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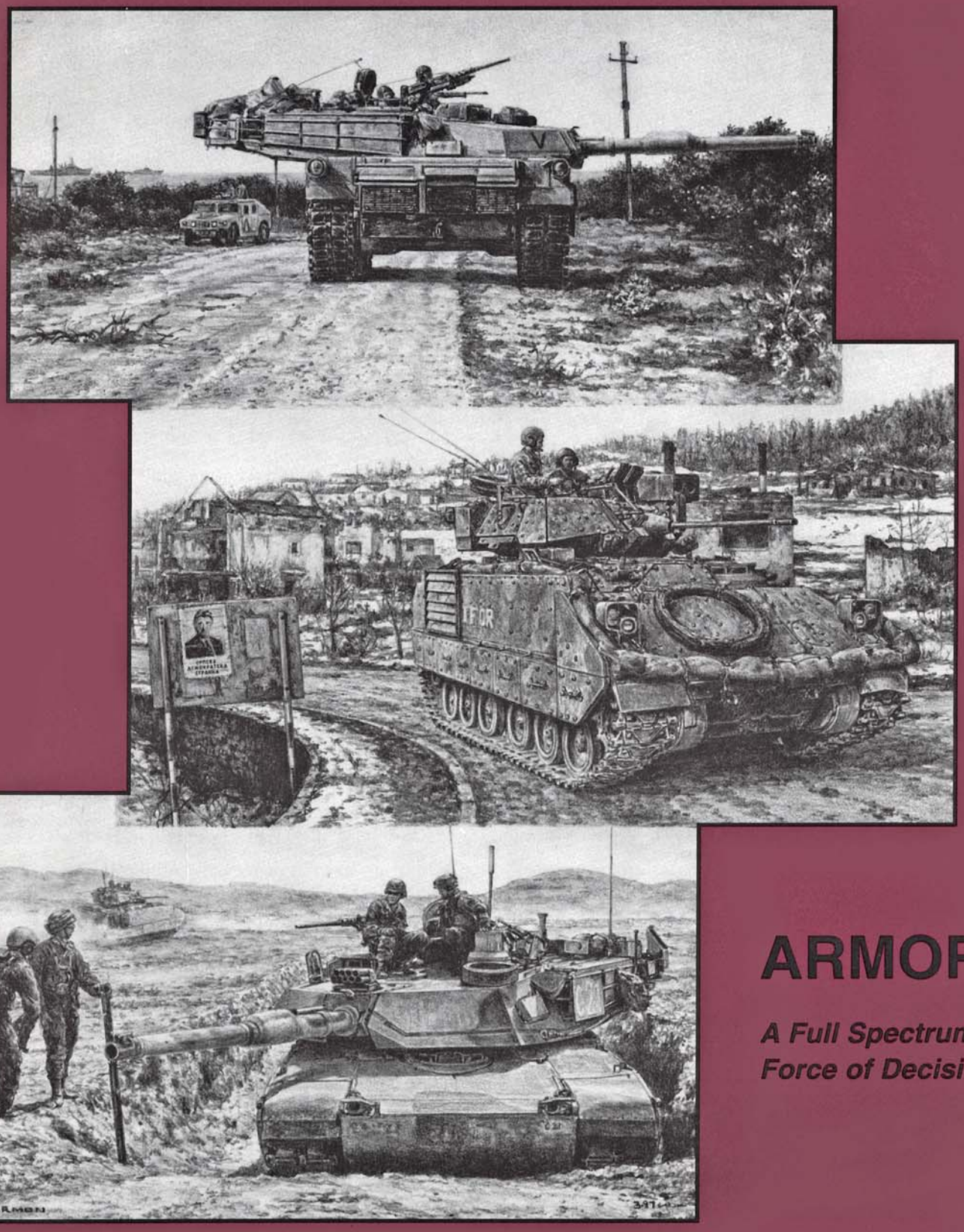

ARMOR

A Full Spectrum Force of Decision

PB 17-97-3

May-June 1997

I hope that everyone listens to the thoughts of a tried and true warfighter, MG (Ret.) Edward Bautz, as he points out in an interesting way ("Forest or Trees: Principles or Process?") that in our push to the future we shouldn't all become schoolhouse theoreticians. As we move further away in time from our big war involvements, the number of combat veterans in our units and the Army decreases. The result is that we spend too much time debating and measuring and otherwise quantifying our preparedness to win the future fights than in actually doing. More and more of the articles and mail we receive contain this theme.

We should heed his advice to resist the siren call of a checklist Army. I remember the notebook of charts and lists that my predecessor as battalion XO gave me and the lists I added to it in order to keep a handle on all of the battalion's pieces. Maybe we (maybe it was just me) are already too far down that path for our long-term good. Whether you agree with General Bautz or not, at least stop for a minute and consider why you agree, or not.

His warning on the checklist Army hits home as I look at the computer printout on my desk, just in from the local AG office (look at your own desk for an example of this phenomenon). It tells me to update my official photograph. I appreciate the reminder, since my photo is too old. However, as I read through the checklist of do's and don'ts, I don't appreciate some of the implications, especially after having reread Major Vandergriff's article (March-April) on necessary cultural changes for the officer corps of the 21st century. In the reminder message, there are all of the usual warnings against being overweight, having an improperly fitted uniform, wearing the wrong brass or unauthorized awards, having shoes unshined, and an improperly assembled sign board. It seems to me that if the remaining people in the Army are of such high quality that some of the discriminators we are using on this checklist hinge on whether both shoes reflect the same amount of light, or if a normal crease shows in a jacket, or if a guy's sign board has letters that aren't horizontal, we might need to come up with better discriminators.

You say I'm barking at the moon? Maybe, but it doesn't take too much thought to get to the point. I'm not railing against official photographs here, but a system and a culture that requires us to make decisions on the future of our Army — our future leaders are our Army — based on whether both of the man's shoes are polished the same and reflect light equally, or whether his coat shows a wrinkle, or whether his sign board is to standard, or other such "discriminators."

If we don't listen to the wise men from our past, we are definitely going to repeat some of the mistakes they saw and maybe even made. That is why *ARMOR* has always contained some form of history in every issue, and that is why we remain a professional bulletin and so much more than a command information document.

The man who doesn't have time or the inclination to hear the advice of those who preceded him in this business is an ignorant man, indeed. Our profession is too hard, moves too fast, and has life and death consequences too dramatic for men only of the moment to be in the TC's hatch.

— TAB

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:

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Administrative Assistant to the
Secretary of the Army
03311

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LETTERS

Don't "Heavy-Up" the 2d ACR

Dear Sir:

I read the article in the January-February edition of *ARMOR* about the 2d ACR with great interest. LTC Kevin Benson makes an interesting case for adding weight, protection, and firepower to the regiment; yet I remain unconvinced.

While there is much to be said about the choices, the fact is, the 2d Cavalry represents the only substantial structure change in maneuver forces the Army has made in response to the end of the Cold War. It is designed to be deployable, versatile and lethal, ideal for missions such as Haiti, Somalia, and Bosnia. It was not designed to slug it out against a heavy threat. We need two heavy regiments for that mission; but that is not the issue here.

I find it notable that the article that said farewell to the M551 was in the same edition. The analogy of the combat vehicle which was the classic victim of *requirements* creep, — designed to do all things for all people, thus satisfying no one — cannot be lost on the structure of the 2d Cavalry Regiment. The Army cannot have it both ways; light cavalry is either immediately deployable or it is not useful.

In fact, it is my belief that fielding the Armored Gun System to the reconnaissance troops, as was scheduled, would have been a serious error. What is needed is a lighter vehicle with a small cannon that offers improved crew protection over the armored HMMWV, yet is easily air transportable. Prior to the decision to build the AGS, numerous platforms with varying degrees of capabilities in lethality, survivability, and deployability were examined as potential Sheridan replacements. Perhaps the time has come to recognize the world as it is, not as we wish it were, and reexamine some of the less costly modifications to existing systems. An excellent candidate, but surely not the only one, would be the M113A3 with a mini-turret cannon capability. The AGS would have been the ideal combat vehicle for the tank companies which, if necessary, could have been scrambled into an ad hoc battalion to assist in short-term *guard* missions. The more likely missions in today's world, however, will demand more dismounts — both scouts and infantry, an idea LTC Benson dismisses without convincing argument.

The Army must use its creativity to break the strategic lift paradigm; and this will not happen by making units heavier. We need Force XXI mounted units to meet the heavy, most dangerous threat. We also need mounted forces that can meet the less dangerous but infinitely more likely threats as we pursue the National Security Strategy of *Engagement and Enlargement*. The Army's current force structure situation is analogous to that of the Cold War Air Force. We must ensure the most dangerous threat is deterred by constantly modernizing the strategic force (then ICBMs, now M1s and M2/3s); yet we must be able to respond to the more likely requirements (then tactical aircraft, now light cavalry),

How big you are does not always decide success on the battlefield. This is especially true in the realm of reconnaissance. The light cavalry regiment was not designed with a major regional contingency in mind; it was designed for **everything else**. The Army should provide it the right equipment to complete its missions and so that it may remain, ***Always Ready!***

COL TOM MOLINO
Burke, Va.

Sheridans "Retired" to the NTC

Dear Sir:

I concur with readers that are concerned that the 82nd lost a unique capability, but I wanted to set the record straight on the "retirement" of the M551A1 at its farewell. The M551A1s of the 3-73 Armor are not retiring, but in a twist of fate, are returning to one of the original Sheridan units — the 1st Squadron, 11th ACR. 1/11 portrays the 125th Guards Tank Regiment of the 60th MRD. These M551A1s, with thermal sights, will be converted to visually modified T-80s. These vehicles will more closely match the capabilities of a real T-80. Although they will no longer fire "live" ammo, they will participate in many more battles here at the National Training Center. They could conceivably serve in the armored force for another seven years, until the OPFOR Surrogate Vehicle-Tank (OSV-T) is developed and fielded. Another generation of Blackhorse Troopers will serve on the General Sheridan.

MAJ BART HOWARD
SXO, 1/11 ACR
Ft. Irwin, Calif.

Second Thoughts on New Ideas

Dear Sir:

I have been impressed by the thoughtful ideas concerning maneuver warfare and the implications of Force XXI operations that have appeared in *ARMOR* intermittently since Desert Storm. Most recently, the article by Captain Robert Bateman, "Training for Maneuver" in the Jan-Feb 97 issue is a thought-provoking piece which challenges conventional thinking and should help fuel the exchange of ideas. So also should LTC Robert Leonhard's new book, *Fighting by Minutes: Time and the Art of War,* reviewed by Captain Bateman in the same issue. We obviously have at least a small group of young officers thinking seriously and imaginatively about the profession.

I agree with Captain Bateman that despite the apparent intent of TRADOC to move doctrinally away from attrition warfare, the force-on-force, sandbox way of tactical training still dominates most professional thinking and exercises. (The doctrine writers have been in denial a long time on this subject, at least since the Active Defense came under general attack in the late '70s. BG Joseph K. Kellogg was quoted in *AUSA News*, July 1996, asserting "Attrition warfare, we don't play that way anymore.")

Without question, it's hard to get beyond the tactical level in actual maneuver training on the ground, and the Army will always have the absolute requirement to be proficient in head-to-head conflict aimed at destruction of enemy forces, as Captain Bateman acknowledged. These skills must be drilled. Beyond tactical proficiency, however, there are a lot of concepts that need to be challenged and wrung out, and the current debate is healthy. I hope the Louisiana Maneuvers people are paying attention. To further the discussion, I offer a couple of observations/questions for consideration.

- Almost all of the contributors to the debate appear to assume an essentially conventional enemy and battlefield. How can we get beyond that limitation in training and thinking about the potential real-world challenges? Are we armor officers reluctant to give up the known-type enemy, fearing a reduced, unclear role?

- Several writers have suggested that the doctrinal emphasis on synchronization has a counter-productive side. In view of the absence of known details or good intelligence about most of our potential unconventional enemies, should the Army reassess its commitment to detailed planning, repeated rehearsals, and highly synchronized operations as essential components of battlefield success? Do we risk losing the positive effects of carefully orchestrated combat power applied at the tactical level if we move toward more decentralized, opportunistic operational controls? Are synchronization and *Auftragstaktik* compatible without accommodating modifications?

- Do concepts such as the objective, centers of gravity, rules of engagement, and force security require significant revision for contingency operations? In fact, in view of the many possible contingency scenarios, are we reduced to train for them at the tactical and operational levels solely by computer simulations? If so, how can we ensure that the assumptions and data buried in the software are relevant?

It appears that one of the possible weak links in TRADOC's planning for the 21st

Continued on Page 50

COMMANDER'S HATCH

MG George H. Harmeyer
Commanding General
U.S. Army Armor Center

Vision for the Armored Force and Fort Knox

We in the United States Armor and Cavalry Force will face many challenges and changes in the future. The volatile world situation, the revolutionary changes in military technology, and political and economic realities force us here at the Center of Armor and Cavalry to put a great deal of effort toward strategic planning. Any strategic plan must have a vision, and ***the vision of the Armor and Cavalry Center is to forge the finest mounted combat force in the world capable of winning decisively throughout the spectrum of conflict by:***

- **Achieving excellence in training the total armor and cavalry force.**
- **Designing and integrating the total mounted force.**
- **Being the Army's leader in quality of life, community relations, and infrastructure efficiency.**

With this vision and guidance from the Chief of Staff of the Army and the Commanding General of TRADOC, we at Fort Knox are developing new doctrine, organizations, equipment, and new training strategies. These strategies and implementing goals, objectives, and tasks are being captured in the Fort Knox strategic action plan entitled, "The Future of Armor: Decisive Mounted Maneuver XXI." This strategic action plan reflects an evolutionary shift in our core competencies as a result of the current political and economic environment and the ongoing Force XXI effort. The fielding of the new systems to support Force XXI, like the M1A2, demands that we develop organizations, doctrine, tactics, techniques, and procedures that optimize new technologies.

These new systems require us to develop training programs for armor/cavalry soldiers, maintainers, and leaders here at the Armor School. Further, new classroom and laboratory technologies provide the Armor School with improved methods to conduct training, including virtual and constructive simulations, along with other distance learning techniques.

In future articles of the "Commander's Hatch," I will give you more specific information on the various initiatives we are working here at the home of Cavalry and Armor. In the meantime, we need your help. We realize that Fort Knox's long-term future is in the hands of the Congress, Joint Staff, TRADOC, CAC, and the world situation.

It is also clear that actions being worked today in the Unified Combatant Commands J3 and the Corps and Division G3 shops will be tomorrow's action here at Fort Knox. Unfortunately, we often do not hear about these requirements until the day after tomorrow because of the time it takes to transfer the action through the various headquarters. This is where all you great Armor and Cavalry soldiers come in. Many of you are assigned to key positions throughout our Army and many of you are working actions that will affect the future of the mounted force. ***We need to hear from you.*** We can give you more information and you can give us additional planning time to come up with solutions and options to cope with future actions. To do this we are initiating an Armor Network to contact armor and cavalrymen. We want to get a current job title, phone number, and E-mail address and subsequently give you a point of contact here at Fort Knox. We also plan to devote the November-December issue of *ARMOR* Magazine to include an *Army Magazine - Green Book*-like format with information about what is going on here at Fort Knox and in the brigade/regimental size forces in the field. More details will follow in future issues of Armor and will be addressed at the Armor Conference.

The theme of this year's Armor Conference is "The Armored Force: *A FULL SPECTRUM FORCE* of Decision." This conference promises to be one of our best and most important ever. The theme ties in directly with our vision for the fully capable armored force of today and tomorrow. We want to show during the conference how our armor force, fighting as part of the joint combined arms team, is *DECISIVE*, and *SUITABLE* throughout the full range of conflict.

The upcoming armor conference and all the other efforts towards improving communications between Fort Knox, armor soldiers in the field, and the rest of the Army will only make the branch stronger. Better communication will yield better information which, in turn, will give us the time and knowledge to develop and refine an Armor and Cavalry strategic plan that ensures that the mounted force remains viable as the decisive maneuver force for our Army, and our nation, today and into the future.

CSM Ronnie W. Davis,
Command Sergeant Major,
U.S. Army Armor Center

Armor Promotion Review — Overview of the SGM/CSM Selection Board

The Armor Force is well on the way to becoming the Armor Force of Force XXI. The full potential of the Armor Force lies not in the futuristic vehicles or doctrinal manuals, but in the hearts and minds of our quality Armor leaders. This article is designed to highlight the need to actively mentor our quality NCO corps to help maintain, retrain, and promote our best and brightest. Armor NCOs must be prepared for the future challenge by understanding the strenuous competition which will ensue for future promotion boards.

The recently released Sergeant Major/Command Sergeant Major Promotion Board provides a profile of the future Armor NCO. The selection board convened on 17 September, and recessed on 4 October 1996. It considered first sergeants and master sergeants with a date of rank 30 September 1993 or earlier in the primary zone, and 1 October 1993 through 30 September 1994 for the secondary zone. The chart below identifies the time in service, time in grade, and educational level that characterized the Armor selectees and compares them with Army averages.

NOTE: Armor had the second highest selection rate in combat arms and was 13th out of 30 CMFs in selection rate. Additionally, there were no dual selections to SGM then CSM, although nine previously selected SGMs were nominated for CSM. The overall Armor selection rate was in-line with the Army Average: 12.3%.

The line between those selected and those not selected was very thin. Solid performance in the tough jobs remained the key to success for promotion in CMF 19. As the quality of the CMF continues to increase, the promotion boards must be even more conscious of the whole man when selecting between highly qualified NCOs. One such indicator of quality which becomes a factor "when all else is equal" is education. No soldier in CMF 19 owed his selection to education alone, and as stated, performance in the tough jobs is the key to success. However, the soldiers who performed the tough jobs, and still found time to attend college courses, displayed the initiative which separated them from the pack. The competition for SGM/CSM is tough, and with all else being equal, civilian education becomes an important discriminator.

The importance of civilian education, and its indication of a soldier's initiative, is apparent in the CSM selectees. The board chose nine CSMs from among the 138 MSGs in the zone for promotion and the large number of previously selected SGMs. The quality cut-line for this large pool of eligibles was obviously high, and the difference between the selectees and non-selectees was minute. The education level of the nine selectees was: five with a baccalaureate degree, three with 3 years of college, and one with 2 years of college. Education was just one of the discriminators; with performance remaining the primary discriminator, it is evident that education could play a major role on future promotion boards.

