chief, division IG, nominative and/or functional area assignments, and joint assignments. Approximately 15 percent of Armor lieutenant colonels and colonels will attend Senior Service College (MEL 1). A very fortunate few armor colonels will be selected for brigade/regiment command.

Armor Branch uses DA Pam 600-3 to chart out each officer's career pattern — where he's been, where he is now, and where he needs to go next. We match the professional development needs with the Army's requirements and the officer's desires. Unfortunately, the officer's desires sometimes don't match his professional development needs, the Army's requirements, or both.

Factors Determining Assignment

- Army requirements
- Nomination acceptance
- CTC experience
- Tour equity CONUS/OCONUS
- Functional area development
- Field commanders' demands
- Unprogrammed requirements
- Family & compassionate situations
- Time on station
- Availability location/position
- GO involvement
- Professional development
- Officer preference
- Joint/Title IV
- Officer performance

Figure 3

Assignments

Many variables affect assignments (see Figure 3). Standard assignments occur in cycles (see Figure 4) and are identified in requirements submitted to PERSCOM by the major commands (MACOMs, i.e., USAREUR, FORSCOM, USMA, etc.) and validated by OPMD's Officer Distribution Division. A key factor used by the Distribution Division to validate the requisition is the officer distribution plan (ODP).

The Army's Personnel Management Authorization Document (PMAD) establishes the number of active duty service members authorized by grade, but the number available for assignment is always less than those authorized, for a variety of reasons. To equitably distribute these shortages, Officer Distribution Division applies ODP against each MACOM/post. For example, if USAREUR's ODP for armor (12Z) lieutenant colonels is 120, and 119 are either assigned or projected, the Distribution Division will validate a 12Z lieutenant colonel requisition to USAREUR.

Sometimes, because of ODP, we can only get officers to a particular location by assigning them against valid O1A (branch immaterial), 02A (combat arms immaterial), or functional area (FA) requisitions — an option we use to get those who need branch qualification to a troop location otherwise closed because the 12Z ODP fill is at or above 100 percent. The officer involved will have the opportunity to eventually "walk into" a branch-qualifying job.

As mentioned earlier, most of the routine assignments are made "in cycle;" however, some requirements, known as "shotguns," are validated inside the normal cycle for a variety of reasons. Shotguns can be hard-to-fill requisitions, or "in cycle" requisitions which were filled, but unexpectedly became vacant (e.g., a ROTC PMS position for which someone was approved, but unforeseen health problems precluded compliance with the assignment instructions). Shotgun assignments provide less than the optimum six to nine months planning time provided by "in cycle" assignments; in fact, some officers have moved with only one month's notice.

Tour equity and time-on-station (TOS) are other factors that influence our assignments. The longer one stays in CONUS, the more vulnerable he becomes for an OCONUS assignment.

Requisition Cycle Schedule

CONUS

Cycle	Report Months	Cycle Begins	Reqs Open For Fill	Closeout
01-92	Jan/Feb	August	30 August	30 Sep 91
03-92	Mar/Apr	October	1 November	29 Nov 91
05-92	May/Jun	December	27 December	31 Jan 92
07-92	Jul/Aug	February	28 February	31 Mar 92
09-92	Sep/Oct	April	24 April	29 May 92
11-92	Nov/Dec	June	26 June	31 Jul 92

OCONUS

Cycle	Report Months	Cycle Begins	Reqs Open For Fill	Closeout
02-92	Feb/Mar	May	24 May	31 Jul 91
04-92	Apr/May	July	26 July	30 Sep 91
06-92	Jun/Jul	September	27 September	29 Nov 91
08-92	Aug/Sep	November	29 November	31 Jan 92
10-92	Oct/Nov	January	31 January	31 Mar 92
12-92	Dec/Jan	March	27 March	29 May 92

Figure 4

If you have more than six years in CONUS, you're looking good for an OCONUS PCS soon; however, as we reduce OCONUS forces, the frequency of OCONUS assignments will also decrease. TOS rules differ. In CONUS, the goal is four years TOS. Most officers don't serve the full four years because of branch qualification, professional development (school selection), etc. OCONUS long tours are normally three years, but if one has a fully funded PCS within the command (e.g., USAREUR), known as a COT (consecutive overseas tour), then one must serve a total of 48 months OCONUS, unless a waiver, known as a stability break, or STABREAK, is approved.

STABREAKs are used when TOS will be less than that required by PCS rules (i.e., four years CONUS, three years OCONUS long tour, one year OCONUS short tour, etc.). Approval authority for STABREAKs runs the gamut from the chief of a career management division to the Assistant Secretary of the Army (Manpower and Reserve Affairs). Any proposed assignment that involves a STABREAK must meet a valid Army requirement and pass the "makes sense" test or it won't be approved. We won't release a request for orders (RFOs) that requires a STABREAK until the STABREAK is approved. STABREAKs can take time and delay RFOs, even though the assignment is a foregone conclusion, and the transportation appointment is fast approaching.

Professional development directly affects assignments. Captains and majors will normally not be available for nominative or non-troop assignments until after they are branch qualified. We work very hard to assign officers to locations where they have the opportunity to get branch qualified. Once that branch qualification is achieved, officers are eligible for non-troop functional area, 01A (branch immaterial), or 02A (combat arms immaterial) assignments. Sometimes, as mentioned earlier, we'll put the cart before the horse and target a non-branch-qualified officer against a functional area or branch immaterial position at a troop location so he can eventually "walk into" a branch qualifying job.

Regardless of where you're assigned, job performance is important. Some officers seem to feel that only branch qualifying jobs are important. Wrong! If you fall off the mark in any job, you've placed yourself at risk for advancement. I've seen files of officers who've "maxed" the branch qualifying jobs, but done poorly in others, and were not selected for CGSC, battalion command, etc. The moral is — maintain a sustained high manner of performance irrespective of assignment; don't just peak for the branch qualification jobs.

Nominative positions are non-troop assignments to commands that are authorized to screen potential assignees. The initial requirement is that the nominee be branch qualified. Unique requirements, such as grade point average, GRE score, manner of performance, etc., are also used by the gaining command in approving nominees. Most of the nominative positions we handle are in USMA, USAREC, Cadet Command, PERSCOM, DA staff, and joint staff. When an officer is nominated for a position, we won't consider him for another position until the selection is made. Virtually all of the nominations are against FA, O1A, or 02A positions.

Joint assignments have their own unique requirements. The vast majority of joint positions are field grade jobs in functional areas. Minimum joint tours are for three years unless an officer is approved for a critical occupational specialty (COS) takeout after the first two years of his initial joint tour. OJCS nominations are required by law to have three candidates for every position (unless one of the candidates is a JSO already, then only two are required); all other joint nom-

inations require only one candidate. Under the joint professional development program, officers who are either BZ selectees to major or due course, first-look selectees for resident CGSC schooling are programmed, in most cases, for an initial joint tour before they are eligible for SSC. Officers who have earned the 3L (JSO) skill identifier, and meet all the criteria (i.e., JPME and full credit for an initial joint tour) are eligible for future assignments to critical joint positions, but they must also serve a minimum of three years in that assignment with no possibility of parole.

The Officer Personnel Management System (OPMS) codified the dual track system, in which the majority of armor officers are "dual-tracked," i.e., Armor (12) and a functional area. Descriptions of each functional area and its professional development requirements are found in DA Pamphlet 600-3. Some of the functional areas require advanced civil schooling (ACS), followed by a utilization tour. Once an officer is "branch qualified" in his functional area, he can expect repetitive tours in that functional area when he's not in an armor assignment. The higher the rank, the more time you're likely to spend in your functional area. Caution: Some functional areas require a lot of time away from troop units. For example, an FAO (FA 48) can receive two years of ACS, followed by a three-year utilization tour. If he then goes to CGSC, he's spent six years away from troops. My advice is to plot out potential timelines based on your career aspirations and goals. Include in the timeline the mandatory professional development needed in both Armor and your functional area. In choosing your functional area, remember that the designation is made in your fifth year of active federal commissioned service and is based on needs of the Army, academic background and performance, personal desires, and overall manner of performance. Be reasonable in your request — history majors, for example, normally are not admitted into FA 49 (ORSA) or 52 (Nuclear Weapons)! You should also remember that your functional area assignment officer has a large part to play in your assignments; if we get you for one key armor assignment, he may put a string on your services for your next assignment.

We use timelines to plot the professional development of each armor officer, second lieutenant through lieutenant colonel (see Figure 2). Factored into the timeline are PCS constraints (time-on-station), tour equity (CONUS vs OCONUS), the next promotion window, the next school window, and branch qualification requirements for both armor and the functional area. We use the timeline to determine if a proposed assignment makes sense and meets the professional development needs of the officer. As an example, many of the majors attending CGSC require branch qualification after they graduate, but they only have two years left to serve as an S3 or XO before PZ to lieutenant colonel. Some of them still request participation in the Advanced Military Studies Program (AMSP) at Fort Leavenworth after graduation. The AMSP consists of one additional year of study at CGSC, followed by a one-year utilization tour at either division or corps level. Attempting to "flip-flop" and go to a battalion first before serving the utilization tour is not guaranteed. Without branch qualification, selection for promotion is much riskier. In the example above, the timeline does not support AMSP and we'll recommend against it.

"Homesteading" is defined as remaining in one place too long or having repetitive tours to the same post or command. Homesteading is the antithesis of tour equity. Selection boards tell us that even the perception of homesteading can disadvantage an officer, especially when, everything else being equal, he's being compared to another officer who has a variety of different CONUS and OCONUS assignments. We will stress the danger of homesteading to anyone who insists that he wants another five years at "good ol' Fort Apache."

"Blackbook" nominations are a special category in that they are for assignments at the highest echelon of the military or the national government. Examples are jobs in the Office of the Chief of Staff of the Army, Offices of the Secretary of the Army or the Secretary of Defense, or in the Offices of either the President or the Vice President. Some blackbook nominations require discussion with the officer, while others prohibit any dialogue. Virtually all of the blackbook nominations come down as "shotguns," and some officers, when approved, must move with the speed of light. A key point here is — don't ask for a blackbook assignment. If your file is supportive of a blackbook assignment, and one opens up, and you're available, then you'll be asked (or told, as the case may be).

The slating process for certain schools and commands can be high adventure. For schools such as CGSC and SSC, we slate officers to the schools based on their professional development status, FAs, timelines, and projected assignments. For example, a major enroute to CGSC who has been a battalion S3 and completed non-resident CGSC will be a prime candidate to attend either a foreign or sister service school. A lieutenant colonel without a master's degree will be a prime candidate for either Army or Naval War College, whereas one with a masters degree who is not a JSO is likely to get slated for either National War College or ICAF. Slating for post-school assignments is also challenging. For CGSC graduates, those requiring branch qualification are targeted against troop units, while those who are already branch qualified, or with four years in their timeline before PZ to lieutenant colonel, will probably be assigned to joint

MACOM or HQDA staff assignments. SSC graduates without ARSTAFF experience are likely to learn the Pentagon experience firsthand, while most of the NDU graduates will serve next in OJCS, DOD, joint MACOMs, etc. Slating lieutenant colonels for battalion or squadron command involves strict adherence to guidelines established by both the CSA and the DCSPER. The officer's desires are a prime consideration, but when he's been in CONUS for eight to ten years and all he requests are CONUS units, he's swimming upstream at flood stage because he's a prime candidate for an OCONUS command. We don't discuss list status with anyone before its release — period.

One last item on assignments. As mentioned earlier, we take validated requisitions and fill them with the best qualified and most available officer. Once we release the RFO, the officer belongs to the gaining command. We do not pinpoint an officer's assignment, that's done by his gaining command, which has the authority to divert him from the position originally advertised. We do our level best to ensure that officers are placed in positions that advance their professional development. It helps when the officer actively coordinates his assignment with his gaining command.

OERs

OERs send a very strong message to selection board members. Everyone involved in the process, rated officers as well as rating officials, must understand thoroughly how OERs are used. When you're writing an OER, remember that it's a written communication to a board. The OER speaks of an officer's performance and potential to every type of selection board, whether it's a promotion, command, or retention board. In other words, an OER is a written instrument through which you can tell each board member, regardless of experience or branch, about an individual's performance and potential. The OER's impact is enormous, and its importance should never be taken lightly.

Write the OER as clearly and concisely as possible. Be succinct. Be clear — don't write in ambiguous terms. Don't feel compelled to fill in every blank space with prose. Before you sign the OER, read it as if you were a selection board member. What impression of this officer do you gain from the word picture that you've created in the OER?