Performance in a wide variety of assignments was another major indication of success to promotion panel members. Years ago, an assistant commandant in the Armor School used the phrase, "Blossom where you are planted" when mentoring his personnel. You must maintain a high performance level wherever you are assigned, but you must also ensure that you are planted in a variety of the tough jobs that Armor has to offer. The boards looked not only at performance in branch-qualifying positions, such as tank commander, platoon sergeant, and first sergeant, but also at performance

Continued on Page 53

	Selectee	% Select	Avg TIS	Avg TIG	Education
Armor (PZ)	13	27.7%	19.8	3.0	13.9
Armor (SZ)	4	4.4%	19.4	2.3	13.5
Army Average	427	12.3%	20.6	3.6	14.1

THE 1997 ARMOR CONFERENCE

A Look at the Armored Force's Role as a Full Spectrum Force of Decision and How Units are Meeting Today's Diverse Training Challenges

As has been the tradition since 1949, the United States Army Armor Center and Fort Knox is hosting the annual Armor Conference in conjunction with the meeting of the United States Armor Association. The conference, originated 48 years ago by past Armor School Commandant Major General William Livesay. It serves as an excellent opportunity to bring together the leaders of the armored force in order to disseminate information and discuss current issues impacting on our rapidly changing profession. It is likely that over 800 personnel will attend this year's gathering, with representatives from our nation's defense industry, numerous allied countries, the Marine Corps, Department of the Army civil service, along with the Army's Active Duty and Reserve Component forces. This year's conference is being held from June 3d through the 5th and carries the theme, "The Armored Force - *A FULL SPECTRUM FORCE* of Decision."

For the past few years, the Armor Conference has focused primarily on emerging technologies and how the new generation of equipment, combined with digitization initiatives, is impacting the future of armor's doctrine, training, and force structure. This year, Fort Knox's Chief of Armor, Major General George Harmeyer, has brought a new focus to the conference. Instead of looking at factors internal to the armored force that will change the way we do business, the Armor Center is looking externally to today's global situation, and examining how the mounted force is facing the current task of training for an ever-growing diversity of missions across the crisis spectrum while retaining its high-intensity warfighting edge.

Since the United States military's involvement with Operation "Restore Hope" in 1992, we have found ourselves faced with a variety of missions across the globe, unlike anything faced since our constabulary role in post-World War II Germany. In addition to being prepared to intervene in a major theater of war, as seen in Desert Storm, the men and women who comprise the armored force have been facilitating the transition to peace between warring factions, assisting with famine relief, restoring democracy, and often aiding states suffering from natural disasters. How the mounted force trains effectively for all of these contingencies is the topic of this year's gathering. Key leaders from the armor and cavalry forces involved in these and other operations will be present to provide informative briefings on their units' involvement and how they met the challenges of a previously non-standard mission. Time has also been set aside to look at what the Armor Center and Combat Training Centers are doing to help train the force in this new age of armored operations. Finally, as we examine the future of the armored force, leadership from the EXFOR will brief the outcome of the long-awaited March '97 Advanced Warfighting Experiment at the NTC.

The shift in the Armor Conference's focus can be traced back to the arrival of Major General Harmeyer at Fort Knox as the Chief of Armor. His presence has brought a renewed interest in the armor and cavalry institutional training and training development ongoing at the Armor Center, and throughout the force. This interest has served as the driving force for the 1997 Armor Conference's theme. His experiences with command from troop to brigade, coupled with his command of Operations Group at the NTC and service as the commander of 7th Army Training Command in Grafenwoehr, Germany, have given him an insight that is critical in training the present armored force. The Armor Conference is one key means by which he can assist units with the training challenges they face in preparing for today's broad range of requirements.

The 1st Cavalry Division serves as an excellent example of a unit confronted with this full spectrum of challenges. Since Desert Storm, soldiers from its ranks have returned to Kuwait three times, including the recent contingency deployment when Iraq deployed troops near the border of Kuwait. Back in the States, the division has gone through numerous NTC rotations, while managing to execute gunneries and situational training exercises at all echelons. In the summer of 1994, 1,350 of its soldiers found themselves fighting forest fires in Idaho and Montana.

Meanwhile, cavalry soldiers in the 10th Mountain Division have faced a separate, almost non-stop, lineup of missions during the past four years: rescuing hurricane victims in Florida, feeding the starving masses in Somalia, and helping secure democracy in Haiti for the return of ousted President Jean-Bertrand Aristide.

Soldiers responsible for training the force are faced with the same challenges. The Combined Maneuver Training Center (CMTC) in Hohenfels, Germany is maintaining a tempo of 10 brigade rotations. There, soldiers comprising the OPFOR and OC Teams are challenged with training the "blue" force units on all types of tactics, techniques, and procedures, from the diplomatic skills involved in convoy and checkpoint operations, to the myriad of tasks involved in a task force deliberate attack. Additionally, the 7th Armor Training Command, responsible for CMTC and the Grafenwoehr Training Area, has just resumed gunnery training at the Taborfalva Training Area in Hungary for units rotating out of Bosnia. With the U.S. Army at its smallest size since the end of World War II and its operational missions up by 300 percent, it is likely that such a high tempo of diverse missions will be seen by more of the armored force in the future.

Directly preceding the Armor Conference each year is another major event known as the Armor Trainer Update (ATU). The ATU is a two-day conference which focuses on the unique training issues faced by the National Guard and Army Reserve. The theme mirrors that of the Armor Conference, with today's Reserve Component forces faced with the distinct challenge of training to meet the diverse body of missions now assigned to the Active Component, while also being prepared to accomplish any task given by their

State Governor (in the case of the National Guard). This full spectrum of missions has been seen in recent years, with reserve soldiers serving as OCs for the 3d Infantry Division (then 24th Infantry Division) in Kuwait during Operation "Intrinsic Action," involved with drug interdiction throughout the U.S., and aiding with flood rescue and relief operations in Louisville, Kentucky this past March.

Presentations for the ATU will include the ARNG Force Structure and Force Modernization, the Total Army School System (TASS), the 49th Armored Division's recent Mobilization Exercise (MOBEX), and an update by the National Guard Bureau on the Quadrennial Defense Review just completed May 15th. It is expected that over 300 members of the National Guard and Army Reserve will be in attendance.

In conjunction with the Armor Trainer Update, the Armor Center's G3/Directorate of Training, Plans, and Mobilization will be conducting the 5th Annual External Unit Scheduling Conference. During this conference, Fort Knox will offer the post's available training resources for FY98 to the Army Reserve, National Guard, Active Army, and other military branches of service. The goal is to provide resources that will give commanders a broad range of training options and integrates simulation technology into their mounted force training strategy.

To help make this goal a reality, Fort Knox has completed over 50 million dollars of training facilities upgrades over the past 10 years. The quality of the Armor Center's unit training facilities is swiftly being realized by the force as evidenced by last year's External Unit Scheduling Conference. Two hundred and thirty-seven attendees representing 23 states and Canada participated, resulting in training at Fort Knox by external units in FY96 exceeding 270,000 soldier-training days and encompassing all components of the Army, with contingents from the Marines, Navy, Air Force, and Special Operations Forces. Some major resources that will be available at this year's conference are: the Mounted Warfare Simulation Training Center, JANUS with Observer Controller support, Battalion/Brigade Staff Trainer System (BSTS), M1 and M3 Thru Site Videos, M1 and M3 Unit Conduct of Fire Trainers (UCOFT), Tank Driver Simulators, and Maintenance Trainers, along with live-fire ranges and maneuver training areas. This wide variety of resources offers units the opportunity to combine constructive, virtual, and live training into a successful training program. Knox's most recent addition is another state-of-the-art Table VIII range with more modernization scheduled in the coming years to include a Close Combat Tactical Trainer (CCTT) Facility which began construction late last year.

One of Fort Knox's most exciting additions to its training resources will not be available until next year's scheduling conference and stands as a testimony to the armored force's expanded role in today's military. It is the construction of an urban combat training complex. Groundbreaking is scheduled for this fall with the site ready for training in early 1999. The Mounted Urban Combat Training Site, a 13 million dollar training facility, promises to significantly improve the readiness of the mounted force by providing a state-of-the-art, computer-enhanced facility replicating the unique aspects of operations in a contemporary urban environment. Such a capability does not currently exist elsewhere in the Army. In light of recent peacekeeping, peace enforcement, and other related operations, the construction of this facility became a priority mission for Fort Knox. It is foreseen that the Mounted Urban Combat Training Site will be used in the Officer Basic and Advanced Courses, Basic and Advanced Noncommissioned Officer Courses, the Scout Platoon Leaders Course, and Armor Pre-Command Course. Once completed, it will contain all the residential, commercial, and government facilities of a small town, to include an embassy, junkyard, and underground sewer system. The special effects will entail reconfigurable collapsing buildings and bridges, burning cars, smoke, noise (guns cocking, dogs barking, running footsteps), and smart targets that react to movement.

Training units will be forced to deal with multiple tactical problems, such as road blocks, in confined spaces between buildings and impediments to traversing tank turrets. Access to the site will be possible via airborne, air assault, land, and water approaches. The cumulative effects will provide realistic challenges for soldiers and their leaders similar to that found now only at the combat training centers. It is intended that the site can be used in conjunction with Fort Knox's JANUS facilities so that battalion and brigade staffs can be included in the planning, preparation, and execution phases. Also, there will be a comprehensive After-Action Review (AAR) capability to provide significant and worthwhile feedback on the spot. An 8x5 foot rendition of the Mounted Urban Combat Training Site will be on display throughout the ATU and Armor Conference.

Another major event of the conference is the presentation of the General Frederick M. Franks Award, created by then Chief of Armor, Major General Larry Jordan in 1995. This year will be the third time the Franks Award has been bestowed. It recognizes an individual who has demonstrated a long-time contribution to the ground warfighting capabilities of the U.S. Army.

Nominees this year came from all sources of the Department of the Army, including active duty and reserve component officers, NCOs, and enlisted personnel; along with DA civilians. The nominees, endorsed by the first major general in their chain-of-command, were evaluated by a selection committee comprised of seven members that jointly represented the Officer and NCO Corps, National Guard, Army Reserve, and Federal Civil Service. Candidates were reviewed for a variety of superb duty performance characteristics during the preceding year or years which may include:

- Offering a vision for the future of the mounted warfighting force that significantly improved combat survivability, lethality, or mobility
- Developing an innovation in equipment, materiel, or doctrine that significantly enhanced the effectiveness of combat arms' mounted elements
- Exemplifying professional excellence in demeanor, correspondence, and leadership
- Displaying a love of soldiering

The traits were picked after the leadership characteristics of the awards namesake, General (Retired) Franks, who was instrumental in shaping our current Army. After the selection committee designated a recipient on April 30th, the results were forwarded to the Chief of Armor for final approval. The recipient will be presented his award on the final day. Last year's winner was Lieutenant Colonel Kevin B. Wall from Fort Leavenworth, Kansas for his

exemplary service as an instructor and course author for the Command and General Staff College Advanced Warfighting Course.

Throughout the conference, leading defense contractors will showcase equipment that will enhance the mounted warrior's ability to conduct operations across the globe. Over 125 separate displays are expected, with everything from conceptual models of future armored vehicles to the newest field boot available to the force. A highlight of the displays will be the new M3A3 Bradley Fighting Vehicle, straight out of its reliability, availability, and maintainability (RAM) testing at Yuma Proving Ground in Arizona. The M3A3 is a product of United Defense Limited Partners and it is expected that the Army will purchase 266 of them over an eight-year period. If plans stay on track, the 3d Infantry Division should be the first unit to receive the vehicle in late 2000. Other notable exhibits should include the newly developed Command and Control Vehicle (one of six prototypes in existence), a display by the Military History Institute, and an Unmanned Aerial Vehicle Mission Simulator. Additionally, the Armor Center's Mounted Maneuver Battlespace Lab (MMBL) will be conducting a demonstration of its TRADOC Brigade and Below Virtual Battlefield operations. Previously known as the Mounted Warfare Test Bed, the Virtual Battlefield was created to provide Fort Knox with the infrastructure necessary to conduct research and development in the areas of doctrine, training programs, training support packages, and hardware/software integration. Many technologies from the Force XXI Training Program will be demonstrated such as: Reconfigurable Combat Vehicle Simulators, laser communication via binoculars, the Staff Group Trainer, and C2V mock-ups with the Army Battle Command System.

The Armor Conference is for the entire mounted warfare community. It serves as a critical link in the information chain for providing the active and reserve component armored force and its civilian support structure with the most current news on what is happening in our profession. Its combination of presentations, demonstrations, and displays, along with numerous occasions for fellowship among attendees, provides for an exciting and informative three days. In his Strategic Plan, TRADOC Commander General William Hartzog states that "today's environment demands a global power projection Army capable of responding to the nation's needs across the full spectrum of operations... our focus is clear: train and maintain an Army capable of decisive victory on any battlefield." As 40 percent of the Army's combat power, the importance of the armored force in meeting that requirement is obvious. The 1997 Armor Conference will highlight the challenges faced in training today's armor and cavalry to meet this demand.

Notes

[1]"Conference on Armor," *Armored Cavalry Journal*, Jul-Aug 1949, p. 25.

[2]"Armor Conference General Information Sheet," 1995-1996.

[3]Biographical Information Sheet, 13 Feb 97.

[4]Donna Miles, "Upping the Tempo," *Soldiers*, June 1995, p. 15.

[5]Ibid.

[6]Major Mike Belew, "Armor Trainer Update Agenda," March 7, 1997.

[7]Jim Hornback, "5th Annual G3/DPTM External Unit Scheduling Conference," February 1997, p. 1.

[8]Dean Sprague, "Training complex funds expected," *Inside the Turret Armor Conference Issue*, May 31, 1996, p. 21.

[9]Mounted Urban Combat Training Site Information Paper.

[10]Ibid.

[11]Ibid.

[12]Nancy Probus, "Franks Award Message," 27 January 1997, pp. 4-5.

[13]General William Hartzog, "From the Commander," *Strategic Plan 1995*, p. II.

Leave Kuwait Training to the Units There

Dear Sir:

Having just read Kevin Benson's letter from the Jan-Feb 97 edition of *ARMOR* entitled "Kuwait Training Ain't Broke, So Let's Not Fix It," I couldn't agree more. He made reference to a "General Officer Good Idea" to NTC-ize the Intrinsic Action exercise and opined that it was NOT such a good idea. I agree.

I was the G3 of the 3d Infantry Division when USAREUR sent its first rotation to Intrinsic Action in 1993. Bill McAlpin took Task Force 2-37 Armor. I had the good fortune to visit him during his rotation and saw for the first time in many years how a TF commander, with a little help form his brigade commander, could do exactly what we pay him to do — train his outfit for war.

While we have the best O/C-led, OPFOR-provided, lane-trained prepped, AAR'd CTCs in the world, look anywhere in the Army today and you'll see fewer and fewer opportunities for armor and cavalry leaders to do their own training, without the structure, cost, and overhead of the CTC training paradigm. The argument that maneuver opportunities are constrained by time and dollars — so we need to get the biggest bang for our buck — is a valid one. But ask any platoon leader, company commander, or even battalion commander how many of the 800 or so OPTEMPO miles he gets completely FOR HIS OWN USE in a training year and I suspect you'll see they are few.

As I reflect back, some of my most valuable training opportunities were during my time as S3 of 1-1 Cavalry in the mid-eighties. It was routine for MG Saint to have us spread all over Bavaria. I recall one week in particular when we had a troop in Schwabach supporting Boeselager training (we had the VII Corps team); another troop on 117 km of Czech border working for COL Bill Crouch's 2d ACR; and the third troop (with a squadron slice) at Hohenfels to support an Armor Center sponsored NBC-vehicle test comparing the M113 to the Fuchs. One cavalry troop had all of Hohenfels to themselves for 7 days — can you imagine that?

Our squadron commander (LTC Montgomery C. Meigs) split his time between Terry Wolff's C Troop on the border and home station. I was with Bill Moyer's B Troop at HTA. Leaders trusted leaders to do the right thing. Today, General Crouch commands USAREUR, MG Meigs commands the Big Red One in Bosnia, LTC Terry Wolf commands a squadron in the 3d ACR, and LTC Bill Moyer commands a tank battalion at Ft. Hood. Do you suppose they did "the right thing?"

I'm doing time on the joint staff and am not currently a muddy-boot soldier, but I've not forgotten my roots and the fact that I too was once a commander looking for training opportunities of my own.

So, while creating a SWA NTC has its merits, I would submit that "Kuwait training ain't broke, so let's not fix it." Our Intrinsic Action leaders will do the right thing.

BG CRAIG B. WHELDEN
Via e-mail

Courtesy U.S. Armor Association

ARMOR MODERNIZATION

"Tank Trail to the Future..."

by Colonel David M. Cowan

Colonel Cowan is the TRADOC System Manager - Abrams, based at Ft. Knox. -Ed.

A mobile armored system that provides the speed, firepower, survivability, and shock effect to close with and destroy an enemy will be the centerpiece of combined arms ground combat on the 21st Century battlefield. The Tank Modernization Plan, published in the fall of '96, provides a road map for the Total Armor Force specifically tailored to the Force XXI battlefield. This plan reflects a year of intense efforts by many players from the entire Armor community to produce a strategy which meets the challenges of today and tomorrow. The Tank Mod Plan does indeed do that and is a "must read" for all tankers.

The purpose of this article is to introduce the mod plan to a wider audience. This is the first in a series of articles which will detail the Modernization Plan for our armored force. In this first edition, we'll review the development of our modernization strategy.

The Armor Caucus

An assessment of the Armor modernization strategy in August 1995 by the Armor Center concluded that a holistic approach to Armor vehicle modernization was needed, that existing plans were unaffordable, and that the science and technology base for Armor was not aligned with 21st Century battlefield needs.

The realization of these shortcomings led to the Atlanta Caucus Initiative. On 22 November 1995, the Armor Center hosted a joint Combat Developer/Materiel Developer briefing at Headquarters FORSCOM for senior Armor leaders. The Caucus provided a forum to review and discuss the existing modernization plans, gain consensus on the problems, and decide upon a single strategy for Armor modernization.