The OER must be error-free. Most units don't have world-class typists; nonetheless, don't give up and accept any errors. Treat every OER that you sign as if it were your own. Ensure that social security numbers and the OERs' time periods are the same on both the front and back of the form (Make sure the name's the same as well). The current APFT and height/weight data must be entered on the front side. Don't use acronyms unless they've been spelled out earlier; remember, many of the board members are not from Armor Branch and may be ignorant of the acronyms we take for granted.

The current OER, DA Form 67-8, remains a healthy and valuable tool to selection boards; however, any entry in the rater's portion other than a "1" in the professional competence block (part IVa) on the front side, or "box check-offs" in the performance and potential blocks (parts Vb and Vd) on the back, are serious discriminators. If you've left the professional ethics block in part IVb blank, you're sending a negative message to a board. Any ratings in the rater's portion that deviate from what I've described above do not meet the criteria to be termed adverse, but the message received by any board member is that, during this particular rating period, the officer failed to meet standard and should not be selected.

Most boards can spend only from one and one-half to a maximum of three minutes per file. Each OER is printed on microfiche (except for those that arrived in PERSCOM just before the board deadline and could not be microfiched in time). Each board member will view at least 200-400 files per day on a microfiche reader. With that in mind, OERs must be readable. Ensure the type on the OER is dark enough so it reproduces well on the microfiche. Center your narrative so the block's sides, top, and bottom have plenty of space. Write the narrative so that the first and last sentences carry the gist of what you want to say.

The senior rater (SR) profile, when combined with the SR's narrative, conveys the total message of the rating. If the words in the narrative are not supported by the SR profile (i.e., outstanding narrative, but the SR profile is below center of mass [BCOM]), the board member receives conflicting signals. What is the SR trying to say; what is his intent? Virtually every DA selection board comments that using the second block as the SR's center of mass (COM) is the one profile least subject to misinterpretation. Boards have also commented that a second block COM rating fares better perceptually than a third block COM.

One of the most damaging events in writing OERs occurs when the SR loses control of his profile and inadvertently gives the rated officer a BCOM report. I recommend that each rated officer receive a face-to-face counseling with his SR, during which the SR tells the officer what his profile is. SRs should keep their profiles updated — when in doubt, call PERSCOM's Evaluation Systems Office at DSN 221-9659/60 or commercial (703) 325-9659 and ask for an update. Don't guess if you're unsure

— a mistake here, however innocent, can inadvertently damage a career beyond repair.

I've seen several recurring problems with OERs received in Armor Branch. One problem is caused by "batching," which occurs when any agency processing OERs for shipment to PERSCOM fails to send them as they are received, but holds them until either a minimum number is reached or a certain day arrives, at which time the "batch" is shipped to PERSCOM. If the SR is carefully managing his SR profile and rates officers based on when he signs the reports, batching can defeat his intent. For example, a COM report, signed on one day and then delayed in its shipment to PERSCOM as a result of "batching," may really be a BCOM report because the SR profile is NOT updated on the day an OER (or OERs) is signed, but when it's processed by the PERSCOM Evaluation Systems Office (e.g., your SR signature date affects a profile restart, not the OER's order of processing). If the batch contains a number of OERs from the same SR who ended up rating other officers of the same rank higher, the COM report can become a BCOM report.

SR profile restarts can also cause problems. If you call the PERSCOM Evaluation Systems Office to restart your profile, make a memo for record of the call, which covers which rank(s) you restarted and with whom you coordinated the restart. CAUTION: A senior rater may selectively restart one, two, or more grades. The choice is up to the senior rater. Senior raters should NOT attempt to shift philosophies in the field without a "DA-accomplished restart" because it's risky and can hurt their rated officers. Restarts are always made effective on the first day of the month and are keyed to the senior rater signature date on the OER; therefore, it's doubly important that senior raters always date their own signatures when signing the OER. If you sign an OER before your effective restart date, but it arrives in PERSCOM after the effective restart date, the SR profile entered on the OER will be the old one! Why? Your signature date determines which SR profile will be used.

Don't use gimmicks such as underlining, bold or italic print, compressed letters, etc. The OER will be returned for correction (which may change the senior rater profile because of the time it takes to correct and return the report).

SR intent can be clouded by an apparent disconnect between the SR profile and the narrative. Great words such as "select for LTC and battalion command ahead of his peers," when combined with either a COM or BCOM SR profile, does not constitute a credible report. SRs should also focus their narrative on the rated officer's potential — just briefly comment on performance. If the officer is close to or at the maximum allowable screen weight for his age and height, but is in excellent physical shape, say so!

Finally, SRs do a disservice to their rated officers when OER timing precludes a SR rating. These "basic vanilla" reports, especially in branch qualifying positions, do not carry the same weight with board members as do similar reports with SR ratings (put yourself in the same seat as a board member — perceptually, which report will seem stronger: one with, or one without, the SR rating?). Also, those SRs who are physically separated from those whom they senior rate should make a conscious effort to visit/contact those officers as often as possible. Avoid the perception that those in close proximity will do better than those in the "outback."

ORBs

The ORB is an important management tool, which provides a "snapshot" of the officer's past assignments and other basic data to commanders, personnel managers, and board members. Avoid acronyms or nonstandard abbreviations that don't make sense — spell out duty titles and ensure they match the job titles on the OERs. Ensure also that the PULHES, height/weight, and photo date are all current and correct. Height/weight mismatches between OERs and ORBs are a red flag to boards. Be patient; SIDPERS can be maddening in its slowness in updating or correcting ORBs. Eliminate repetitive entries in the assignment history portion.

Photos

Take one every five years or when promoted. If you're prone to be heavy, keep it current. Wrinkled uniform, improper branch brass (regimental numbers or cavalry brass), etc., are all no-nos. Wearing unauthorized awards will result in serious adverse actions. Many board members also comment on the negative effect of a mustache. Take a friend to look through the lens of the camera before the picture is snapped; if he doesn't like what he sees, get the problem corrected. If the photographer isn't taping/clipping/smoothing your uniform to eliminate creases, wrinkles, etc., he or she is doing you a disservice, and every blemish will show up on the photo. Some official photos make the officer look as if he had slept in his uniform. Finally, don't forget the edge dressing on the soles of those otherwise shiny shoes.