Senior Armor leaders explicitly rejected evolving the Abrams into a Future Main Battle Tank (FMBT). They determined that only a revolutionary vehicle should merit significant modernization funding and that a new strategy for Armor modernization was necessary. Discussion yielded the following key points as a framework for developing the modernization plan:

- Accept prudent risk; continuous Abrams production/upgrades and FMBT fielding are not affordable
- Invest in a "Leap Ahead" FMBT for production in 2015-2020
- Mitigate risk by:
  - Completing M1A2 SEP (final production number beyond 1079 undetermined)
  - Developing improved 120mm munitions
  - Developing the XM 291 (120mm) gun
  - Installing select high-payoff improvements on the current fleet

- Develop and field a Future Scout/ Cavalry System

On 15 January 1996, the Chief of Armor commissioned four Integrated Concept Teams (ICT) to flesh out Armor Caucus I guidance. The ICT core membership came from The TRADOC System Manager-Abrams Tanks (TSM-Abrams); the United States Army Armor Center Directorate of Force Development (DFD); the Program Executive Officer-Armored Systems Modernization (PEO-ASM); the Project Manager, Tank Main Armaments Systems (TMAS); the Tank Automotive and Armaments Command (TACOM); the Army Research Laboratory (ARL); and various research and development commands. The four ICTs focused on: the current Abrams fleet, gun and ammunition, a Future Main Battle Tank, and a Future Scout and Cavalry System.

Specifically, the ICTs had to develop modernization plans, based on Atlanta Caucus guidance, and influence the 98-03 Program Objectives Memorandum (POM). The ICTs used the methodology in TRADOC's new "Requirement Determination Pamphlet" to determine Force XXI conceptual implications, identify required operational capabilities, estimate the rough order of magnitude of costs and schedules, and formulate a program and a plan for modernization.

Multiple general officer reviews resulted in adjustments and culminated in successful briefings to the TRADOC and FORSCOM commanders and the Vice Chief of Staff of the Army.

The collective work of the Current Abrams Fleet, Gun and Ammunition, and Future Main Battle Tank ICTs is the foundation for the Tank Modernization Plan, and provided an immediate framework for the POM submission. This has resulted in an executable shift in tank modernization that complies with guidance from the Atlanta Caucus and is approved by the Army.

A second Armor Caucus was held during the June 1996 Armor Conference. Senior Armor leadership reviewed the key points of the previous caucus and were briefed on the current status of the Armor Modernization Plan. Caucus leadership determined that the M1A2 SEP tank with high payoff improvements may be called an "M1A3," but would not include a new turret or 140mm gun. Senior leaders also directed a thorough review of the science and technology base to align programs to support the Tank Modernization Plan.

The Army Science Board Ad Hoc Tank Modernization Study

As the Caucus and ICT efforts unfolded, an Army Science Board Ad Hoc Tank Modernization Study also took place. The study analyzed armor modernization with the following objectives:

- Determine which technologies offer the most cost- and operationally-effective improvements for insertion into the Abrams tank beyond the current M1A2 upgrade program, and when the windows of opportunity will be present to insert these improvements.
- Determine when the Army will reach the technology and engineering "crossover" point(s) where it becomes more effective to develop a new tank rather than continue to insert advanced technologies into the Abrams tank, and what technology and engineering factors drive the choice between continued upgrades or the initiation of a new system.
- Determine, with respect to the "crossover" points, if a decision process, methodology, or model can be derived to address this issue for the tank and, if so, determine its potential for application to other ground combat systems.

After using a three-stage, decision-aid model to assess four possible tank modernization alternatives, the board arrived at the following conclusions:

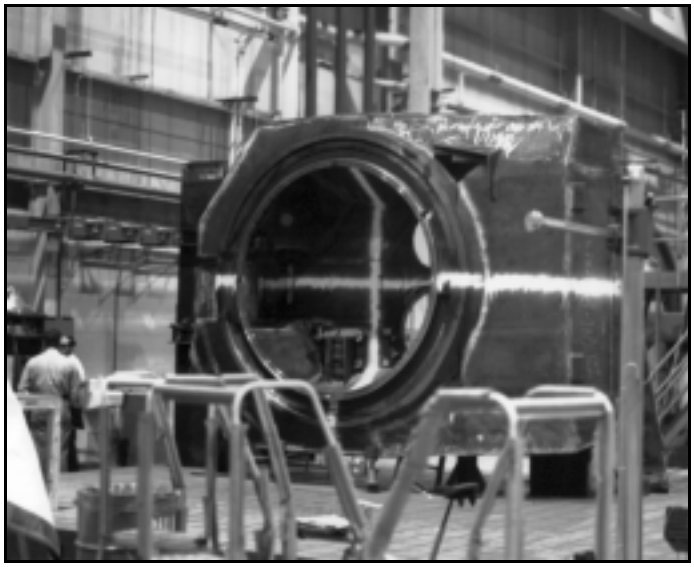
- The Army does not yet visualize a change in the central role of the tank on the future battlefield. While recognizing the importance of UAVs, digitization, and helicopters, the need for a tank-like system remains a high priority well into the next century.
- Foreign advances in protection and gun/ammo combinations that are already in evidence indicate that by approximately 2015, the Abrams will be surpassed in its world #1 ranking by a new tank, perhaps Russian, if no new improvements are added to the Abrams M1A2 SEP tank.
- A careful search of new technology failed to show a breakthrough for tank improvements before 2020. Several technologies could bring improvements to the Abrams family, but no such technology is on the horizon that would make it necessary and cost effective to opt for a new tank, or Future Main Battle System (FMBS), before 2015.
- The Abrams tank family, with prudent technology insertions as they mature and become available, should continue to be improved until an FMBS is warranted. The key areas for upgrading are survivability and lethality.
- Based on detailed battle analysis, the use of smart rounds for the tank (like STAFF or X-Rod), when coupled with improved target acquisition capabilities, shows a high leveraged payoff in range and lethality. An active protection system (APS), and the use of IR suppression and radar signature reduction techniques, if combined, would produce a significant improvement in the loss-exchange ratios by reducing U.S. tank losses.

The Army Science Board further proposed an implementation strategy that included continued M1A2 production (beyond Tank 1079), with a goal of completely fielding the active component (an additional 1967 M1A2 tanks). The Army Science Board proposal for continued M1A2 production did not include an examination of affordability.

Conclusion

With the results of the two studies on hand, senior leaders concluded that continuous M1A2 production/upgrades and investment in a Future Combat System were not affordable. They did feel, however, that prudent use of our resources will allow us to apply specific, high-payoff modifications to the Abrams fleet, mitigate risk with the development of a new gun and ammunition, and provide for leap-ahead capabilities that support development of a revolutionary Future Combat System. The "Way Ahead" for tank modernization is set. Subsequent articles will detail the modernization plan for the Abrams Fleet, Main Gun and Ammunition, and the Future Combat System.

You Want to Shut Down The Tank Plant !?



by Don Loughlin

The flurry of recent articles about the Future Combat System (FCS) in trade journals is a lot of talk about a system so far away.[1,2,3] According to what I read, some in the government wanted to shut down tank production facilities so we can concentrate limited R&D funds on completing technology development of components and subsystems needed for the FCS. The FCS is intended to defeat a threat system of unknown capabilities emerging at some unknown time in the future. These articles raise several troubling issues:

The possibility of shutting down tank production facilities until the FCS is ready for production, and using the savings to fund development of components and subsystems of the FCS.[1]

Although this idea may not be too likely right now, depending on which article I read, it wouldn't take too many changes of leadership to make it a lot more likely in the future. In my opinion, shutting down tank plant production capability would be a disaster for the Army and the nation. The loss of continuity and the loss of critical skills found in experienced design and production teams would be a far worse problem than the loss of the facilities. Should a national crisis develop, these skills cannot be recreated rapidly enough by throwing money at the problem. While the government can print money, it takes time, patience, and skill to create resources. In peacetime, the country still builds ships and aircraft, but no one will remember how to design, test, and produce a tank **system** once we shut down tank production. With production capability shut down, who would be left in the contractor base or in the government that would know how to design the system, prepare a program plan for production, prepare a system-level production test plan, prepare a production technical data package, design and build the production line, and test production prototypes? Where would we get the very important vendor base of qualified suppliers, including the second and third tier suppliers? The Army's skills at system-level testing will atrophy, with nothing to test but components and subsystems. The technologists will say, "No problem," but take it from me, don't believe 'em.

Where would we get armored vehicle transmissions, for example? These unique items have no comparable technology in the commercial market. If you wipe out the vendor base for designing and producing entire armored vehicle transmissions, the new transmission supplier, who may never have built one before, would have to start from scratch, develop his own vendor base, and train his own design and production staff, but who would be available and qualified to do the training? The lead time from cold start to transmissions coming off a line could take years. I'm not going to say how many years, because I have it on hearsay and, if I told you how many years, you wouldn't believe me anyway.

Keeping the tank plant open doesn't necessarily pay for whatever production rate is being proposed by the tank plant managers or tank program office. There is little money available for all we need, so all programs may have to produce at a lower than desirable rate, and at a higher unit cost, just so we can maintain other important capabilities.

Another experienced team that would atrophy would be the manufacturers' project management staffs, a large group of skilled people that includes technicians, draftsmen, designers, engineers, and scientists, not just in the engineering departments, but in the test, purchasing, and production and manufacturing departments. Of almost equal importance to their individual skills is the fact that many of them have worked together for decades, and know each other well – this is what makes them a team. Because they know each other well, they can rapidly contact the person with the correct, unique skill when a problem arises, speeding any proposed solution. If we shut down tank production facilities, this capability, like so many others so patiently built up over the years at great expense, will quickly just blow away. Recreating these skills won't be easy because the skills are so foreign to the contemporary common experience of most of the public. The general population now has little military experience (thanks to the All-Voluntary Military). When I started in the defense industry in 1957, virtually every man that I worked with had been in the military, many with service in WWII and/or Korea. Today, you can hire an engineer to design shoe-making machinery, or to design a bridge; and he or she can learn the job quickly with some specific training, because the engineer knows what shoes and bridges are and how they are supposed to function. But just try telling that same person that he or she is to work on a coax machine gun installation, including boresight, zero, and ammo feed system, paying particular attention to ruggedness, ease of use, and simple operator mainte-

nance. Imagine next that there is no one around who can train that person because the plant had been shut down years ago, the former design team has been scattered to the winds, and you will have some idea of the chaos that will result. The military's cutbacks, regardless of how painful and sometimes unjust (How many civilians have been laid off from the Pentagon?), result in a loss of ability to meet national commitments, but not in the total loss of institutional memory to conduct warfare. Cutbacks in the defense industry can result in a *total* loss of defense capability in some areas, and in some cases we are already well into loss of institutional memory. There's nothing new about that; after all, the cutbacks started ten years ago.

Suppose now that war comes before the FCS is ready. Aside from the loss of experienced teams, there will be shortages of critical materials, machine tools, and time. Printing money won't change the availability of anything. If the Air Force can even now get $1.3 billion to spend on a plane (each, not per squadron), would you like to try to compete with that horsepower in trying to get resources in a crisis?

Another difference between the military's problems and industry's problems during a critical cycle of retrenchment is that when a new armored formation is created, it has a training period for it to form and to learn to operate together, as well as to learn to operate its equipment. There is no such grace period for the operators of a new production facility in a time of national crisis. It will start to work to meet its contract commitments (surely made optimistically), which will include trying to find equipment, materials, and personnel — and this *community of strangers* will then try to design and manufacture the equipment in which *you* will go to war. If that doesn't make you feel very comfortable, consider that the contract probably will go to the low bidder.

An excellent report on the importance of continuity of design and production experience is *Armor Development in the Soviet Union and the United States*.[4] It is concise and eminently readable with a minimum of jargon. Here are some excerpts:

Page v: *"Improved weapons are primarily the outcome of a process of cumulative product improvement and evolutionary growth."* In other words, the 'Great Leap Forward' is more likely to result in a stumble.

Page vi: *"...an effective R&D strategy can be abstracted: (1) product improvement of existing designs; (2) independent development of components and technology; and (3) construction and testing of experimental prototypes."*

Page 2: *"... flexible, experienced design teams that can respond to the surprises of R&D are more likely to be creative than those that have little continuity and are constrained by rigid, pre-established plans."*

Page 5: In referring to pre-WWII American tank design strategy, the report made this statement that is every bit as valid today: *"U.S. tank development was also influenced by a belief that research could meet the specifications laid out by military planners. Many of the designs that were requested were both unrealistic and inconsistent with budgets and technology."* Unfortunately, the unrealistic ideas have all too often been sold to the users by the technologists of both industry and government.

Page 135: In "IN SUMMARY": *"... Prototypes provide a better way to test hardware than any paper analysis, computer simulation, or intuitive judgment."*

Page 105: I conclude the quotes with a sly smile on my face while I add this: *"The program-management strategy* (i.e., the 'new' concept of the Program Manager having authority and budget control) *also spread to other systems, with the same results as those of the Sheridan — unpredictably high development and production costs, extended times to development, and considerable (often unmanageable) technical problems."*

The second troubling issue that concerns me is the drift toward a tank with an external gun and minimum turret armor.

Every illustration of a notional FCS that I have ever seen shows an external gun turret. It is clearly the preordained solution, and any contractor with his eyes open will bid an EGT because that is what the powers-that-be obviously have been sold on. Pious declarations in the proposal solicitation that 'all solutions are acceptable' if they meet the performance requirements will be seen for what they are, just so much smoke, and they will be ignored in favor of the perceived 'school solution.' Every briefing given by a military or industrial organization anxious to win a role on this big development project will enthusiastically tell the user what a great idea the EGT is. Candor would be punished by exclusion from being part of the team.

I have already had most of my say on the subject of EGT,[5,6] and so have my critics,[7] but there are two issues on which I wish to dwell further**:** that the external gun turret (EGT) is not really 'low profile;' and that minimizing armor on any turret, external gun or not, is not advisable.

The External Gun Turret

In Section 2 of my article on external gun turrets,[5] I referred to height problems with an EGT but didn't spend much space on it because I didn't know how to handle the difference between the paper claims and the real world. I finally realized that there is a real world comparison available. In the competition for the Assault Gun System contract, there were four real-world prototypes, one being an external gun turret and three with conventional turrets.

Let's look at the reducible height of both winner (conventional turret) and the EGT**:**

	Conventional Turret (M8 AGS)	EGT
Reducible Height	2.38m [8] (93.7 in)	2.45m [9] (96.5 in)

Table 1.

Both the above systems used the same M35 105mm tank gun; both were designed to meet the same C130 air transportability requirements since the C130 requirement puts a premium on minimum height, and the system with the conventional turret still had a lower overall height, which proves my point**:** the alleged low profile of the EGT is fictional. (The comments about both the EGT vehicle and the M8 being designed for C130 transport, and both using the same cannon, doesn't mean that they were both designed to meet the same overall military specs, including armor protection. Only the M8 was tested by the Army; all other comments about the EGT are based upon the bidder's unverified data sheet.)

The height of the 360° view ring of unity, direct vision periscopes on top of the turret does add a little height to the M8, but such clear vision at the top of the turret is one of the advantages of a conventional turret**:** One can easily go

	Est. armor thickness (mm) & obliquity (deg)	
Armor Location	**T-62 Tank**	**T-55 Tank**
Turret: Front	242 @ 0°	203 @ 0°
Turret: Sides	153 @ 5°	150 @ 0°
Hull: Front (Glacis/top)	102 @ 60°	97 @ 58°
Hull: Front lower	102 @ 54°	99 @ 55°
Hull: Side upper	79 @ 0°	79 @ 0°
Hull: Side lower	15 @ 0° *	20 @ 0° *
* Limited protection by roadwheels, but not much.		

Table 2. Russian Armor Distribution, T-62 and T-55.

into turret defilade. But one cannot readily obtain unity, direct vision at the very top of a vehicle with an EGT. One could remote it, at considerable expense and complexity, but I doubt how effective something like a fiber-optic bundle would be in trying to replicate a ring of simple periscopes. Sight heads for IR or TV sights could be mounted on top of the gun mount, from where they could be remoted to both commander and gunner, but they would not provide the daylight visual acuity of direct vision obtainable with simple periscopes.

I have seen photos of a vehicle with EGT next to an M1, with the caption saying something about the photo illustrating the advantages of the EGT. That is very misleading! Similar photos of an M41 light tank next to an M48 tank show the M41 obviously smaller. Both the M41 and the M48 have conventional turrets.

What such a photo illustrates is only the difference in size between a light tank and a main battle tank — which is all the EGT vs. M1 photo shows. (Speaking of EGT, when told that *xyz*'s EGT can, in case of autoloader failure, emergency-load the gun under armor, ask 'em to demonstrate it.)

How Much Armor on the EGT?

The sources cited are inconsistent as to how much armor is needed on the EGT. If the Future Combat System is to have "...armor capable of stopping all known tank munitions...",[1] then that implies that the EGT will also be heavily armored. If the rationale is that burying the crew down in the chassis means that there is no need for a heavily armored turret,[2,3] then I emphatically disagree. How can anyone convince themselves that minimizing armor on the EGT to save weight does not also degrade survivability of the vehicle and crew? In a hull defilade position, the only part of the vehicle exposed to hostile flat trajectory fire will be the least armored part of the vehicle. Does it really make sense to have little or no armor on the turret? Gunners are trained to shoot at the apparent center-of-mass. What else do they have to shoot at on a vehicle in hull defilade, other than the turret? During cross-country movements, the undulations of the ground will provide some protection against flat-trajectory fire for the lower part of the vehicle, but the top of the FCS (the turret with minimum armor) will be the part most likely to be exposed to fire.