Things You Can Do

Stay in touch with your branch assignment officer. Keep him informed of your current unit, job, address, and phone number. Send in your preference statement after you've been on station at least one year. Be realistic in what you request (someone who had a 2.2 GPA in college probably won't qualify for fully-funded ACS in nuclear physics); make your requests for your next assignment after you've

read DA Pam 600-3. If you're projected to be reassigned by your functional area manager, remember that Armor Branch must be kept informed. Battalion and brigade commanders should let Branch know of any plans for an officer before we enter the standard assignment cycle; otherwise, we may nominate the officer for another assignment. If he's placed on orders, revocation becomes very difficult. Commanders should also tell Branch who they feel should be observer/controllers at NTC/CMTC, who should be small group instructors, etc. Your input helps us in planning assignments!

Commanders should also endeavor to give as many officers as possible the chance to serve in a branch qualifying position. To assign a captain as a battalion S3 precludes a deserving major from a chance to get branch qualified. Unless the captain is promoted to major while in the job, Branch won't always credit him with branch qualification; however, if a MACOM personnel manager sees on his ORB that he served as a battalion S3, he may serve his majority without any battalion-level assignments. Would you like to compete for lieutenant colonel and battalion command under those conditions? Finally, CAS^3 completion is mandatory for all YG 79 and later officers before their ninth year of AFCS; otherwise, they cannot be slated for CGSC attendance, even if selected.

Myths

Let's examine some of the myths that circulate about how we operate. My favorite is, "If I don't call Branch, they'll forget about me. If I do call, they'll remember me and I'll get the first unpleasant job that comes up!" Branch does use automatic data processing to keep track of our officers. We maintain a current DTAV (Date of Availability) roster for every grade. When you set foot on the ground at your new assignment, the clock starts. The type of assignment (CONUS, long tour, short tour, all others, etc.) determines when we look at your normal availability. When you go into a branch-qualifying job, we automatically begin tracking when you'll be available for a nominative job, which requires branch-qualified officers. "Laying low" doesn't work, especially because we may target you for one job, when another, in which you'd be happier, is also available, but you're maintaining radio listening silence. Also, please let us know whenever your status changes, such as marital status. If you marry another service member, enroll in the joint domicile program so we can coordinate with your spouse's branch; otherwise, you could end up in separate locations, even when a joint domicile location was available.

Some officers also think that we maintain a "Hit List" of those who've made our job very difficult. False — we maintain copies of phone conversations, memos and letters which relate to professional development and assignments, etc., because we must be able to reconstruct what was said or promised. Regardless of how painful an assignment may be, we do NOT keep a list for "payback." If I or anyone in PERSCOM found such a list, the offender would be relieved immediately.

"But you said..." What an assignment officer tells you one day may change the next; not because he speaks with forked tongue, but because the truth changes, based on any number of variables over which we may have no control. A job offered one day may be unavailable the next. The selection criteria for a nominative assignment may be changed five minutes after the assignment officer talks to you. We deal in a system designed and operated by humans —and it's not perfect. Yes, we have pressures to fill requisitions, but we'll do everything possible and legal to match your desires with Army requirements.

"I thought you guys knew everything in PERSCOM..." See the above paragraph — the truth changes (especially during periods of high adventure such as Operations DESERT SHIELD and STORM). Many times during the war with Iraq, we didn't know where an officer was because the SIDPERS was slow or nonexistent. We sure won't know if an officer is being considered for a second command — or a lateral transfer — without the officer or his unit/G1 telling us. Please keep us informed, or we're forced to plan some assignments in a vacuum, or based on obsolete information.

"You guys maintain an informal order-of-merit list (OML) at Branch." Absolutely not! The assignment officers get to know their population very well and can identify quickly some of the "superstars" or "fast burners" as well as the "at-risk officers." We do NOT — words twice — we do NOT maintain any OML, period. Only a DA selection board (promotion, CGSC, etc.) can establish an authorized OML, and that OML is NOT shared with or used by Branch for anything. If a "blackbook" nomination pops up, the assignment officer analyzes the requirements and, knowing his population pretty well and knowing who's generally available and meets the criteria, makes the match and runs it through the Branch Chief for approval. We do not maintain an OML or "favorite sons" roster.

"There must be a secret code for the 'superstud' files." Again, absolutely not! No file has any special coding such as a color stripe that screams "here's a fast burner!" We do use temporary "flash" cards, which go inside the left side of the CMIF to identify and highlight special considerations, such as CGSC or command se-

lectee, a BZ selectee (he loses one year from his timeline), sequential assignment commitments, or joint duty, which precludes any reassignment without the concurrence of the joint management office.

The last myth deals with a "first team—second team" perception. Too many officers who did not deploy on Operations DESERT SHIELD and DESERT STORM seem to think that they're no longer competitive with their peers who were lucky enough to deploy. I strongly disagree with that perception. If you've got a solid file, you're competitive with all of your contemporaries, regardless of combat experience. Eisenhower "missed" World War I because he spent the war in CONUS training soldiers. He persevered, kept doing well, and got his chance later. History has a habit of repeating itself. At least we're still moving ahead with promotions. At the end of World War I, Marshall and others went from colonel to captain — and had to restart their climb back up the ranks. At the end of World War II and Korea, officers were frozen in grade for up to 10 years! Do your jobs to the best of your ability and "keep your dauber up."

Conclusions

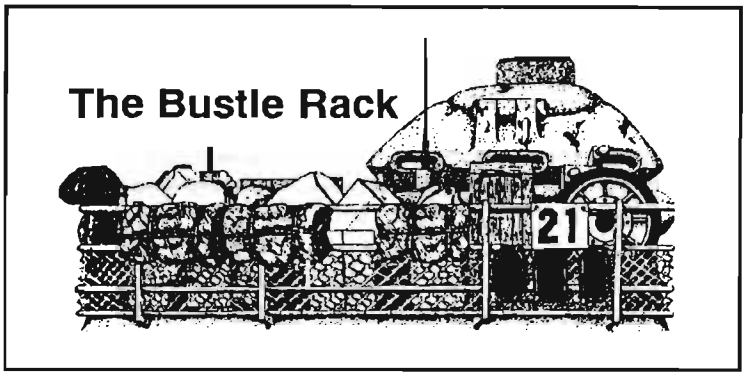
The faces in Armor Branch change quite frequently, but the underlying goal of doing what's right for armor officers has not changed — and will not change. We who are privileged to serve as branch career managers firmly believe that we are here to help both our officers and our Army.