An example of how the Russian experience has led them to armor their vehicles can be seen in the armor data at Table 2, which show that the turret was always armored at least as well as the hull.[10]

The Russian tank designers clearly saw the necessity for the heaviest armor on the turret, even to the point of having almost no armor on the lower sides of the hull. The same priority on armor placement must still be in place on the T-72s because 25mm Chain Gun penetrators were killing T-72s in Operation Desert Storm with side shots "...out to 1,000 meters ... if you get it between the tracks where the armor is thin."[11]

Any kind of armor unclassified data that has been released to the public is hard to find, and it will usually be available on tanks that are no longer first-line systems. However, it is reasonable to believe that the frequency and location of direct-fire, KE cannon hits on tanks (in the vertical plane) are no different now than they were in the past, nor should they be any different in the future. (If they are, then let's hear the rationale from the FCS advocates.) Let's look at these older tanks and examine their armor distribution (see Table 3).[12]

So, we have seen that, in the past, it appeared that the turret was at least as heavily armored as the rest of the vehicle. Why wouldn't it be necessary now on the FCS? I have read the fallacious reasoning that, with the crew safely (!?) buried in the hull, if the gun is blown away, the crew will still be safe. If the gun were to be blown away, how do we know that the ammunition in it, or around it, would not detonate and cave in the hull roof just below it, under which the crew is 'safely' hidden? Even if it were true that the crew could be safe after the gun is blown away, which I dispute, how long would they be safe after they were disarmed and the system turned into a mobile target? Once disarmed, the defenseless hull would be easy pickings for most weapons on the battlefield. How safe is the crew now? They can't even call for help, because their antennas were on the gun mount and they were blown away with the gun. A strategy that's good for a turtle is not necessarily good for a tank. The turtles' enemies don't have tank guns, artillery, AT rocket launchers, bombs, guided missiles, and satchel charges.

Could it be that the real reason for not armoring the EGT is not that it isn't needed, but because of the ex-

	Est. armor thickness (mm)			
Armor Location	**French AMX-30**	**UK Mk13 Centurion**	**UK Vickers Mk1**	**US M48 Series**
Turret: Front	80.8	152	80	110
Turret: Sides	41.5		40-60	76
Hull: Front (Glacis/top)		118	80-60	
Hull: Front lower		76	40	
Hull: Front, combination	79			101-120
Hull: Side front	57			76
Hull: Side rear	30			51

Table 3.

...Those threat briefings were usually exaggerations. When we later got our hands on the threat hardware, all too often, either the high tech wasn't there, or it didn't work very well....

treme difficulty of providing any substantial armor on it?

Another concern is timing — in other words, "What's the rush?"

The specific capabilities of the FCS need to be tailored to at least match, and preferably overmatch, the specific capabilities of the next-generation threat system. It does not make much sense to commit the country to finishing development of the FCS so we can go into production when the threat system is so undefined. And from where will this powerful threat originate? From a country that, in the past, specialized more in the idea that 'quantity has a quality all its own,' rather than high tech solutions? Yes, I've heard future threat briefings; I heard 'em for 40 years. Those threat briefings were usually exaggerations. When we later got our hands on the threat hardware, all too often, either the high tech wasn't there, or it didn't work very well.

One of the few cogent statements made by the supporters of the FCS (based upon reading the trade journals) is the need to reduce the logistic burden of the M1 tank, not the least of which is its massive weight and high fuel consumption. It would make more sense to invest in a more supportable, lighter weight version of the M1 than to invest in the FCS. We have spent a lot of money on advanced armor technology, haven't we?

I'm also concerned about proposals for an "Advanced Gun."

If we're seriously considering a revolutionary cannon using advanced technology for the FCS,[2] then this taxpayer hopes that it won't go too far until someone has made a public, *full-scale demonstration* of the technology in actual firings at the ranges of interest. By this I mean that the performance, weight, **volume**, and cost of the new gun have been demonstrated within the constraints (i.e., *inside*!) of the tank on which it is to be integrated. The claims for performance should not be based upon analytical projections, and the data justifying the choice should be made public. If we are told that the performance is 'so great' that the data must be classified, and then we are told that the other limited data that is unclassified is also closely held because it is the proprietary data of the contractor, then it will smell like another Cased Telescoped Ammunition (and Gun) fiasco.[13] A 'demonstration' of an advanced cannon whose total volume and weight, including all subsystems and components necessary to fire at the claimed muzzle energy and rate of fire, are *x*-times the volume and weight of an entire tank ought to make you suspicious. If the advanced cannon system is that large, then it's too early in the development cycle to be talking about putting it inside any particular tank.

Are we again pursuing "Fads and Fashions?"

A reviewer of this article, in commenting on the EGT and the everyone-buried-in-the-chassis approach, told me that he has seen a lot of fads and fashions come and go in his years as an Armor officer and in the defense business. He noted that it is interesting how the fad of where the crew is to be located has changed. In the MBT-70, everyone was located up high in the turret, even the driver. We were told then that it was a great innovation. The view was excellent, but there were cost and practicality issues. MBT-70 has gone off to that great museum in the sky, and we can only hope that, in the fullness of time, the EGT will fade away like leisure suits and Nehru jackets.

Conclusion

I wrote this article, and my previous one on the EGT,[5] in order to give the user community a viewpoint different from what they've been told for a long time. My conclusion is that the FCS Program has so many flawed conceptual approaches that to shut down the tank plant in anticipation of using the money saved to develop the FCS would be a disaster for the Army and the nation.[14] Would the Navy shut down its last shipyard? Would the Air Force shut down its last aircraft factory? Hardly!

References

(1) Sherman, Jason, "21st Century Tank," *Armed Forces Journal International,* October 1996.

(2) Roos, John G., "Wizard Warrior," *Armed Forces Journal International,* June 1996.

(3) Keating, Peter M., "Agile, Elusive Armored Killer...," *National DEFENSE,* September, 1996.

(4) Alexander, Arthur J., *Armor Development in the Soviet Union and the United States,* Rand Corp., Report R-1860-NA, September 1976. Prepared for Director of Net Assessment, Office of the Secretary of Defense. DTIC # AD A031 100.

(5) Loughlin, D., "The External Gun Turret:.....", *ARMOR,* January-February 1996.

(6) "External Gun Turrets:...", *ARMOR,* 'LETTERS,' July-August 1996.

(7) "Don't Dismiss External Guns," and "External Guns Have Real Benefits," *ARMOR,* 'LETTERS,' March-April 1996.

(8) M8 Armored Gun System Characteristics, Data Sheet, undated. United Defense - FMC/BMY.

(9) AGS CHARACTERISTICS, Data Sheet, undated. General Dynamics Land Systems Division.

(10) von Senger und Etterlin, F.M., *Tanks of the World, 1983.* Nautical Aviation Publ. Co. of America, Annapolis, MD. 1983. (The table is based upon U.S. DIA Report No. DDB-1100-241-80.)

(11) Jensen, Ron, "Iraqis say they never saw what hit them," *The Stars and Stripes.* Page 4 of March 3, 1991.

(12) *Jane's Armour & Artillery, 1986-87.* Jane's Publ., Inc., N.Y., N.Y. (Since no obliquities were given, the estimated armor thicknesses must be 'shot line' thickness.)

(13) DOD Office of the Inspector General. Report No. 96-164; *DOD Cased Telescoped Ammunition and Gun Technology Program.* June 14, 1996. (I am the complainant, and you can fax to the IG a request for a copy at fax number 703-604-8932.)

(14) It is traditional to offer thanks to the reviewers of a draft article, and to cite them by name. I must forego that courtesy, since the four reviewers still work in the defense industry, but none stand to profit by any decision regarding the FCS, nor do I.

Don Loughlin retired from the defense industry in 1992 after a 35-year career as an ordnance engineer. Prior to that, he was a Marine armor officer for five years. He holds degrees from the University of Pennsylvania and John Hopkins University and is a 1953 graduate of the Armor School.

Too Late for the War:

The U.S. Industrial Base and Tank Production 1950-1953

by Major Mark A. Olinger

During the rainy pre-dawn hours of Sunday, 25 June 1950, beginning with a massive artillery barrage, the North Koreans launched an unprovoked invasion of South Korea. At the time of the invasion, the closest major United States ground forces to the Korean Peninsula were four divisions on occupation duty in Japan: the 7th Infantry, 24th Infantry, 25th Infantry, and 1st Cavalry. Assigned to these divisions were the 71st, 77th, 78th, and 79th Tank Battalions, in which only the Company A's were active and equipped with M24 Chaffee light tanks, giving each battalion an end strength of 17 tanks. These four divisions also each had an organic reconnaissance company, with an additional 17 tanks.

During the initial occupation of Japan, planners determined that medium tanks would damage roads and cause lightweight bridges to collapse. To avoid any further damage to the infrastructure, the tank battalions and reconnaissance companies began occupation duties with M24 Chaffee light tanks instead of retaining their heavier M4 Sherman and M26 Pershing medium tanks. Stationed on Okinawa was the 29th Infantry Regiment, with the 5th Regimental Combat Team (RCT) in Hawaii. The only other ground force available in the Pacific area was the 1st Marine Division in California. These units were all at approximately 70 percent of their authorized personnel strength. They did not have their full authorizations of recoilless rifles, mortars, machine guns, and antitank mines, and fielding of the new and improved 3.5-inch rocket launcher had not been completed.

One aspect of the subsequent fighting in Korea that received little attention at the time was the use of armor by the United States and its Allies. To this day, most soldiers view the Korean War as one fought by infantrymen in hilly, mountainous terrain against swarming, innumerable foes. Even less well known was the status of new tank designs and the condition of the industrial base required to build tanks. In the weeks after 25 June 1950, staff officers and civilian assistants worked long hours and weekends to get soldiers and critical supplies moving to meet the theater commander's requirements. Between 7-10 July 1950, Supply Division, G-4 Army Staff, completed 24 actions, four of which involved either tank status or tank production. Among them:

- Submitted a report, at the request of the G-3, showing equipment readiness and on-hand status of certain infantry, airborne, and armored units in the United States.
- Informed General Ridgeway, Deputy Chief of Staff that, even with the diversion of equipment from the Mutual Defense Assistance Program, approval of General MacArthur's request for four divisions at full strength probably would exhaust certain supplies in the Special Reserves. Further informed the Deputy Chief of Staff that immediate emphasis would have to be placed on expediting overhaul programs, rebuild programs, renovation of ammunition, and essential new major end-item procurement. Any delay in these efforts would put additional serious drains on reserves and depot stocks in the United States.
- Informed the Assistant Chief of Staff, G-4 that, for planning purposes, it would take 15 days to move tanks from depots to western ports of embarkation. Military Sea Transportation Service could ship all types of tanks from San Francisco to Yokohama in 15 days, and to Pusan in 16 days.
- Prepared a study on the status of tanks in the 66th, 70th, 72nd, and 73rd Tank Battalions.[1]

By August 1950, the United States had power-projected the following battalion-size, heavy forces into the Korean Peninsula: 6th Tank, 70th Tank, 72nd Tank, 73rd Tank, and the 89th Tank. The 6th Tank Battalion was equipped with the M46 Patton; the other battalions — to include the 64th Tank Battalion that arrived early in November with the 3rd Infantry Division — were about equally divided between M4A3 Shermans and M26 Pershings. Regiments that deployed to Korea with their organic tank companies included: The 9th, 23rd, and 38th Infantry Regiments, assigned to the 2nd Infantry Division, and the 5th Regimental Combat Team. An infantry regiment tank company was authorized 22 medium tanks. This was a significant amount of combat power projected in a short time, considering it required a minimum of 31 days to ship tanks to Pusan from the United States.

With this tank support, United States forces were able to stop the North Korean offensive and hold along the Naktong River line. They were outnumbered for several weeks, and it was not until late August or early September that the tank balance tipped in favor of the United States and its United Nations Allies. By then, more than 500 tanks were in the Pusan perimeter, outnumbering North Korean tanks by more than five to one. On 16 September 1950, the 1st Marine Division and 7th Infantry Division made an amphibious assault landing at Inchon and, supported by their organic tank battalions, pushed inland rapidly, quickly retaking Seoul, the South Korean capital. Concurrently, United States forces in the Pusan perimeter launched a coordinated attack to the north and west to link up with the amphibious forces. Led by the 70th Tank Battalion, 1st Cavalry Division, the link-up occurred in the vicinity of Osan on 29 September.

Neither light nor medium tanks were then in production in the United States, and tooling for World War II models had long since been reconverted to civilian production or disassembled. The Army was in the progress of converting

M4 Sherman "Easy Eight"

M24 Chaffee Light Tank

M26 Pershing Medium Tank

M46 Patton Medium Tank

800 M26 Pershing tanks[2] to M46 Pattons. (An M46 Patton was essentially an M26 Pershing with wider tracks and a more powerful engine.) As the tactical situation became clearer, and it was determined that the demand for tanks was greater than could be supplied, if any were to be maintained in the strategic reserve or transferred to military assistance programs, a decision had to be reached on which tank models should be put into production. Of the new series of medium tanks being developed, none had been fully tested and standardized. World War II models had been thoroughly tested, and industry knew how to build them, but they lacked the firepower, maneuverability, and heavy armor of the new tank designs. In both options, it would be necessary for the U.S. industrial base to retool and set up production facilities. The Chief of Staff and the Secretary of the Army decided to assume the risk of producing the new models without full testing.

The decision for the new light tank was not difficult because the T41 prototype had been tested. Later called the M41 Walker Bulldog, in honor of LTG Walton H. Walker, of the Eighth Army, who was killed in an automobile accident in Korea, the M41 was designed to replace the M24 Chaffee as the standard light tank. The Walker Bulldog weighed over 25 tons fully loaded, was equipped with a 76mm main gun, had a crew of four, a maximum speed of 44 mph, and a range of 100 miles. Over 5,500 of all types were built by the Cadillac Division of General Motors Corporation's Cleveland Tank Plant, by the late 1950s. M41s remain in service with eight countries today.[3]

Thought to be more difficult was the decision of what medium tank to produce, but it actually turned out more satisfactorily. While the M26 Pershings were being converted to M46 Pattons, a completely new medium tank, the T42, was on the drawing boards. At the time of the North Korean invasion, design work on the turret had been completed, but drawings for the complete tank were not expected to be finished before November 1950. To save time, the Army staff decided to combine the new turret, with an improved 90mm gun and a new fire control system, to what was basically the M46 Patton hull. The resulting hybrid tank became the M47 Patton. With a 90mm gun, a crew of five, and a loaded weight of 50 tons, the M47 Patton had a top speed of 37 mph and a range of 80 miles. Bypassing the pilot model, and the engineering and service board tests, the Army ordered the M47 Patton into production on 17 July 1950. Ten months later, the new tanks began to come off the assembly lines. It was an additional eleven months before the inevitable design flaws were eliminated. The Army announced acceptance for delivery in April 1952. At $240,000, the M47 Patton cost three times as much as the World War II M26 Pershing. A total of 8,576 M47s was built by the American Locomotive Company and the Chrysler Corporation's Detroit Tank Plant. In the U.S. Army, the M47 Patton was soon replaced by the M48 Patton and most M47 Pattons were supplied to other countries under the Mutual Aid Program. M47s remain in service with six countries today.[4]

Concurrently, development continued on other models. The most successful was the M48 Patton, the first completely new tank developed since World War II. It went into production in the summer of 1952. Wider tracked than older model tanks, the 49-ton M48 Patton had a one-piece cast hull. It was powered by an improved version of the Continental air-cooled petrol engine, the Allison cross-drive transmission from the M46/M47 tanks, and had power steering. Its one-piece, cast turret mounted an improved 90mm gun. The tank commander had an external 12.7mm machine gun. The tank had five track-return rollers, a crew of four, and a new type of range finder. Maximum speed of the M48 Patton was 29.9 mph, with a range of 134 miles. First prototypes were completed in 1951 and first production tanks left the assembly plants in 1952. By the time production was completed in 1959, 11,703 tanks had been produced by the Chrysler Corporation Plant in Newark, Delaware; Ford Motor Company, Michigan; Fisher Body Division of the General Motors Corporation, Michigan; and Alco Products, Schenectady, New

York. M48s remain in service with 15 countries today.[5]

Completing the family of new tanks was the first heavy tank to go into production for the U.S. Army — the T43. This tank was developed to counter Soviet heavy tank models of the IS and T-10 series in a reinforcement role during offensive operations and in a general support role during the defense. In 1952, a heavy tank was defined as weighing between 56 and 85 tons. The T43 was designated the M103, heavily armored and weighing 62 tons, with a crew of five, and used the M48 Patton chassis with a larger turret mounting a 120mm gun. The maximum speed of the M103 was 29.9 mph, with a range of 75 miles. The M103 was placed into production in late 1952 at the Chrysler Corporation plant in Newark, Delaware. Production was not pushed for this tank; the new medium tanks had priority. About 300 M103 heavy tanks were produced and would remain in service until 1974, when the U.S. Marines phased them out of service.

When the Korean War Armistice was signed on 27 July 1953, none of the new M48 or M41 tanks had reached Korea in time to affect the fighting. The war was fought with the M24 Chaffee, M4 Sherman, M26 Pershing, and M46 Patton tanks. The major reason was that tanks are long lead time major end items. The design and manufacture of the thousands of parts and the assembly of a tank meeting strict Army specifications could not be done overnight. The hybrid M47 Patton took 21 months to come off the assembly line. During the "limited mobilization" of 1950-1953, more than ordinary delays could be expected and they impacted other areas of the industrial base as well. These delays caused by the "limited mobilization" included shortages of machine tools, materials, conflicts between civilian and defense work in the allocation of limited facilities, and lack of skilled engineers, supervisors and inspectors to support the expanding defense industrial base while maintaining the civilian industrial base.

These tanks arrived too late for Korea...

M41 Light Tank

M47 Medium Tank

A few M47s were sent to Korea for evaluation late in the war.

Notes

[1]Of the four tank battalions mentioned in these actions, three eventually served in Korea, they were the 70th Tank Battalion, from July 1950-December 1951; the 72nd Tank Battalion, from August 1950-through the armistice; and the 73rd Tank Battalion, from August 1950-through the armistice. (Appelman and Sawicki)

[2]The M26 Pershing was a 46-ton medium tank developed at the end of World War II.

[3]Variants of the M41 are in service with Brazil, Chile, Denmark, Dominican Republic, Guatemala, Taiwan, Thailand, and Uruguay. (Foss)

[4]Variants of the M47 remain in service with Iran, Pakistan, Somalia, South Korea, Turkey and Yugoslavia. (Foss)

[5]Variants remain in service with Greece, Iran, Israel, Jordan, Lebanon, Morocco, Pakistan, Portugal, South Korea, Spain, Taiwan, Thailand, Tunisia, Turkey, and Vietnam. (Foss)

Bibliography

Appelman, Roy, E., *South to the Naktong, North to the Yalu (June-November 1950)*, Center of Military History, 1986.

Foss, Christopher F., Ed., *Jane's Armor and Artillery, 1996-97*, Surrey, United Kingdom, Jane's Information Group, 1996.

Gervasi, Tom, *Arsenal of Democracy II*, New York, New York, Grove Press, Inc., 1981.

Huston, James A., *The Sinews of War Army Logistics 1775-1953*, Washington D.C., Government Printing Office, 1966.

Mesko, Jim, *Armor in Korea: A Pictorial History*, Carrollton, Texas, Squadron/Signal Publications, 1984.

Sawicki, James, A., *Tank Battalions of the U.S. Army*, Dumfries, Virginia, Wyvern Publications, 1983.

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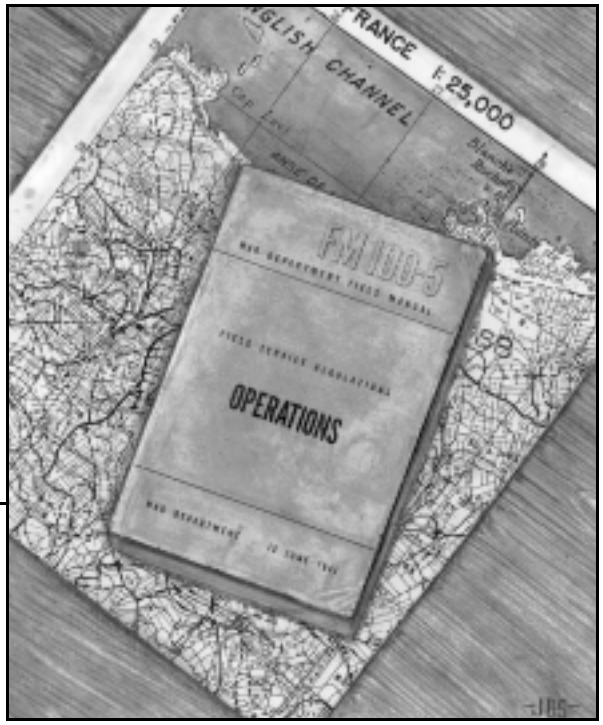
Forest or Trees, Principles or Process?

by Major General Edward Bautz, USA, Ret.



This article is based on the thesis that tactical doctrine becomes exponentially more academic each year after termination of active combat, resulting in concentration on individual trees while missing the impact of a forest. This certainly was the basis for publication of a compendium of small unit actions in 1939 entitled "Infantry in Battle," which had the following introduction written by then Colonel of Infantry George C. Marshall:

> There is much evidence to show that officers who have received the best peacetime training available find themselves surprised and confused by the difference between conditions as pictured in map problems and those they encounter in campaign. This is largely because our peacetime training in tactics tends to become increasingly theoretical. In our schools we generally assume that organizations are well-trained and at full strength, that subordinates are competent, that supply arrangements function, that communications work, that orders are carried out. In war, many or all of these conditions may be absent. The veteran knows that this is normal and his mental processes are not paralyzed by it. He knows he must carry on in spite of seemingly insurmountable difficulties and regardless of the fact that the tools with which he has to work may be imperfect and worn. Moreover, he knows how to go about it. This volume is designed to give the peace-trained officer something of the viewpoint of the veteran.

In 1982, the Armor School published a similar book of Armor actions, quoting the Marshall introduction as the Foreword. Obviously those at the school felt that the problem persisted.

My motivation for writing stems from reading many articles on training and tactical performance published in *ARMOR, Infantry*, and *Army* magazines and other military media, and from listening to formal and informal comments about performance at the National Training Center. Many of these articles seek perfection by measuring the degree to which every individual and unit is "trained to standard" in all tasks. Others seek the same goal of perfection but view the end result — mission accomplishment — as more significant, allowing more flexibility in the process of getting there. My view is that there is room for both: common sense should rule, and common sense should be governed by a small set of basic principles.

Many readers will recognize the term Tactics, Techniques and Procedures (TTP). Most of the functions involved in the last two are repetitive and, as such, readily subject to checklist evaluation. However, tactics is decision-making — evaluating the situation in light of the knowledge available and determining the best way to proceed. In military parlance this is (1) making an estimate of the situation, (2) analyzing courses of action, (3) selecting a course of action, and (4) issuing an implementing order. There are standard formats and procedures for all four actions. However, the primary reason for the format is to develop a standard thought process that will lead quickly to the appropriate conclusion and implementation in combat.

Therefore, we should emphasize the process in its rigid detail where it applies, but when it comes to tactics a "top-down" orientation based on fundamental principles is appropriate. We have a set of Principles of War, and they can be found in the current edition of FM 100-5. The exact wording of these principles has varied over the years, but from Sun Tzu in 500 BC through Clausewitz to current-day principles, they have consistently focused on the same basic ideas.

From an early age we are enjoined to learn sets of principles such as the Ten Commandments and the Bill of Rights. Why not the Principles of War? Every soldier should know and be guided by them although I find them missing in such manuals as FM 7-11B1, *Soldiers Manual, 11B Infantryman;* FM 7-7, *The Mechanized Infantry Platoon and Squad (APC);* FM 7-75, *The Mechanized Infantry Platoon and Squad (Bradley);* FM 71-1, *Tank and Mechanized Infantry Company Team;* FM 7-2, *The Tank and Mechanized Infantry Battalion Task Force;* and FM 71-3, *Armored and Mechanized Infantry Brigade.* Shelved together these 8½ x 11 inch manuals require 5½ inches of shelf space, but they neither list nor specifically refer to the principles of war.

I don't propose to solve this problem nor to preach to the Army on how to train. Rather, I will lead the reader through quotations from some older field manuals, starting with those published in the mid- to late 1940s. These manuals represented recent combat experience of the time, and readers can draw their own conclusions from studying the different presentations.

The first quote is from the 1944 edition of FM 100-5, an impressive work that is broad in coverage yet brief and precise in presentation. The manual measures 4½ x 6½ inches, has no illustrations, and the table of contents and index make locating a subject easy. Incidentally, practically all field manuals of that time had the same dimensions and were designed to fit field gear.

CHAPTER 5. THE EXERCISE OF COMMAND

Doctrines of Combat

112. The ultimate objective of all military operations is the destruction of the enemy's armed forces in battle. The ability to select objectives whose attainment contributes most decisively and quickly to the defeat of the hostile armed forces is an essential attribute of an able commander.

113. Simple and direct plans promptly and thoroughly executed are usually decisive.

114. *Unity of command* obtains that unity of effort which is essential to the decisive application of the full combat power of the available forces. Unity of effort is furthered by full cooperation between elements of the command. Command of a force of combined arms is vested in the senior officer present eligible to exercise command.

115. Through offensive action a commander exercises his initiative, preserves his freedom of action, and imposes his will on the enemy. A defensive attitude may be deliberately adopted, however, as a temporary expedient while awaiting an opportunity for counter-offensive action, or for the purpose of economizing forces on a front where a decision is not sought. The selection by the commander of the right time and place for offensive action is a decisive factor in the success of the operation.

116. Numerical inferiority does not necessarily commit a command to a defensive attitude. Superior hostile numbers may be overcome through greater mobility, better armament and equipment, more effective fire, higher morale, and better leadership. Superior leadership often enables a numerically inferior force to be stronger at the point of decisive action.

117. A *strategically defensive mission* is frequently most effectively executed through offensive action. It is often necessary for an inferior force well disposed for combat to strike poorly disposed hostile forces early before changes in the enemy disposition can be made.

118. Concentration of superior forces, both on the ground and in the air, at the decisive place and time and their employment in a decisive direction, creates the conditions essential to victory. Such concentration requires strict economy in the strength of forces assigned to secondary missions. Detachments during combat are justifiable only when the execution of tasks assigned them contributes directly to success in the main battle.

119. *Surprise* must be sought throughout the action by every means and by every echelon of command. It may be obtained by fire as well as by movement. Surprise is produced through measures which either deny information to the enemy or positively deceive him as to our dispositions, movements, and plans. Terrain which appears to impose great difficulties on operations may often be utilized to gain surprise. Surprise is furthered by variation in the means and methods employed in combat and by rapidity of execution. Surprise often compensates for numerical inferiority of force.

120. To guard against surprise requires a correct estimate of enemy capabilities, adequate security measures, effective reconnaissance, and readiness for action of all units. Every unit takes the necessary measures for its own local ground and air security. Provision for the security of flanks and rear is of special importance. (pp. 32-33)

The next excerpts are from FM 17-33, *Tank Battalion*, September 1949. In general they implement the principles enunciated in FM 100-5 above, focusing on implementation at this level. It is a 500-page document covering light, medium, and heavy tank battalions in the armored, infantry, and airborne divisions and the cavalry group. It includes sample orders, training programs, etceteras, and is well indexed and easy to use. Written in straightforward, concise prose, the manual was useful to every soldier in a tank battalion, not just the battalion leadership.

Section III. PRINCIPLES OF EMPLOYMENT, MEDIUM TANK BATTALION

36. SURPRISE. Surprise is attained by striking the enemy at an unexpected time, at an unexpected place, from an unexpected direction, in sufficient numbers and with sufficient support to gain the objective. Rapidity of concentration, speed of movement, the use of covered approaches, and the intensity of the attack assist in gaining surprise.

37. FIRE AND MANEUVER. The reinforced tank battalion normally advances by fire and maneuver, the maneuvering force always being covered by a supporting force or base of fire. The enemy's fire is neutralized by the weapons in the base of fire, while the mobile maneuvering force closes to destroy him. The base of fire usually consists of artillery, assault guns, and infantry mortars, if available; however, it may contain tanks, armored infantry, and other forces. The maneuvering force consists primarily of tanks and armored infantry, and sometimes includes a small detachment of armored engineers.

38. CONCENTRATION OF EFFORT. The power of the battalion must be concentrated on critical areas. Dispersion results in weak effort at all points and is resorted to only against a weak or demoralized enemy. Even then, the battalion must be able to concentrate rapidly. The tank is not an individual fighting weapon. Tanks are employed in mass as part of a combined arms team.

39. RETENTION OF THE INITIATIVE. The initiative must be retained; for once lost, it is difficult and costly to regain. The initiative is retained by the continuous application of force against those portions of the enemy defense least capable of withstanding attack. Retention of the initiative is furthered by a rapid succession of attacks against vulnerable points, denying the enemy an opportunity to adequately organize his forces to oppose them. It is essential to have alternate plans prepared for immediate execution should the initial thrust fail. The enemy must not be permitted to withdraw, or to prepare for an attack, without measures being taken to divert him from his plans.

40. SECURITY. The reinforced tank battalion always secures itself from surprise by the enemy. It obtains this security by continuous reconnaissance, by the formation it assumes, and by its position with respect to other troops and to natural and artificial obstacles. When a measure of security is provided by an adjacent unit, the battalion establishes liaison with this unit.

41. COOPERATION. Armored combat troops normally consist of tanks, infantry, engineers, and artillery. Cooperation is achieved when this team of combined arms works together for the accomplishment of a common mission – when it has good teamwork. Before cooperation can be attained, everyone must understand his instructions and must execute them in accordance with the spirit and intent of the

authority issuing them. Between independent commanders, cooperation is attained by each working for the common good. Planning is essential, *and rehearsals are desirable when time, location, and terrain permit them.* (Italics added)

42. COORDINATION. Coordination is the timing, the mutual action, and the control which enable a team of combined arms to strike the enemy and destroy him. Within the reinforced tank battalion there are many tools available to the commander for his use in the accomplishment of his mission. These include tanks, armored infantry, engineers, artillery, reconnaissance units, signal facilities, and such supporting weapons as assault guns and mortars. Service elements – such as medical, ordnance, and quartermaster – are also available for support of the combat elements. The capabilities and functions of each are considered when organizing combat teams, in order to provide forces capable of coordinated action against the enemy. This coordination is attained through thorough planning, adequate communication and liaison, the wholehearted cooperation of each member of the team. (pp. 28-30)

In addition to the principles quoted in FM 17-33 above, I have selected a few additional passages that suggest ways to implement the principles with common sense. Italics have been added to emphasize phrases that are pertinent to the theme of this article and to current practices.

43. INFORMATION OF THE ENEMY. a. All possible information of the enemy is obtained prior to commitment of the reinforced tank battalion. The primary sources of enemy information include aerial photos, reports from tactical air pilots, reports from liaison plane pilots, reports obtained through liaison with adjacent units, and general intelligence reports passed down through intelligence channels.

b. The battalion itself can obtain much valuable information. The reconnaissance platoon and the armored infantry get information from patrols. The commander and members of his staff may use a liaison plane to obtain information. Combat patrols, or reconnaissance in force, may be used to determine the disposition and composition of the enemy force.

c. Based on this information, the higher commander can decide whether or not to employ the reinforced tank battalion in this particular zone of operation. The battalion commander, once the decision has been made to employ the battalion, can utilize this information in designing the plan to best cope with the known enemy dispositions.

* * * * * * *

47. SIGNAL COMMUNICATION, GENERAL. It is essential that the commander train himself and his staff to properly utilize the means of communication available within his unit. There are four principal means of communication available to the tank battalion; radio, wire, messenger, and visual. *No one means should be considered for use to the exclusion of all the others.* Radio is the primary means used within the battalion, but it is supplemented by all other means whenever possible. The communication plan must ensure that the failure of any one means will not necessarily result in loss of communication.

* * * * * * *

149. ISSUANCE OF ATTACK ORDERS. The battalion commander personally should issue the attack order to his subordinate commanders. Initial orders for an operation should be as complete and detailed as possible; orders must be brief as clarity will permit, but clarity is not sacrificed for brevity. *Oral orders, fragmentary orders, and warning orders should be considered as standard.* These orders must be issued soon enough to permit dissemination by company commanders to the platoon. When time permits, it is desirable to supplement oral orders with attack orders of the overlay type, which should be as detailed as the situation requires. Reproduction equipment is provided in the battalion headquarters for this purpose. Once the attack is under way, however, orders will of necessity be oral and fragmentary, and will be transmitted by voice radio. The initial order must specify the general plan of attack; this will ensure that, in the absence of orders or in situations requiring immediate decisions, subordinate commanders will be able to take action that will conform to the over-all decision and plan of the battalion commander.

152. COMMAND AND CONTROL. a. General. Control is essential to coordinated and effective action. The battalion commander must be able to direct the maneuver of his companies, and to concentrate the maximum fire power as he desires. Control, once lost, is difficult to regain. Control is based on thorough planning and effective orders. During the attack itself, control is usually decentralized; but centralized control is regained during the reorganization.

b. Battalion commander. The battalion commander places himself where he can best observe and control the action of the battalion. Normally he should be immediately in rear of the assault companies. He must at all times be well forward. He directs his companies by personal orders or by the use of his staff; radio is his primary means of communication. As the attack develops, *he must be prepared to make rapid decisions and to take advantage of any opportunities offered him to speed or further the attack. He must be prepared to shift the fires of supporting weapons, and to vary the employment of his troops, to meet any situation that arises.* A liaison plane is an excellent medium from which to control the operations of the battalion. However, the commander can, from a position well forward on the ground, both influence the action of his troops and, by his presence, add to their morale.

c. Staff officers. *Staff officers, as representatives of the battalion commander, assist in the control and coordination of the battalion's units and attached troops.* They procure and furnish information, prepare plans and action reports, transmit orders to lower units, and supervise the execution of these orders. Staff officers must exercise sound judgment to ensure that they do not restrict the initiative of company commanders.

d. Flexibility. As the attack progresses, *unforeseen circumstances frequently make it necessary for the battalion commander to change his plan of action.* He avoids drastic changes as much as possible; however, he must exploit favorable developments without hesitation and must overcome new obstacles as quickly as possible. As a rule, the most effective way to meet changing situations is to utilize any uncommitted portion of the battalion; this enables the commander to meet the situation without halting his attack.

From FM 100-5 there are two additional pertinent excerpts:

126. In spite of the most careful planning and anticipation, *unexpected obstacles, frictions, and mistakes are common occurrences in battles.* A commander must school himself to

regard these events as commonplace and not permit them to frustrate him in the accomplishment of this mission.

* * * * * * *

154. Orders must be clear and explicit and as brief as is consistent with clarity. Short sentences are easily understood, *Clarity is more important than technique.* The more urgent the situation, the greater is the need for conciseness in the order.

Today we find the principles of war listed in the 1993 version of FM 100-5. They extend to more than double the space of the 1944 version, primarily due to more detailed explanation. However, each principle is defined in one sentence as follows:

Objective — Direct every military operation toward a clearly defined, decisive, and attainable objective.

Offensive — Seize, retain, and exploit the initiative.

Mass — Mass the effects of overwhelming combat power at the decisive place and time.

Economy of Force — Employ all combat power available in the most effective way possible; allocate minimum essential combat power to secondary efforts.

Maneuver — Place the enemy in a position of disadvantage through the flexible application of combat power.

Unity of Command — For every objective, seek unity of command and unity of effort.

Security — Never permit the enemy to acquire unexpected advantage.

Surprise — Strike the enemy at a time or place or in a manner for which he in unprepared.

Simplicity — Prepare clear, uncomplicated plans and concise orders to ensure thorough understanding.

The reader at this point probably will readily agree that there is a great deal of similarity among the various versions of the basic principles. If so, where is the problem? The principles and the selected passages all point to the need for simplicity, conciseness, and flexibility. Yet without the pressures and constraints of combat to discipline doctrine development, simplicity has been replaced by complexity, conciseness by verbosity, and flexibility by rigidity. Inadequate field training opportunities and excessive personnel turnover only exacerbate this unfortunate situation.

As an example, I examined the 1958 version of FM 17-33. The very first entry is as follows:

1. Purpose and Scope

a. This manual covers specific doctrine, tactics, techniques, procedures, and organization of all tanks units, platoon through battalion.

b. The procedures described herein are intended as guides only and are not to be considered inflexible.

c. This manual must be used in conjunction with FM 17-1.