Remember also that when the branch chief or an assignment officer doesn't tell you what you want to hear — don't shoot the messenger! Regardless of how much it hurts, we are committed to "telling it like it is" — our best shot at predicting what may or could happen in an imperfect world. We certainly make mistakes, but every decision made is based on the best information on hand. If you receive a "buckup" letter from the branch chief based on a poor OER, start working on improving your performance. Stay in touch! Sometimes we're overly committed to board preparation (ensuring your files are ready and complete for the next scheduled board that affects your year group), making assignments, attending meetings, TDY, etc. If we can't talk to you at once, and you're calling long distance at personal expense, give your name, phone number, and reason for your call; we'll return your call as fast as we can. Keep in mind that, in most cases, we're only one deep at each assignment desk.

If you haven't acquainted yourself with DA Pam 600-3, please break the seal and read the Armor and applicable functional area chapters. Look for the new version, which should be available in 1992. Once again, we use DA Pam 600-3 to chart professional development requirements for each officer, which affects how we program the next assignment to support that professional development. Although some of the criteria and/or requirements in this article will change, how Branch operates won't.

It's now 1930 hrs. and you're trying to get home for supper and a quick nap before your 0200 UCOFT session. You've convinced the motor officer that if you don't get that 02-priority part for your tank NOW, he'll be well qualified to sing in the Vienna Boys' Choir. You had a nice discussion with your battalion commander about what you need to do next and you've just finished rereading the applicable portions of DA Pam 600-3. Because you served as a battalion S3 air for 18 months before taking command of your company, you know that you're probably ripe to move when you relinquish command. You wonder if Branch really read the preference statement you sent in right after taking command — the one which requested ACS to begin your FA 48 qualification. You figure that you'll invest two years in ACS, followed by a three-year utilization tour. Your DLAB score was 130, so language training is a good possibility. Just then, your phone rings. You answer it and hear your assignment officer say, "Hey, how'd you like to spend a year at the Defense Language Institute in the Presidio of Monterey studying Mandarin Chinese with a follow-on assignment to the People's Republic of China? ...Hello?.....Hello?!?!"

Colonel Stephen E. Wilson is currently assigned as the Chief, Operations and Contingency Plans Division, Office of the Deputy Chief of Staff for Operations and Plans, Headquarters, Department of the Army. Previously, he served as the Chief, Armor Branch, PERSCOM; commander, 3-32 and 2-67 Armor, 3d AD; XO, 3d Bde, 3d AD; XO, 3-32 Armor, 3d AD; S3, 1-4 Cavalry, 1st ID and 1-17 Cavalry, 82d Airborne Div.; and commander, Troop B, 1-17 Cavalry, 82d Airborne Division and Troop B, 1-1 Cavalry, Americal Division. Other assignments include instructor, US Army Infantry School; and S3 Air, 1st Bde, 1st AD and 1-17 Cavalry, 82d Airborne Division. Colonel Wilson is a 1968 graduate of the Virginia Military Institute with a BA in History and an MPA from Shippensburg University. He is a 1980 graduate of the Army Command and General Staff College, a 1983 graduate of the Armed Forces Staff College, and a 1989 graduate of the US Army War College.



DTAFR Opens New E-Mail Hot Line

The Directorate of Total Armor Force Readiness (DTAFR) has been in operation at Fort Knox since February 1990. Its primary mission is to assist the Total Armor Force to achieve the highest state of readiness possible. To do this, DTAFR will assist you in the areas of personnel, equipment, training material, repair parts supply, and safety. DTAFR is not intended to circumvent your normal chain of command, but will help in instances when normal channels are working too slowly, or not at all. If it cannot immediately find an answer to your issue, it will track it until someone does have a solution.

Access to DTAFR is easy, 24 hours-a-day, worldwide. Call DSN 464-TANK, or commercial 502-624-TANK. Your message will be recorded on a hot line, and a rapid response provided directly to you. DTAFR is also now available via electronic mail. The PROFS address is:

KNO1(TANKHELP)

The DDN address is:

TANKHELP%KNO1@LEAV-emh.army.mil

Some of the support that DTAFR provided during Operations DESERT SHIELD and STORM are good examples of what it can do on a regular basis: coordinated emergency shipment of air panel markers to Southwest Asia (SWA), rapidly disseminated information to SWA on dangers of tankers wearing jungle boots and coordinated contract reestablishment and emergency shipment of V-packs to units deploying to SWA. These are only a few examples of successful missions that DTAFR has accomplished to help armor and cavalry units, Active and Reserve.

In the near future, DTAFR will establish a 1-800 phone number to make access even easier. The recorded hot line will also offer message choices to users calling from a touch tone phone. When these services become available, DTAFR will notify you of the exact operating features available. In the interim, please feel free to use the services currently available so that we may provide you with any assistance you need in maintaining your readiness.

RC NCOES Training

Reserve Component (RC) Armor and Cavalry NCOES training has undergone many changes in the last six years. Before 1985, very little Armor training designed especially for the RC NCOs existed. Today there are both NCO Basic and Advance Courses for MOS 19E, 19K, and 19D. These courses qualify the NCOs as tank commanders, vehicle commanders, and platoon sergeants. They include such subjects as leadership, gunnery, tactics, land navigation, maintenance, mine warfare, NBC, and communications. The courses are conducted by both United States Army Reserve Forces Schools and National Guard Academies. Both the BNCOC- and ANCOC-level courses use a combination of Inactive Duty Training (IDT) and Active Duty Training (ADT) phases. The IDT phases train Common Leader subjects (47-hours BNCOC and 109-hours ANCOC). All Armor Branch training is in the ADT phases.

Two RC ANCOCs are available, 19E/K40 and 19D40. Each course contains a single IDT and two ADT periods. The requirement for TWO two-week ADT periods is because of the amount of material that must be covered. During each ADT, the soldier is trained in platoon-level tactics using the "crawl-walk-run" method. He is taught the basic principles of each subject in a classroom setting where he completes written and terrain board exercises. At the end of each ADT phase, he must put the classroom lessons into practice during a 36-hour field situational training exercise/evaluation. The two two-week ADTs can be combined into a single 23-day ADT. There is no way to complete both ADT phases in one 14- or even 17-day period. This is outlined in the Program of Instruction and Course Management Plan for each course. Any other changes to the courses must be preapproved by the Armor School.