Despite the words in 1.a. the word "procedures" in 1.b. better describes the contents. The manual also references five other manuals. It does not include any discussion of principles of war or employment. FM 17-1, *Armor Operations, Small Units,* August 1957, states under purpose, "It provides the *basic* doctrine, tactics, techniques, and procedures common to two or more types of small armor units. Other publications provide the *specific* doctrine, tactics, techniques, and procedures for specific units." It does cover the principles of war, providing expanded explanations over those cited earlier. In this author's view, the changes tend to confuse rather than clarify — the concern of the "atomic age" is apparent. The size of both manuals increased to 6 x 9 inches and the relative page count increased by one-third. Increasing the physical dimensions of the manuals may seem trivial — but it reveals the trend toward classroom rather than field use.

The authors who contributed to the 1947 FM 17-33 were required to develop Army training tests, including the checklists used in evaluating tactical performance. By the late 1950s, battalion and battle group test scores were calculated to two decimal points. Testers and tested alike were so critical of the procedure that a new Seventh Army commander decentralized all testing to the division and corps commanders.

In the mid-1970s, centralized development of tactical performance evaluations returned with The Army Training and Evaluation Program. The tasks have the grace of using a "go/no go" basis. However, the number of tasks is very large and detailed. These evaluations have their place, provided they are used in a common-sense way.

By "common sense" I mean that every leader and commander needs to establish priorities — one of the most important being the use of his and his unit's time. Priorities are established based on the objective(s) sought. In training evaluations, checklists serve some useful purposes, but they are a means to an end — not the end in itself. As an example, the tendency to insist on "rehearsals," so obvious in literature and evaluations, can be counterproductive. Referring back to the extract from paragraph 41 of FM-17-33 *"——rehearsals are desirable when time, location, and terrain permit them."* I suggest the words "rehearsals are desirable" present a fact. The remaining words present common-sense guidance.

We stand today with the most educated Army ever. It has been a half century since World War II, for which the Army School System had been restructured to meet immediate wartime needs. The wars and actions involving combat or potential combat since then involved directly only a portion of the Army at any given time. Those not directly involved have been engaged in peacetime activities, a major part of which is training and schooling. The basic structure of career development, downsizing, and funding constraints reduce opportunities for field operations. It is a cycle that has been repeated numerous times throughout this century.

The issue, then, is how to avoid becoming a "checklist" Army. My suggestion is that every soldier, and especially every leader, should know the Principles of War, what they mean, and how to apply them. Further, these principles should be the primary evaluation criteria for all tactical training and operations. The principles are short; they are simple; they provide a structure for the thought process; and they do not become obsolete.

This century has seen the Army move from horses to helicopters, from foot infantry to mobile armored formations, from simple cannons to guided missiles, from field wire to satellite communications, and from message pads to computers. Technology changes the way we do things, but not the human thought process. Success in battle will accrue to the commander and the unit that can orchestrate all the detailed

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The Tank XO... 2IC OR TOC-IC?

by First Lieutenant (P) Daniel W. Peck

Recently, I was rereading the May-June 1996 *ARMOR* magazine and, as always, I was searching for the articles dealing with the M1A2 MBT and digitization of the battlefield. As a company grade officer in the FUE (First Unit Equipped) M1A2 battalion (3-8 CAV), I am always looking to integrate as much professional knowledge as possible into developing the TTP for how to fight this new tank. Reading MAJ Poling's article, "M1A2 update," I was anxious to hear the insights of an officer who has had first-hand experience with the M1A2 outside of 3-8 CAV.

As with any opinion, I found great merit in some of his points and disbelief in others. I was glad to see him recognize the M1A2 tank commander's difficulty in deciding where to locate himself in the hatch, without suggesting that anyone but that TC knew the answer to that question. Somewhere in the first paragraph of his section, "Doctrinal Considerations," however, I began to have great problems with his opinion. I was surprised to hear him suggest that a tank company XO should fight from a C^2V. Tank officers who have been on the M1A2 are usually focused on learning how to fight the tank to suit tanking, rather than change tanking to suit the tank. His doctrinal considerations could not have been more wrong. The tank company XO must fight from a tank.

First let's examine one of MAJ Poling's considerations, the assumption that CPT Krenzel's[1] proposal "involv[ing] the company XO playing a much larger role in the company's use of digitization and reporting information to higher headquarters" was a "bold proposal." This is without basis. First, in CPT Krenzel's article, his use of digitization was in reference to the information management side of digitization only. If you remove the word digitization from the quote and replace it with information management, I am confident that he and his battalion and company commanders would agree this perfectly describes how successful company XOs from 3-8 CAV fought at the NTC in M1A1 HC MBTs, yes I said M1A1! If this was the way an M1A1 XO fought his tank/company, then the only difference is the tool, not the task. If he could manage the task before this tool, and cannot now, get rid of the M1A2! However, in my experience as an M1A2 XO, it's easier to apply the tool to make the task easier. My point is not that being an M1A2 TC is easier at first, but that it should be in the long run. If it isn't easier, then the tank doesn't meet the needs for which it was created. When considering doctrinal changes, as MAJ Poling is, it is easy to confuse arguments over doctrine with the related arguments over system types. We should clearly separate the two arguments and consider doctrine itself as a separate tool used by the soldier.

In MAJ Poling's article, he uses the capabilities of this new tank to define the role of the company XO. By doing this, he has effectively changed the job to meet the needs of the tool, thus breaking the basic rule that an item's form must serve its function. Using the form and function rule as a basis for the argument to decide which platform the XO should be in, we must first define the XO's doctrinal role, then choose the platform that best meets his needs.

For this discussion, I assume that the XO is the second most senior officer in the company, that he is the only officer in the company, other than the CO, who integrates all company/team assets to accomplish his mission, and that he has experience leading a tank platoon, as well as in battalion operations, from either a specialty platoon or assistant staff point of view. I will assume that an M1A2 is a tank (with digital capabilities) and that a C^2V is an operations center (with digital capabilities[2]). I also assume that, when full up, every unit within a battalion has a redundant leadership so that the second in command has full capability to assume the role of the first without degrading his unit or a subordinate unit's redundant command. For example, in the platoon, the platoon sergeant has dual net capability. If he did not, he would degrade his platoon in one of the three essential elements of an Armor unit's ability to fight (shoot, move, and communicate) when he took over for his platoon leader. Additionally, when the platoon sergeant takes over, he does not disrupt the redundant command of his subordinate, the wingman, in any way. Finally, I will assume for my discussion that I am on the offensive in order to simplify the argument (I do hope all can agree, without much heartburn, that armor was intended to be used on the offensive).

What is the company XO's role? I believe that most company and battalion commanders would say they expect the XO to build and maintain combat power, assist the commander in the decision-making process, keep them constantly informed of the company's status, ensure class I, III, and V happen without delay, and any number of other key tasks. What probably won't be mentioned, but what you will experience in your first EXEVAL, is that they expect the XO to be a fully functioning commander in charge of a fully functioning company the minute his commander's MILES whoopie light goes off.

Not only do they expect this but, at that moment, any other task that conflicts becomes secondary. To be able to assume command immediately, nothing the XO does to perform his duties can place him in a position that will not allow succession of command. Without more in-depth discussion, I will accept that being the second in command is the XO's primary responsibility. He is the redundant leadership at this level, so his form must meet this function. He must have the ability to coordinate all company assets to accomplish the mission, and assume full responsibility of the commander's duties. Therefore, we must consider the functional requirements of being a commander.

The CO of any combat arm must have the ability to focus the efforts of his fighting units by locating himself at the decisive point of his battlefield to influence the outcome. The commander must be able to "lead the charge," that is, join his men in the fight to inspire them and lead by example. Therefore, the commander must be able to position himself within the battle, as well as be able to join the fight. A platoon leader in his tank could assume this role if the XO's platform did not allow it, but not without degrading his pla-

At right, members of A/3-8 Cav at the first digitized battalion EXEVAL.

toon by removing its redundant command. Therefore, the company needs someone with this capability. If an XO's responsibility is to assume this role, then his form, or platform, must also be able to include those abilities required of the commander.

Now, what about all those other logistical responsibilities? If taking over is just a contingency, shouldn't the XO's tools allow him to easily perform the other actions required by his position? Looking at the logistical coordinator for the battalion, however, the battalion XO, you will see he is not in a tank. His responsibilities in these areas are too important to become secondary when his commander falls. Why isn't this true at the company level? Both XOs are responsible for all classes of supply, replacement, repair, and maintenance. They each have responsibilities in many different directions. Or do they? The battalion has organized itself so that it will assume all responsibility for building, finding, collecting, or providing these assets and responsibilities so that they come to and from the company in one package, the LOGPAC. By assuming this role, they allow the company to focus on these responsibilities in cycles.

Before the battle, building combat power is the company's foremost responsibility. Once the attack begins, the company must move, and move rapidly, so the battalion allows them to switch primary focus to fighting the tanks. Building combat power becomes secondary to the company so that it will not slow its pursuit. Then, after the fight, repairing the tanks and preparing for the next fight again becomes the primary focus. To make full use of its tanks' strengths in pursuit and exploitation, the battalion cannot afford this luxury of cyclic CSS; it must constantly build, feed, and repair while the companies maintain battle momentum. The battalion XO is therefore placed in a operations center where he can continuously manage the assets that build and maintain the companies' combat power during all stages of their cycle. By placing him in an operations center, the battalion level XO's primary responsibility is not to assume control of the fight when his commander falls, thus creating the need for the battalion S3. The battalion S3 can assume command[3] without degrading his unit or his subordinate companies' redundant command. If the battalion did not assume these logistical responsibilities, it is quite possible the company XO would have a similar role to the battalion XO, but then the company would need another first lieutenant in a role similar to the S3 at the company level. It is obvious, given the complexity of the company vs. battalion, and the different role — constant vs. cyclic — of the logistics system, that the battalion XO's role in an operations center is not similar enough, as its name suggests, to a company XO's to help in defining the company XO's role.

During the fight, the company XO has the great responsibility of acting as the company's battle captain. To do this, he needs tools that assist in information management. His focus is the task of collating, sorting, and distilling the flood of battlefield information into usable information and intelligence for his company and battalion commanders, so his platform must provide the ability to manage this information. At higher levels, this function is handled by someone in an operations center out of the fight, so they can calmly gather many types of information and provide them to the battalion commander as needed. Wouldn't the company commander have the same needs of his XO? As brought out by many articles warning of some of the potential downsides of digitization, such as CPT Bateman's ("Force XXI and the Death of Auftragstaktik," Jan-Feb 96), we must remember that the only reason the battalion commander needs this information and someone to manage it is because he can never truly see or feel his entire battlespace himself. The critical difference between a company and battalion is that the company CAN see its entire battlespace, and this is why a company commander provides priceless information to the battalion commander that his staff cannot. The XO's role as battle captain is more to manage this information flow, freeing his commander to fight his platoons, than to manage it separately from the fog of war. Part of that fog is emotion and morale, and the battalion commander must see and feel that fog, not see through it, because it affects his soldiers and his battlespace. If a company XO was in an operations center, the information that he provides to the battalion would have the same disadvantages that come from information from the staff. The company XO must therefore be in a position to provide that true vision of war to the battalion commander in his role as battle captain.

Given his primary role as second in command, his responsibilities of managing the cyclic logistic system, and his additional role as company battle captain, we can easily define what the XO's platform must include. First, just as the commander, he must have the same mode of transportation and weapon as his men on the line, and the ability to communicate with his men and higher. For a tank company, this means a tracked vehicle with a cannon[5] and dual net radios. He must have the ability to manage logistical assets during specific cycles, so he needs the ability to reach battalion logistic nodes by radio or on land. Because it is not a constant need, this does not require a third net, simply the ability to change frequencies. To reach them on land he needs any vehicle capable of moving him from forward positions to the rear and back. Finally, as battle captain, he needs the ability to manage information that he or his commander personally observes, from and to company and battalion. This requires an open hatch, or periscopes, and at least dual net radios, as well as any analog or digital tools which will help him manage that information. It's irrelevant whether those tools are laminated status cards with grease pencils and a map board, or digital report formats using a cursor and a map screen. Any way you slice it, the company XO's role **REQUIRES A TANK**.

Notes

[1]CPT Krenzel served as an M1A2 tank platoon leader in A/3-8 Cav(MBT) during the first company-level test of the M1A2 in the U.S. Army. Based on his experiences as an M1A2 platoon leader, then as an M1A1 HC XO, he

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Vietnam: Tanker's War?

The crew of "Apostle," an M48 operating with the 67th Armor in Binh Dinh Province, survived their encounter with a 500-pound bomb, rigged as a booby trap, in 1967.

by Lieutenant Colonel Jim Walker (Retired)

More than 21 years since the end of the Vietnam War, an old veteran has finally taken up its new home in the Patton Museum collection, bringing a promise of closure and even achievement to a veterans group of tankers who fought there. This old veteran happens to be an M48A3 main battle tank, the tank employed by most Armor and Armored Cavalry units in Vietnam.

The 69th Armor Association had spent several years searching for an 'A3,' an appropriate memorial of their Vietnam experience, for exhibit at the museum. The problem was that most of these tanks had long since been either upgraded to M48A5s, passed on to allies, or dumped in the ocean to form artificial reefs. The search turned up a virtual empty bag on more than one occasion. Anniston Army Depot had only one left, and needed to keep it. The Tank-Automotive Command offered a variety of substitutes: "We can give you an M48A5 or an M60. But an 48A3? Nope." "An M forty what?" was the response from Aberdeen.

Finally, the search bore fruit, strongly augmented by the personal investigations of the late LTG Paul S. Williams, Jr. (former battalion CO of 1/69 Armor in Vietnam) and COL Don Williams (Ret.), former Chief of Staff of the Armor Center and A-1/69 Armor CO, MG Stan Sheridan (former 1/69 CO), John Purdy of the Patton Museum, MG Lon E. Maggart (Ret.), former Armor Center CG, and the Center for Military History. Shortly before the June 1996 Armor Conference, the tank we wanted arrived at a rail siding on Ft. Knox. I snagged MG Jim Fairfield, Honorary Colonel of the 69th Armored Regiment, and moved out smartly for the Boatwright repair facility. There we found row after row of retired M60A1 tanks and other vintage vehicles. Then we came upon the oddball. Nestled snugly next to an M103 heavy was our vision from the past... an M48A3 in near mint condition, complete with cupola and coax-mounted machine guns.

So, why is this tank so important to the veterans of America's longest war? What makes it so different? What should it mean to others?

Millions of Americans today were born after the end of the Vietnam conflict. Their limited understanding — shaped by the popular media, movie, and book cultures — has painted Vietnam as a war fought in swampy jungles by foot soldiers. Most are surprised to hear veterans talk about their service on tanks in that war, but U.S. Army tanks first went into Southeast Asia nearly 31 years ago with the 1st Battalion, 69th Armor. More disturbing is that many current serving members of the Army are ignorant of the contributions tanks made in Vietnam. This institutional memory lapse may have been a factor in the tragedy at Mogadishu, where foreign armor had to answer a call for help to rescue our pinned-down Rangers. We must ensure that U.S. armor soldiers aren't forgotten again in the planning and execution of similar 'meals on wheels' or other such diverse missions in the 21st century.

Almost immediately upon landing his first tank in 1966, the CO of the 1st Battalion, 69th Armor, LTC (MG, Retired) R.J. Fairfield, Jr., found widespread misunderstanding of the role of armor. Assigned to support the 2d Brigade, 25th Infantry Division, operating near Cu Chi, the 69th Armor commander found himself at loggerheads with the brigade commander over employment of his tanks. Despite nearly a half century of bitter experience from two world wars and numerous other conflicts, traditional Infantry-educated/indoctrinated commanders had yet to grasp the principles of mass, maneuver, and objective as they applied to Armor employment. This was the situation facing LTC Fairfield as his immediate superior sought to parcel his tanks piecemeal to infantry units without defined mission or measurable objectives.

When summarizing his arguments to the division commander, MG Fred Weyand, Fairfield stood his ground and stated simply. "Sir, the **only** time I will ever deploy **one** of my tanks will be to ordnance."[1]

Following a well-supported rationale for maintaining his unit's integrity and employing his mass, firepower, and maneuver capabilities, LTC Fairfield won the day and the approval to retain operational control over his tanks. The successful rout of an enemy force by his A Company, only an hour and a

Above, LTC R.J. Fairfield. commander of 1/69 Armor, who fought attempts to parcel out his unit's tanks.

Above right, one of the unit's M48s busts jungle near the Chu Pong Massif, November 1967.

half after landing in country, significantly reinforced the battalion commander's arguments. This proved critical in the ensuing weeks as the application of the battalion's massed firepower and shock action broke the back of an enemy offensive against the brigade in the Ho Bo woods.

This would also prove to be the seminal argument for virtually all succeeding 1/69 Armor commanders in the application of their unit's assets. The consideration of unit integrity and Vietnam lessons learned would similarly guide planners for the development and application of doctrine for Desert Storm and hopefully, will also hold true for 21st century application of armored forces.

Equipment:Blessing and Nightmare

Immediately prior to its Vietnam deployment, 1/69 Armor had traded in its gas-guzzling M48A2 tanks for the somewhat upgraded M48A3 vehicles. The A3s were a distinct improvement over the A2C version, with the addition of an economical and much safer V12 diesel power plant that gave the A3 increased horsepower, over 310 miles range on the roads, and some 230 miles range cross-country. Most important to the crews was that the A3's diesel fuel tanks did not explode violently when penetrated by enemy fire, a long-standing problem with gasoline-powered U.S. vehicles. Similarly, the elliptical hull of the M48 Patton provided outstanding protection from mine explosions, artillery, and small arms fire. With few exceptions, Vietnam tank crews would survive even large mine incidents thanks to the robust M48. Additional upgrades included the new AN-VRC 12-series radios and a Xenon searchlight (2 or 3 per platoon issued in 1967).

The A3s 90mm cannon, and its broad range of available ammunition types, was the major reason the M48s were sent to Vietnam, rather than the later M60 series. The 90mm came with a variety of ammunition choices that proved critical in Vietnam combat. Tankers could draw on the devastating canister round for use in thick jungle and wooded areas, high explosive plastic (HEP) for taking out bunkers and structures of all types; HE and HE Delay for use against personnel and fortifications; white phosphorus (WP) for marking targets and for use against personnel; and HEAT for use against other tanks and fortifications. The normal basic load for 1966-68 tankers might include equal numbers of canister, HE, and a WP-HEP mix. Later loads would include HEAT, due to the introduction of armored vehicles by NVA forces in the tri-border areas of operation.