Three BNCOC-level courses currently exist: 19E30, 19K30, and 19D30 M113/ITV. Both the 19E and 19K courses are undergoing major revisions. The ADT phases of these two courses are almost entirely devoted to tank gunnery. The revised ver-

FY 92 Upcoming Courses

19D Scouts

New courses available for MOS 19D:
- M551 Sheridan Course at Fort Knox, Ky.
- Battle Staff Course at Ft. Bliss, Texas.

19D ANCOC FY 92 Class Dates
- 7 Feb-18 May 92
- 25 Aug-10 Dec 92

BFV Master Gunner

Class	Date
92-001	Oct-Dec 91
92-002	Jan-Mar 92
92-003	Mar-May 92

19E/K

M1TC³

Class	Date
92-001	14 Oct-25 Oct 91
92-002	27 Oct-8 Nov 91
92-003	11 Nov-22 Nov 91
92-004	1 Dec-13 Dec 91
92-005	5 Jan-17 Jan 92

M1 Master Gunner

Class	Date
92-002	6 Jan-25 Mar 92
92-003	2 Mar-18 May 92
92-004	13 Apr-30 Jun 92
92-005	1 Jun-18 Aug 92
92-006	13 Jul-29 Sep 92

M1 Master Gunner Transition

Class	Date
92-001	4 Nov-5 Dec 91
92-002	10 Feb-11 Mar 92

sions will train gunnery and tactics in a single ADT. The tactics portion will stress the tank commander's role in platoon-level operations and conclude with a field situational training exercise/evaluation. It is projected that the new courses will be ready for use in FY 92. Starting in FY 93, the Reserve Component Tank Commanders Course (Gowen Field, Idaho) and Tank Commanders Certification Course (Fort Knox) will no longer be acceptable as substitutes for Phase II or Armor BNCOC. The student must attend a Phase II taught by a USARF school or NG Academy.

Courses to support 19D Skill Level 3 are being increased. Besides the 19D30 M113/ITV course, the Armor School is developing two more RC 19D BNCOCs, one for M3 Bradley and one for HMMWV-equipped soldiers. These will be ready in FY 92 and FY 93 respectively.

Armor Trainer Update Conference

The annual Armor Trainer Update Conference is scheduled for 20-23 November 1991 at Fort Knox, Ky. The theme for this year's conference is "The Total Armor Force."

The conference provides information on safety, leader development, training, doctrine, force structure, equipment, and mission support. National Guard and Reserve armor and cavalry officers and NCOs, and personnel who work in related areas, should plan to attend this update.

Personnel who plan to attend should preregister by contacting Cheryl Hawkins or Troy Schaffner, Directorate of Total Armor Force Readiness, ATZK-TFR, at DSN 464-7114/1543 or commercial 502-624-7114/1543. Registration will be held from 1000-2100 hrs November 20, and 0700-0800 November 21-23 in Bldg. 2369. A no-host social is scheduled for 1800-2000 hrs, November 20 in the Candlelight Room at the Officers Club, and a dinner buffet is scheduled for 1830-2200 hrs, November 21, in the Regimental Room. Tickets for the dinner buffet will be available at registration.

Military personnel may wear BDUs for all events.

Detroit Tank Plant Closes

Tank assembly at the Detroit Arsenal Tank Plant, Warren, Mich., ceased at the start of September. General Dynamics Land Systems Division, which operated the plant, will consolidate tank assembly at its Lima, Ohio, facility. The Detroit plant will continue to produce gun mounts, with a reduced work force.

Some 44,649 tanks were produced at the Detroit plant. With U.S. Army and foreign military sales, GDLS should continue to produce M1-series tanks through the late 1990s.

Congratulations!

Three army scout platoons were named the best in Europe at U.S. Army, Europe's recent Cavalry Cup Competition. The units are 1st Platoon, A Troop, 1st Squadron, 11th Armored Cavalry Regiment; Scout Platoon, 3d Battalion, 12th Infantry Regiment, 8th Infantry Division; and Scout Platoon, 4th Battalion, 8th Infantry Regiment, 8th Infantry Division.

The competition, held at Wildflecken Training Area, tested competitors on physical challenges, marksmanship, screen missions, zone reconnaissance, night dismounted reconnaissance patrols, and other cavalry skills.

LETTERS

Continued from Page 2

concern is very real, and we would like to thank SFC Wells for providing the opportunity to address this very important subject.

Let's start by saying that we continue to believe in and support the Master Gunner Programs for both Abrams and Bradley. Well trained and motivated master gunners have significantly improved the gunnery skills and combat readiness of the Armor Force. Overall, they have strengthened our ability to close with and destroy the enemy. At least part of our success in the Gulf War is because of the hard work and dedication that master gunners demonstrated in training Abrams and Bradley crews. The master gunner's role is vital to Armor's continued dominance of the battlefield.

Likewise, it is the experienced, seasoned platoon sergeant who provides the leadership at the cutting edge of the battle. Experience as a platoon sergeant is critical to the development of master sergeants and first sergeants. Inevitably, the key selection criteria for promotion to master sergeant is an individual soldier's demonstrated potential for success as a first sergeant. It has long been accepted with the Armor Force that far and away the best indicator of first sergeant material (short of extended service as an acting first sergeant) is superior performance as a platoon sergeant. The Armor Enlisted Professional Development Guide recommends NCOs serve as platoon sergeants for 18-24 months in order to qualify for promotion to master sergeant. The Armor Center briefs this recommendation to each selection board as they begin deliberation.

For what may have been legitimate mission-critical reasons, SFC Wells was not offered an opportunity to serve the recommended period as a platoon sergeant. This may affect his competitiveness for promotion.

What can be done to minimize future situations such as one in which SFC Wells found himself? We all play a part in the solution. First, we at the Armor Center must continually review and revise, as needed, the standards we set for our soldiers. These standards include the promotion prerequisites already discussed. We believe that strict adherence to this policy will create the opportunities for each of our quality NCOs to serve as a platoon sergeant. Second, commanders and command sergeants major at all levels must strive to place deserving NCOs into platoon sergeant positions and rotate them every 18-24 months. Last, the soldier, while continuing to develop his technical, tactical, and leadership skills, should constantly seek the opportunity to serve as a platoon sergeant. Only if every player conscientiously strives to do his part, can we reduce these occurrences.