Precluding the use of the M60 tanks in Vietnam was the lack of HE and canister rounds for their 105mm tank guns. Today. our R&D efforts should be directed toward increasing the types of ammunition available for the 120mm cannon on the M1 series because, given the volatile nature of world politics, our armored forces may encounter a combat environment where they will again need canister and various HE rounds. Efforts to ensure that our Armor soldiers enter these types of situations with the tools right for the job must be on top of everyone's procurement priority lists. While a 120mm SABOT or HEAT round are devastating against T-80 tanks, they will be virtually useless against troops hidden deep in the forest of Bosnia or hunkered down in sun-baked mud trenches somewhere in Africa.

Field Expedients: The Tanker's Lot

Field expedient replacements for weapons or equipment were difficult, but generally, they might be found as close as a sister unit. Vietnam terrain often restricted the cross country travel of our tanks to narrow ravines or treacherous, switchback roads with steep hills between open stretches of road. As ambush was the main enemy tactic, early triggering or detection of ambushes became a primary goal. To reduce the mystery of what lay around the bend or over the hill the battalion CO, LTC Scott Riggs, and later LTC (MG, Retired) Stan Sheridan, made it SOP to carry an M79 grenade launcher on each tank.

As XO of A Company, I was able to enhance this capability by extending the range and lethality of our indirect fire through the addition of 60mm mortars, scrounged from 173rd Airborne supply types, to each of our platoons. Expedient weaponry augmentation was the rule. These added capabilities saved lives and cost the enemy dearly.[2]

After talking with tankers and Infantry soldiers who have or are currently serving in Bosnia, it is evident that M1 crews might very well want to add a few M203 grenade launchers to their inventories, or perhaps begin the requi-

sitioning procedures for 60mm mortars.[3]

There were many unforeseen needs which arose in Vietnam, especially with units operating in the dense highlands' jungles. Enemy contact in these close confines was generally 50 meters or less. Survival required violent, overpowering fire and maneuver to meeting engagements and ambush. Many of our tanks were festooned with claymore anti-personnel mines attached to the hull or on the blades of dozer tanks. Basic loads were augmented with additional quantities of ammunition for the coax, .50s, and individual weapons, along with M72 LAWs, huge quantities of hand grenades, C4 plastic explosives, and flares. A typical A Company tank might carry over 20,000 rounds of 7.62mm ammo for the coax, 1,000 rounds for the .50, and another 5,000 rounds of .45 cal. ball for the M3 submachine guns and pistols. This did not include any additional ammunition for other 'personal' weapons. Interestingly, the major percentage of enemy killed by 69th Armor units resulted from coax, .50 cal., and small arms fire.

Jungle operations also required numerous 'on the spot' modifications to the tanks. The fenders, front and rear, for instance, would invariably become bent or torn as the result of tree branches rolling up under them, often resulting in a thrown track or actual stoppage of the tank. Fenders were summarily detached from new arrivals and otherwise cut away as required. As a defensive tactic, track blocks were hung from turret hand rails; turrets were sandbagged like high riding bunkers against RPGs; airport runway PSP strips were hung over the running gear as protective skirts; and rolls of chain link fence were carried for use as protective screens. I daresay that operations in areas such as Bosnia might require similar considerations. The challenge is exploring these needs, based on terrain peculiarities and enemy weaponry/capabilities, *before* the tanks are deployed, if possible.

Parts, Parts... Never Enough Parts!

The most critical long-term problem encountered at all levels by 1/69 Armor tankers (and all Vietnam Armor/Cav commands) was the scarcity of replacement parts, from roadwheel arms to machine gun backplates and electrical firing solenoids. The basic Army tank inventory was in transition during the mid-1960s, from the M48-series of tanks to the newer M60s, and accordingly, parts inventories were also 'in transition.' From the outset, battalion and company maintenance PLL resources were stretched to the limits. Despite urgent requests from the battalion commander through the division commander to MACV/USARV, replacement parts were slow in coming throughout the Vietnam deployment. Parts supplies were always somewhere between this unit in Europe and that unit back in CONUS.

Company XOs and motor sergeants became masters of midnight requisitioning and bartering. All too often, parts would be in country, in a port depot somewhere, but their actual whereabouts or release authority were not to be found. Because of the disparate nature of 1/69 Armor's missions and the wide dispersion of its organic assets, personnel were forced to extremes of resourcefulness and expediency.

Two critical problems encountered with the M48A3 tank were with its secondary weaponry, the M73 7.62mm coaxial machine gun and the mounting of the M2HB, .50 cal. machine gun in the M1 cupola. The M73 simply didn't work well. The solenoid needed constant replacement; the barrels burned out too quickly; and it was mechanically unreliable. All parts were in short supply. The superb M2 Browning, mounted as it was on its side in the cupola, was virtually useless. Vietnam combat necessitated quick, easy access to the weapon and the capability for fast ammunition resupply, neither of which was possible with this configuration. Most crews and units subsequently mounted one, or even two, M2s externally on pedestals, welded to the turret in front of the TC and loader's hatches. The M73 problems were never fully solved except for carrying an average of three spare barrels per tank and firing the thing manually.

Despite these shortcomings and difficulties, and thanks to the resourcefulness and creativity of our tankers, the M48A3 proved well suited to its role as a protector, forced entry tool, jungle buster, and absolute terror to the enemy.

From the Mountains to the Sea

The typical mind's eye view of Vietnam is of trackless, swampy jungle and an endless patchwork of rice paddies. Indeed, both visions hold true to varying degrees... it's not your expansive 'European tank country,' to say the least. But could tanks operate in that stuff?

They did... and with devastating effect. From its initial assignment in III Corps, 1/69 Armor ran its tanks from the coastal plains on the South China Sea to the mountains bordering Cambodia and Laos and from Cu Chi to Quang Ngai province in the north. To the enemy's chagrin, tanks too often appeared in the most totally unexpected locations.

Missions Impossible...?

I dare say that none of us, trained and prudent Armor Officers/NCOs that we may have been, would have conceived utilizing a tank platoon to climb a heavily jungled mountain, provide *artillery* support, cut roads where none existed, search for submarines, or provide ambulance service (all of this, of course, on top of finding, fixing, and fighting the bad guys). These were but a few of the actual mission requirements given to 1/69 Armor. Versatility, diversity, endurance, and expediency became the tankers' creed. With the battalion's move to the II Corps Area in the Central Highlands, mission demands increased and changed daily, sometimes even hourly.

The 4th Infantry Division, the battalion's new parent (as of 8/67), was responsible for the largest divisional AO in Vietnam, and the 69th Armor prowled all of it and more. Despite loud and protracted arguments against piecemealing, the unit was fragmented almost immediately, with A Company joining the 1st Cavalry Division (Airmobile) in operations on the coastal plain around Bong Son with one platoon assigned to each of the Cav's three brigades.

B Company, already in the II Corps AO, fought one of the war's first major engagements where tanks decisively turned the tide of battle. Detailed to support a company of the 1st Korean Cavalry Regiment at a small LZ (27 Victor) in western Pleiku Province, the 1st Platoon, B Company, beat back and effectively destroyed a reinforced NVA battalion during a night-long attack on the position in August, 1966. This would become the norm for most en-

gagements of 69th Armor tanks... encircled, outnumbered, but not outfought. The 1st Platoon, B Company was awarded the Presidential Unit Citation for this action.

Command of 1/69 Armor had passed from LTC Fairfield to LTC Clyde O. Clark and then to LTC Paul S. Williams, Jr.. It was during the latter's tour that some of the more 'unusual' missions occurred.

BG Jack Mountcastle, Chief of Military History and former platoon leader with B Company, 1/69 Armor recalls two mission of note.[4] Artillery assets of the 4th Division were hard pressed at all times. In April, 1967, B Company was ordered to augment these resources by providing indirect fire support with the tank guns, as had the unit's predecessors in WWII and Korea. For several weeks, they fired missions westward along the Cambodian border with good effect according to aerial target assessments. Here's where the availability of a variety of HE ammunition and fuze types carried the day.

Reconnaissance in force was another favorite mission of 69th Armor tankers. This usually meant that a platoon-size unit, sometimes accompanied by infantry, would smash its way into some heavily jungled grid square and look for a fight. More often than not, they found one. Then-1LT Mountcastle was tasked on a similar mission along the border, searching for signs of NVA activity, in particular a regimental-size unit reported in the area. A short time into the mission, LTC Williams received an unusual radio SITREP from his recon element and LT Mountcastle... "Sir, we spotted NVA... and they are on elephants...!!" Responding with some incredulity, LTC Williams asked for more details and, as a good commander should, reported the find to the division G2. Needless to say, eyebrows were raised at this quarter as well and incontrovertible proof was requested. How do you prove the existence of an elephant, short of snatching one? Finally, after continued requests and snickers from the intelligence types, a bag of incontrovertible 'proof' was duly deposited on the doubting G2's desk.

A Company tankers, commanded by CPT Don Williams, found themselves in similar unique situations during their support of the 1st Cav in 1967. LZ English, the division's forward headquarters at Bong Son, gained public attention in April, when Viet Cong sappers fired up the unit's ammunition distribution facility, setting off massive explosions from the ordnance, including aerial rockets, artillery rounds, and aerial bombs up to 500 lbs. The dump was a blazing, exploding hell for nearly a week with 69th Armor tankers heroically driving their tanks into the inferno and rescuing dozens of trapped troops.

During the Tet Offensive, 1/69 tankers call in an airstrike on nearby NVA near Highway 19E.

Binh Dinh Province was VC territory... an enclave characterized by rugged coastal mountains, virtual seas of rice paddies and villages heavily fortified, first by the Viet Minh in the 1950s, then by the VC in the '60s. Some of the most vicious fighting of the war took place here, where tanks regularly proved decisive in defeating numerically superior, well dug-in enemy forces.

Company A tanks were committed to action almost daily in reaction to Air Cav contacts in heavily fortified villages. Here, another serious problem was encountered in operations with infantry elements. With very few exceptions, ground commanders from platoon to battalion level had little if any knowledge or experience in operating cheek to jowl with tanks. All too often, our tanks first had to proceed into withering small arms, RPG, and recoilless rifle fire as armored ambulances, to extract dead and wounded, before launching our own attack. Working with the brigade commander's authority (COL Fred Karhos), we reduced this problem by establishing a rotational training program with Cav companies as they returned to their forward base camp. Similarly, as the tank platoon leader, I was included as a staff advisor to all brigade operational planning which might include tanks or require their response to enemy action. A helicopter flew daily low level reconnaissance of access routes to the coastal villages. These steps proved extremely effective in reducing both tank and infantry casualties and significantly increasing the efficacy and impact of future ops against prepared fortifications. The grunts had a superb forced entry tool, and we had operational knowledge and the flank and rear security necessary for us to effectively clear these VC strongholds.

Another major concern of the tankers was mines... some as large as 500 lbs.; these were aerial bombs rigged as mines. We had the misfortune of running over one of these in mid-67 during a village sweep operation. The crew of A32, (TC, SSG Roger Urban) though severely injured, survived this awesome blast as did many other men who encountered enemy mines, thanks to the protective qualities of the M48A3.[5]

While the primary mission of Company A was as a heavy reaction/assault force, there were other very 'unusual' missions performed by the tankers, not the least of which included a submarine watch... yes, that's correct... a watch for submarine/boat activity in the Dam Trao Lake area on the South China Sea coast.

Several reports came into the division G2 shop indicating that the VC were moving men and supplies to area VC forces via seagoing vessels, particularly submarines of unknown origin. While we knew of the boat traffic, the submarine factor generated surprise and not a few smiles. We didn't spot any submarines, but did sink a junk loaded with ammo, rifle stocks, and medical supplies which washed up on the beach.

A similar offbeat mission found us attempting to dig an unknown number of VC out of a series of caves formed in coral outcroppings along the coast. We fired every type of available ammunition directly into the cave openings for nearly a week, yet continued to receive heavy return fire. An 8-inch SP howitzer was similarly employed with little discernible effect. The solution came with the pumping of raw napalm from 55-gallon drums, via hand pumps, directly into natural vents in the coral above the caves. A WP round ended the standoff with an earth shaking blast and accompanying fire. Ammunition hidden in the caves cooked off for more than a day and upon inspection, nearly 30 VC/NVA dead were found inside.

For its seven month attachment to the 1st Cav and bitter fighting throughout Binh Dinh Province, A Company, 1/69 Armor was awarded the Valorous Unit Citation.

Dak To, Tet '68, Keeping the Road Open and Ben Het

The primary mission of 1/69 Armor, from late 1967 through its departure in June 1970, was keeping open the critical overland routes of communication into the Central Highlands. These AOs included QL19, from Qui Nhon on the South China Sea to Duc Co and the Cambodian border; QL14, from Ban Me Thout in the south, to Dak To in the north and even parts of QL1 between Phu Cat and Duc Pho on the coastal plain. Over 55 convoys per day traveled the treacherous Highway 19, east and west, supplying the 1st Cav and later, 173rd Airborne in An Khe; the 4th ID in Pleiku, and CIDG/Special Forces camps in western Pleiku Province. At least one of these would be attacked in some manner daily. Similar numbers of vehicles followed the equally nasty Hwy 14S, following its reopening by 1/69 Armor in late 1967. The massive NVA incursion into Kontum province in November and the ensuing battles around Dak To pressed even heavier responsibilities onto the thinly stretched resources of the battalion. Most enemy contacts during this period were either ambushes or meeting engagements, and always on their immediate terms. Despite being outnumbered and at times, short in men and equipment, the 69th Armor tankers had extremely high operational ratios, never lost a fight and, in many instances, reduced enemy force strength to a point of their being incapable of further action.

One such action occurred just before Tet in January, 1968, as the 1st Platoon of B Company was escorting a convoy of ammunition resupply vehicles north to Dak To. Several miles south of the town, the convoy was attacked by a battalion-size force of NVA. Most of LT Bob Wright's tanks were temporarily put out of action by intense RPG fire, wounding many of the tankers. Despite the battering, the crews fought valiantly until a relief column arrived. During the action, SP5 Dwight H. Johnson, driver on LT Wright's tank, became legend, killing over two dozen of the enemy in close and hand-to-hand combat and saving his fellow crewmen, as well as several others of the platoon. Specialist Johnson was awarded the Congressional Medal of Honor for his heroism.[6]

The 1968 Tet Offensive found the battalion heavily engaged in the cities and along the roads of the Central Highlands. A Company and other battalion elements helped defend the city of Pleiku, Pleiku Air Force Base, the Camp Holloway SF complex, and Highway 19 against heavy VC and NVA attacks. B and C companies were engaged in heavy combat in the cities of Dak To and Kontum. While nearly a dozen tankers were lost, and dozens suffered wounds, the Viet Cong infrastructure and hardcore units in the Highlands were virtually destroyed, along with hundreds of NVA killed during the protracted two-week fight. Here again, 69th Armor tankers found themselves improvising tactics and the application of their firepower to fit the situation. Little had been taught in the schools on the employment of tanks in built-up areas. Because of a shortage of infantry, Engineer troops and MPs were pressed into service with the tanks to reduce enemy strongholds in schoolhouses, factories, homes, and even the ARVN military compound in the center of the city of Pleiku. Problems of ammunition shortage, evacuation of wounded, refueling, command and control, and even identification of friendly forces plagued the unit commanders. The VC had forced civilians to dig trenches literally across blacktopped roads in the center of the city and had dug themselves into hasty bunkers along the roadsides. The lack of accompanying ground support cost us two tank commanders killed and several other crewmen wounded when the enemy suddenly popped up behind or to the exposed flank of a vehicle to take it under RPG fire.

B-1/69 tankers inspect an NVA PT-76B tank after destroying it near Ben Het.

The 69th Armor tanks reacted to road ambushes almost daily, especially along Highway 19's infamous 'ambush alley,' a five-mile stretch of road immediately east of Mang Jiang pass. The armor was initially positioned to protect key bridge sites and provide route security for the heavy convoy traffic. The bridge site/checkpoints were typically manned by two or three tanks and perhaps a squad of infantry. Each would normally cover an additional bridge site due to lack of vehicles and troops. These strong points would alternate opening and closing their road segments each day, usually accompanied by Engineer mine sweepers or MPs. Company A initially occupied the strong points in December, 1967, relieving elements of the 1st Cavalry Division. Most required total rebuilding to incorporate revetments for the tanks and bunkers for the troops. This effort alone could occupy a separate volume.

Battalion forward headquarters ultimately displaced to Camp Radcliff in An Khe from a location on Hwy 14S below Pleiku. A Company occupied a run-down fire support base between the pass and An Khe called LZ Schueller, home of a towed battery of 105mm howitzers and an airborne infantry company from the 173rd Airborne. Ultimately, an additional FSB called LZ Action was established at the base of Mang Jiang Pass, in response to the constant enemy contact. While the enemy action, for the most part, consisted of limited ambushes, mortar attacks, and mining, several major attacks occurred in the post-Tet period.

By far the largest incident cost the NVA an entire battalion of fresh troops on 10 April 1968 when the 'B' battalion of the 95th NVA Regiment attempted an ambush of the first convoy of the day. Prematurely initiated by a command-detonated mine, the event turned bad for the enemy immediately. Twelve A Company tanks and nine ACAVs from the battalion scout platoon were in movement to their assigned strongpoint positions. C Company was moving back to Pleiku from An Khe, and B Company was enroute to Bong Son from Pleiku. In essence, the entire battalion was available for any major contingency.

The A Company tanks and the ACAVs reached the point of contact and simply charged on line against the enemy units hastily dug into roadside berms and trenches. The fight continued for half the day, ending with a massive mortar attack on LZ Schueller. C Company secured the north side of the road while A Company engaged the enemy force. As it turned out, no additional force was required. Nearly 300 of the enemy were killed and scores of individual and crew-served weapons captured. The tankers incurred but a few wounded. A captured NVA officer, though in total shock, related to G2 personnel that his unit had only infiltrated into Vietnam from Cambodia two weeks prior and its mission was to destroy a major convoy and attack LZ Schueller. They were told that only U.S. MP and Engineer units patrolled the road. The sheer terror of the charging armor had had true shock action effect on the green NVA troops. Many of their weapons, especially the machine guns, were found to be unfired, with grease still in the barrels.