Our victory in the desert can be credited to having leaders in the 1970s and 1980s able to look beyond their immediate concerns. Their foresight and determination helped build the highly trained, dedicated, and professional force we fielded in the Persian Gulf. If we are to succeed in the future, we must continue to do so.

DENNIS H. LONG
COL, Armor
Director, Total Armor Force Readiness
Ft. Knox, Ky.

BOOKS

Assessing the Firepower Factor

Firepower in Limited War by Robert H. Scales, Jr. Washington, DC: U.S. Government Printing Office, 1990. 291 pages. $9.50.

As the dust settles from the recent Gulf War and we digest the multitude of "lessons learned," there is little question that overwhelming Allied firepower played a decisive role in the smashing coalition victory. However, we must place these "lessons learned" concerning firepower in a broader historical context to be totally useful and applicable. In General Scales' recent work, he provides this necessary historical perspective on the role of firepower in modern war.

Within the scope of his book, Scales reaches his conclusions by examining the employment of firepower in French Indochina, the American experience in Vietnam, the Soviet intervention in Afghanistan, and the British expeditionary efforts in the Falklands. Each of these four post-WWII case studies provides the reader with a clear picture of the roles, capabilities, and limitations of firepower.

For military historians, Scales' opening chapter, "Firepower in the American Way of War," is a particularly insightful synthesis of the evolution of 20th century firepower doctrine. Noted military historian Gunther Rothenberg recently remarked to an Armor colleague of mine that this chapter was "as fine a piece as he has read recently." The reader will share Rothenberg's assessment. It sets the stage well for the heart of the work, the four case studies. In particular, officers of the combat arms team will benefit from Scales' observations of the American involvement in Vietnam, the second of these case studies.

On our actions in Vietnam, he concludes, "If a single lesson is to be learned from the example of Vietnam it is that a finite limit exists to what modern firepower can achieve in limited war, no matter how sophisticated the ordnance or how intelligently it is applied." Again, in spite of the post-war euphoria, this is a lesson that should not be soon forgotten by combat commanders and policymakers alike.

Similarly, concerning the role of firepower in future wars, Scales presents equally cogent conclusions. A prospective reader should not be misled by the book's title. The vast majority of the author's observations are equally applicable in any scenario, whether it be a low-, mid-, or high-intensity conflict. Maneuver commanders must understand what fire support can and cannot do for them. According to Scales, maneuver commanders must ensure that their fire support coordinators apply firepower in a judicious manner, their peacetime training must stress the decentralization of the control of firepower to the lowest level of operational command possible, and they must develop closer Army-Air Force ties.

The bottom line on the book, as a minimum, is that *Firepower* is a "must read" for all combat arms officers. *Firepower* provides a vehicle for a series of useful OPD sessions in any maneuver unit. Maneuver commanders must insist that their fire support coordinators read and understand General Scales' superb work. The time spent considering *Firepower* ultimately will lead to a more "historically minded" and better trained maneuver-fire support team.

LESLIE HOWARD BELKNAP
CPT, Field Artillery
Department of History
United States Military Academy
West Point, N.Y.

The Drift to War 1922-1939 by Richard Lamb, St. Martin's Press, New York, 1991. 372 pages. $24.95.

This is a work of revisionist history. Mr. Lamb presents the reader an exhaustive series of facts that highlight the failure of British interwar policy toward Germany. He leads the reader through the incredible number of British governments during the interwar years, focusing on the policy — or lack of it — toward relations with Europe and Germany. The incautious reader can conclude Great Britain caused World War II.

Mr. Lamb writes a detailed historical narrative. He explores the impact of the Locarno Treaty, the Ethiopia crisis, and the interrelationship of world politics and economies. Mr. Lamb takes the reader into the inner workings of Britain's Foreign Ministry. He reveals back-channel messages, private letters, and diplomatic cables that formed government policies and positions. Mr. Lamb clearly tells what happened in the work of British diplomacy and politics.

But Mr. Lamb never ventures to tell the reader WHY decisions were made, why pre-Hitler German governments received little support from Great Britain, why Great Britain was anxious to appease Hitler. The series of British governments never articulated what today we call vital national interests. Mr. Lamb's narrative clearly shows the British government failed to communicate to the Germans and their allies its concerns on German expansionism. This failure drove Mussolini into the Axis camp, and caused the Soviets to cooperate with the Germans on Poland.

This is a very interesting book. For American readers, the utility is the order of the facts in the narrative. The book makes the reader **think!** Policy makers must clearly state national interests, and executors must understand the nuances of policy. This is not a book to take to Graf. The serious student of our profession can learn from this book, as a narrative of what happened and as a catalyst for thought.

KEVIN C.M. BENSON
MAJ, Armor
Ft. Leavenworth, Kan.

The Last Prussian: A Biography of Field Marshal Gerd von Rundstedt by Charles Messenger, Brassey's, McLean, Va., 1991. 321 pages. $24.95.

The half-century that has passed since the start of the Second World War has

produced innumerable volumes about the politics, battles, and leaders of that epic struggle. Among the most admired and least understood among the military leaders of the Third Reich has to be Field Marshal Gerd von Rundstedt. There's a rather simple explanation for this: unlike most of his fellow field marshals, von Rundstedt neither kept a diary nor did he write an autobiography after the war.

Only von Rundstedt's former chief of staff, General Guenther Blumentritt, has written with any "insider's" authority (*Von Rundstedt: the Soldier and the Man*, published in 1952). *The Last Prussian* does not change this fact; Charles Messenger is not an "insider" because he was not present when von Rundstedt was chief of staff of a corps in Grand Duke Karl's Army Group in the First World War, nor when he was the commander of Army Group A, which broke through the Ardennes in May 1940, nor when he was commander in chief of Army Group South in the early, heady days of Operation Barbarossa, nor with him when he realized the war was lost as commander in chief West in the final dark days in France, Belgium, and finally in Germany itself.

But Messenger is an accomplished historian and author with numerous books on World War II to his credit. More important, he knows first-hand about which he writes, for he was for many years an officer in the Royal Tank Regiment.

These contradictions give *The Last Prussian* its schizophrenic character. It is difficult enough to try and examine a man through the lens of history when we have first-hand sources that tell us something about the man and his times. But when we are left with only a lens that sheds an irregular pattern of light and dark on the subject, the mission becomes almost impossible.

Nevertheless, Messenger has done a valiant job in assembling what is available. He has obtained the few still existent letters the field marshal wrote to his family during the war, as well as copies of the efficiency reports written by von Rundstedt's superiors throughout his career. He has delved into the records of the Nuremberg war crimes trials, where the field marshal appeared as a witness for the defense on several occasions. And he has combed the words of von Rundstedt's contemporaries, friends, and former enemies. With these admittedly limited — and more often than not second-hand — sources to go on, Messenger has drawn a life-size portrait.

True, the portrait leaves much to the reader's imagination, as well as the reader's willingness to believe the author on the numerous occasions where he is left to conjecture "von Rundstedt must have" done this, or "had to have thought" that. Thus, the book would not stand up in a court of law. It will not be regarded as the "definitive" biography of the man, for unless a miracle happens and a long lost diary is located, there isn't enough available information to know for sure what he thought.

But given the available information, there's probably no one who will write a more definitive biography on the man who exemplified, in virtually everything he did, the code of the Prussian general staff officer. Above all else, the struggle von Rundstedt faced between the values of his upbringing and the values of the modern world makes *The Last Prussian* worth reading. He knew that Hitler was using him, but was unwilling to become personally involved in politics. Instead, he decided to stick it out and do the very best job possible, to uphold the honor and the code of being a soldier, and to ensure the soldiers entrusted to his care got the very best he had to offer.

The author clearly admires von Rundstedt. But he doesn't shy away from the harsh judgment that must be passed on a man who had numerous opportunities to change the course of German — and world — history, a man who had the prestige and influence, if anyone inside Nazi Germany did, but chose to ignore the changed reality and to continue to apply 19th century standards to 20th century problems.

DONALD C. SNEDEKER
LTC, Armor
On-Site Inspection Agency
Europe

Grand Strategies in Peace and War, edited by Paul Kennedy, Yale University Press, New Haven, Conn. 1991.

An anthology is always a difficult book to review. This anthology is doubly so. Normally, anthologies are very uneven. One or several of the essays will be outstanding, others are useful, and still others are marginal at best. Building from an outstanding individual effort in his own work, *The Rise and Fall of the Great Powers*, Professor Kennedy has edited an excellent collection of essays by some outstanding scholars. This anthology is more unified than many. The authors of the essays use several common themes throughout the work.

One of the most predominant themes is the non-military aspects of grand strategy and the importance of these to the overall success of the strategy. Another unifying theme is the problems of a great power in a period of perceived decline.

The book is divided into ten chapters. Three deal with the British experience. The first of these discusses the period of the War of Spanish Succession in the early 1700s. The next two cover the British experience in the 20th century. Then there are chapters on the Roman empire, imperial Spain in the mid-17th century, Germany under the Second Reich and the Third Reich, French grand strategy prior to the First and Second World Wars, and finally the Soviet Union.

Professor Kennedy uses the first chapter to introduce the themes he asked his collaborators to focus on and to lead us toward a broader definition of what the term grand strategy really means. He then returns in the last chapter to illuminate some of the more cogent lessons from the European experience for America today and in the future.

The second reason for the difficulty in reviewing this work is its focus on grand strategy. As a student of history, I found the book both fascinating and worthwhile, however, to the broader Armor community the book contains issues to which we have little input. To the serious student of either history or strategy, I highly recommend it as an outstanding collection; to the average Armor leader, it would be an interesting break from the tactical and technical reading on which we normally concentrate.

SFC JOHN T. BROOM
U.S. Army Armor School
Ft. Knox, Ky.

NEW SOVIET ARMORED VEHICLES

BMP-3 T-80U

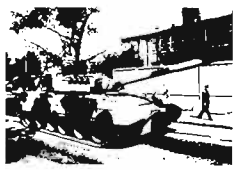
BMP-3

NOTE LARGE SPACE BETWEEN #2 AND #3 ROAD WHEELS AND 2 BOW MOUNTED 7.62mm MACHINE GUNS.

T-80U

T-80U IS AN IMPROVED VERSION OF THE T-80 TANK. DIFFERENCES INCLUDE NEW REACTIVE ARMOR AND STAND-OFF PLATES ON TURRET.

T-80U



FRONTAL SLOPE HAS NEW REACTIVE ARMOR.

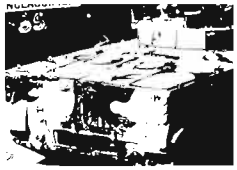
BMP-3

UNIQUE FEATURE IS SIDE-BY-SIDE 100mm MAIN GUN, 30mm CANNON, AND 7.62mm MG.

T-80U

NOTE PLATES ON LOWER PART OF FRONT SLOPE AND STAND-OFF PLATES ON TURRET.

BMP-3

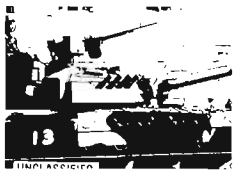


FUEL TANKS ARE INTERNAL, NOT ON BACK DOORS AS WITH BMP-1/2. TROOPS EXIT THRU TOP AND REAR HATCHES. ENGINE AND TRANSMISSION ARE IN BACK.

BMP-3

BMP-3 HAS AN ALUMINUM HULL, WITH STEEL AT VITAL POINTS. NOTE STAND-OFF PLATES ON SIDE OF TURRET, MOUNTING 6 SMOKE GRENADE LAUNCHERS.

T-80U



NOTE REINFORCED SIDE SKIRTS AND NEW CAMOUFLAGE PATTERN.

CHARACTERISTICS

	BMP-3	T-80U
MAIN ARMAMENT	100mm MAIN GUN, 30mm CANNON.	125mm MAIN GUN
MACHINE GUNS	2 X 7.62mm BOW MOUNTED, 1 X TURRET COAX	12.7mm ON TURRET • 7.62mm COAX
SPEED	65 kp/h	70-80 kp/h
RANGE	500 km MIN	480 km
CREW SIZE	3-- COMMANDER, GUNNER, DRIVER/MECHANIC	3- TANK COMMANDER, GUNNER, DRIVER/MECHANIC
PASSENGERS	6 MIN	
NBC PROTECTION	YES	YES

This 24-by-27-inch poster of new Soviet armored vehicles is the latest in a series on Threat tanks, armored vehicles, helicopters, and ATGMs to be produced by Threat Division, Directorate of Combat Developments, Fort Knox. Units may request copies by phoning DSN-464-AWTS or 502-624-AWTS.

PIN: 068749-000
U.S. Government Printing Office 1991
748-050/91-5