Tank vs. Tank

Most veterans of the 1/69 Armor missions in the tri-border area of Vietnam can relate their own experiences and responses to the vehicular sounds emanating from the bad guys' side of the border. At night, we heard engines revving and tracks squeaking. We all knew the sound of heavy armored vehicles and trucks, and they were tantalizingly near... but untouchable... until the night of 3-4 March 1969. Battalion units had reacted regularly to reports of enemy vehicular movement near border CIDG camps and U.S. fire support bases, from Khe Sanh to the Parrot's Beak. Nothing had ever come of it, save for a few random shots in the dark. But as a precaution, 69th Armor units were issued HEAT ammunition, beginning in 1968, because of the potential threat. The Special Forces team at Ben Het, a small CIDG camp west of Dak To, had reported heavy movement of enemy troops and equipment in their area throughout the month of February. While several enemy vehicles had been sighted and identified by CIDG/SF recon elements, none had come closer than a few kilometers to the border. Then in late February, NVA tanks were seen approaching the border by both CIDG and air reconnaissance. B Company's 2d platoon was ordered to Ben Het to provide security in case of an attack. A skirmish the first week of March had resulted in the medical evacuation of the platoon leader, LT Jerry Sullenberger. With all of his officers deployed with other company elements, CPT John Stovall, B Company commander, decided to stand in for the injured lieutenant himself.

The camp had been receiving regular, though light, mortar and sniper fire from enemy troops across the border for over a week. A heavy fog had settled into the area around the camp the night of 3 March, moving CPT Stovall to keep his troop on 50% alert. Shortly after midnight, a trip flare was ignited in the outer perimeter, exposing a Soviet PT76B light amphibious tank. The NVA immediately opened fire on the camp, one of their shots wounding CPT Stovall and killing two tankers. The M48s responded with their 90mm guns, destroying two PT76s and two BTR 50 personnel carriers. Several other enemy vehicles were damaged, but managed to limp back across the border. Though considered to be a minor skirmish in the greater scheme of things, this was to be the only tank-to-tank battle between North Vietnamese and U.S. tanks of the war.[7]

Back to Bong Son... More of the Road

LTC Stan Sheridan was able to get the bulk of the 1st Battalion back together for several battalion operations with the 173rd Airborne Brigade in late 1968. Major engagements with NVA/VC troops were again fought in the fortified villages of the Bong Son plain, while QL19 continued to provide action for the tankers. The complexion of the war had begun to change with 'Vietnamization' accelerating, along with the gradual drawdown of the U.S. troop commitment. The battalion continued its combat role until standing down in June of 1970 with the 4th Infantry Division.

Lessons... The M48A3 Veteran... Into the Future

A number of Armor veterans of Vietnam attended the change of command/retirement ceremony on 29 October 1996 for the Chief of Armor, MG Maggart, himself a former commander of 2/69 Armor and an armored cavalry commander in Vietnam. One veteran stood out above all the rest, however. The old vet looked fit and ready to

fight in his 'new clothes,' a new coat of paint and markings now identifying the recently acquired M48A3 tank as B11, 1st Battalion, 69th Armor, 4th Infantry Division, honoring Dwight Johnson's individual valor, and the combined heroism of all 1/69 Armor tankers whose selfless sacrifices made the battalion the most highly decorated tank battalion in the Army.[8]

The M48A3 will soon take its place as a permanent exhibit and tribute to 69th Armor tankers, (and for that matter, all Vietnam tankers), alongside 'veterans' of other wars, in the Patton Museum. It is an outstanding affirmation of Armor's contributions and accomplishments in Southeast Asia. But more important, it should stand as a signpost, a call to action if you will, for the education and development of Armor soldiers and leaders with doctrine addressing the fluid and diverse mission outlook for Force XXI, but soundly anchored in the valuable experience, resourcefulness, and intrepidity of the Vietnam tankers and their predecessors.

Acknowledgments/Sources

[1]MG (USA, Ret.) R.J. Fairfield, Jr. Honorary Colonel of the 69th Armored Regiment; First Commanding Officer of the 1st Battalion, 69th Armor in Vietnam, 1966; dear friend and advisor; Daddy of the regiment.

[2]MG (USA, Ret.) Stan R. Sheridan. Commander, 1st Battalion, 69th Armor, Vietnam, 1968-69; Chief Advisor, 69th Armor Association; friend and counsel; the regiment's charger.

[3]1LT Stephen Kavanaugh. Bradley platoon leader, 1st Infantry Division, U.S. Army, Tuzla, Bosnia/Herzegovina; the Army's future.

[4]BG John W. Mountcastle. U.S. Army; Chief of Military History, U.S. Army Center of Military History; former platoon leader, B Company, 1/69 Armor, Vietnam, 1966-67; no truer gentleman, fellow platoon leader, and great Virginian.

[5]SFC Roger Urban. U.S. Army, Ret.; former tank commander, A32, A Company, 1/69 Armor, Vietnam, 1967. Our "Mine Magnet." Needed more Rogers.

[6]Mr. Dale Ritch, historian, author, Detroit, Mich.; Mr. Tim Pratt writer/historian, NASA; National Medal of Honor Museum, Chattanooga.

[7]MAJ (Ret.) John Stovall. Former commander, B Company, 1/69 Armor, Ben Het, Vietnam, 1969; good friend; a true place in history.

[8]MG (Ret.) Lon E. Maggart. Former commander, U.S. Army Armor Center and 2/69 Armor; AOBC classmate. Thank you, Sir.

Mr. John Purdy. Curator, Patton Museum of Cavalry and Armor, Ft. Knox, Ky.; the tanker's friend.

LTG Paul S. Williams, Jr. Former commander, 1/69 Armor, Vietnam, 1967; my first Vietnam CO; champion of Armor; we miss him.

COL (Ret.) Donald Williams. Former commander, A Company, 1/69 Armor, Vietnam, 1967; former Chief of Staff, U.S. Army Armor Center; tireless supporter of the 69th Armor and the Armor soldier.

MG Stan R. Sheridan, who served as CO of 1/69 Armor in Vietnam during 1968-69, and now Honorary Colonel of the Regiment, meets up with an old friend at retirement ceremony for MG Lon E. Maggart, outgoing Chief of Armor, in October, 1996. The M48 was used at the ceremony and will be preserved as an exhibit in the Patton Museum.

Lieutenant Colonel James F. Walker (USAR, Ret.) was commissioned in 1965 as a Distinguished Military Graduate of Western Michigan University. A graduate of AOBC, AOAC, CGSC, SF Officers Q Course, Ranger, and Airborne Schools, his active duty service includes platoon leader, company XO, and battalion S3 Air with A Company, 1/69 Armor, Vietnam, 1967-68, and MACVSOG, 1970, SEA. His Reserve service includes S3 and company commander with 327th MP Battalion, 300th POW Command and numerous special operations, staff, and liaison positions with USAR. He is the President and co-founder of the 69th Armor Association; President, New River Valley Chapter (Virginia) Association of the U. S. Army; and a member of the ROTC Hall of Fame, Western Michigan University. He has attended Detroit College of Law and Medill School of Journalism, Northwestern University. LTC Walker is a co-author of several Vietnam novels with Ralph Zumbro (A-1/69 Armor, 1967-68; author of *Tank Sergeant* and *Tank Aces*) for Simon & Schuster — *Jungle Tracks, Puma Force,* and *Easter Tide*.

BALKAN REPORT

POSAVINA THUNDER:

The Task Force Heavy Mortar Platoon in Bosnia-Herzegovina.

by First Lieutenant Clark C. Barrett

3 February 1996: Red section of the 4th Battalion, 67th Armored Regiment heavy mortar platoon is placed under operational control of one of the task force infantry companies, D Company, 2-15 IN. The Thunder Platoon was the indirect fire support and a much-needed fourth platoon for the mechanized infantry as they crossed the Sava River, moved into sector, and established the Emerald City Forward Operating Site (FOS) in the Odzak Pocket.

5 February 1996: Thunder Platoon receives the order to move 14 kilometers into sector and set up checkpoint operations overwatching a key bridge site on the Bosna River. Movement is set for NLT 1200 hours 6 February 1996. The platoon leadership conducts troop-leading procedures, cross-levels necessary supplies from the controlling company, and prepares for the next day's movement.

6 February 1996: After final pre-combat inspections and a mission update, the platoon is ready to move out. Red section is operating with four M106 mortar tracks, one M577 fire direction center, one cargo HMMWV, and one M925 5-ton. 24 soldiers were climbing into their vehicles when the call came over the fire net.

There were soldiers from a former warring faction (FWF) holed up in a building within the Zone of Separation (ZOS) — an area where the soldiers were forbidden to be. The platoon focus quickly changed from the movement and checkpoint mission to a hasty occupation fire mission. The fire direction center quickly determined firing data for a possible illumination mission — to compel the soldiers into submission if necessary. The guns were laid in, within the confines of Emerald City, and awaiting orders to cut rounds. After a time, a field artillery unit within supporting distance assumed the mission.

The Mexican standoff, as it came to be known, continued overnight as IFOR and FWF leaders tried to sort out who was where they shouldn't be. The Thunder Platoon received the order to stand down and resume its original checkpoint mission. By the end of the day, Checkpoint B-1 was secured, established, and operational.

This vignette describes a few days in 4-67 mortars' 8-plus month Operation Joint Endeavor deployment. It may seem like a rather ordinary operation. On the contrary, the nature of the missions in Bosnia was very different from what we are accustomed to in a high-intensity conflict. The mortar platoon and battalion leadership which employs it must be prepared to adjust doctrine to best employ this very important platoon during stability operations (STABOPs).[1]

By analyzing our mission in Bosnia within the familiar framework of METT-T, I hope to shed some light on how the task force mortars were employed and how future mortar leaders can prepare for similar missions. While sticking to basics, such as gun track and FDC operations, leaders will always provide the soldiers of a mortar platoon with a foundation on which to build and succeed. Those leaders who realize early that indirect fire operations in a STABOPs environment require a higher level of proficiency, and are able to adapt to this difficult battlefield, will be successful.

Mission

The ordinary mission for the heavy mortar platoon is to provide quick, accurate, and continuous fires in support of the battalion maneuver elements. They are the battalion commander's hip pocket artillery. This is true in the STABOPs mission too. However, the execution of these duties differs greatly.

The political nature of the Bosnia mission required stringent guidelines on the use of force. Our rules of engagement gave set criteria focused primarily on self-defense with the minimum force necessary to subdue threats to IFOR personnel. Direct fire against the assailants, and the assailants only, was the primary means set forward to deal with hostilities against U.S. troops.

By its nature, indirect fire is not very selective about those people, buildings, or vehicles that it harms. It is ideal for dealing with threats without exposing our own troops to danger but, more often than not, the opportunity for unacceptable collateral damage overruled the use of indirect fire. On the STABOPs battlefield, authority to use indirect fire is often held at higher levels, and obtaining this authority takes time.

Because the mortars provide the quickest fires on station, this requirement for approval authority often takes them quickly and irrevocably out of the

picture. This happened in the Mexican standoff. Mortars were first up and ready to send rounds down range. When the more versatile supporting field artillery battery was ready to fire, Thunder Platoon was released to continue its checkpoint mission. This was due in part to the more accurate nature of FA fires and the wider range of munitions available to the self-propelled howitzers (See Troops and Equipment).

What the mortars did do was act as an indirect fire umbrella for the outlying areas of the task force sector that FA couldn't reach. A platoon of tanks or BFVs was always available as a quick reaction force (QRF) for the FOSs and the task force base camp. Everyone understood that the mortars were a continuous, indirect fire quick reaction force. In support of this type mission, firing points were set up throughout the sector, with particular emphasis in the Odzak pocket (See Figure 1). These points were selected because they could cover the holes in the FA umbrella; they supported target reference points near IFOR checkpoints and named areas of interest; and they offered enough space for the section or platoon to deploy in proper firing configurations. This last factor was a major consideration. With the proliferation of minefields throughout Bosnia, IFOR movement was road bound. Checkpoint B-1 itself lay for several weeks on a road fill between two marked but unverified minefields. No Thunder Platoon members had any difficulty staying on the roads. But these restrictions do hamper ordinary mortar firing procedures.

On the high intensity battlefield, a mortar firing point is a covered and concealed plot of land that does not mask or cover fires and allows the platoon/section to deploy in any one of a number of formations — such as the lazy W. A minimum standard for this firing formation is that the tubes be aligned at 40-meter intervals in order to get maximum effects on the target. At CMTC or NTC, finding the perfect firing point is difficult enough; in Bosnia, with the restriction to roads and hardstands, it was all but impossible. Cover and concealment, unavailable on roads, was given up in favor of an appropriate firing configuration. The parking lots of destroyed schools and factories provided some of the most versatile firing points (see Figure 2). At worst, the platoon could stop and spin on any major road to support a fire mission — but this provided the least-acceptable firing

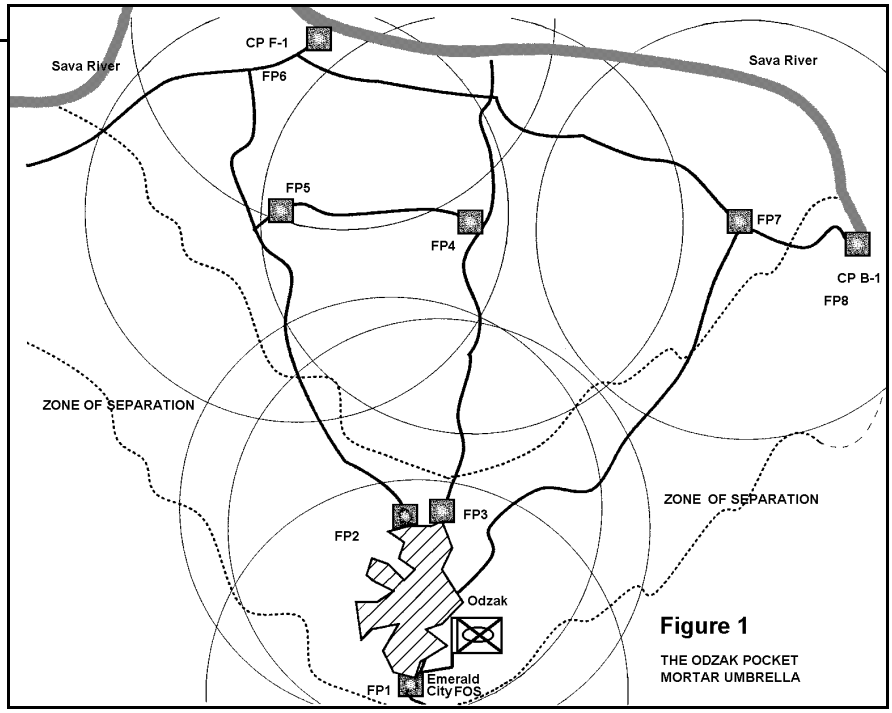


Fig. 1. Firing Points - Odzak Pocket

conditions and follow-on fire adjustments would be difficult or unacceptably slow as the gun tracks would have to adjust their position and orientation within the confines of a narrow strip of asphalt. A final point for consideration is that the guns should always be on station. When possible, whether at the FOS or on checkpoint, the tubes were laid in on a target and ready for adjustment. While the soldiers will have many additional duties (See Troops and Equipment), indirect fire must remain foremost in their minds. During the Mexican standoff, Red section was prepped for movement to B-1, not fire

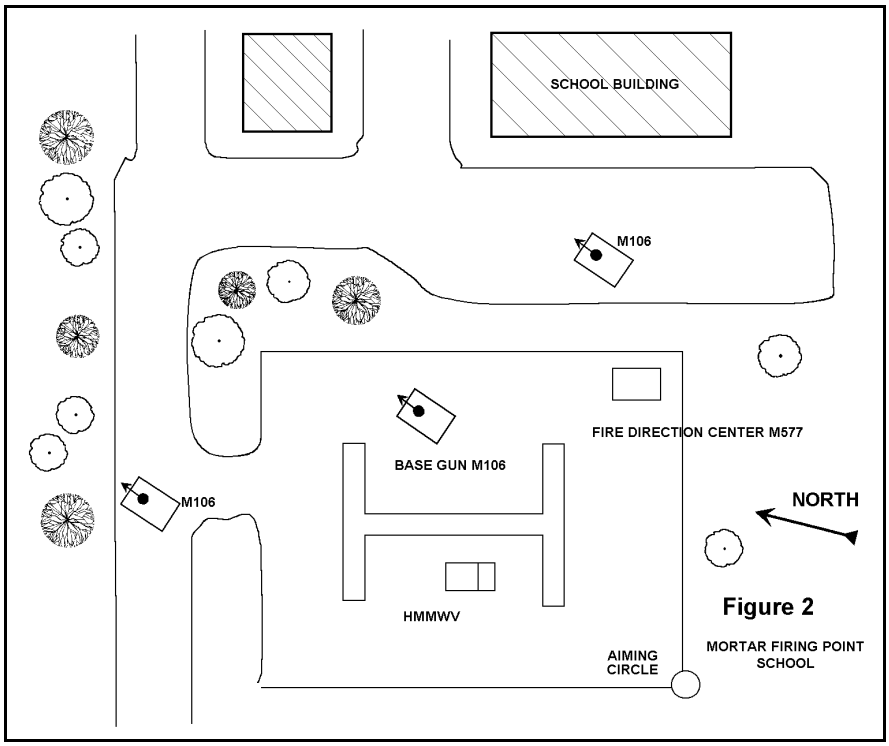


Fig. 2. Parking Lot Firing Configuration

missions. Excitement and solid training ensured that they changed gears to deal with what was a hipshoot mission and properly refined it into a hasty occupation. Guns were UP AND SAFE in record time.

Enemy

The former warring factions did not constitute an enemy, per se. However, they were armed and trained and, if they desired to, could have presented a formidable adversary. An organized threat was not likely, but we didn't dismiss it. The real threat to IFOR and U.S. safety was that, with three factions and numerous paramilitary groups operating in a relatively small area, any one group could stage an attack on IFOR personnel and blame it on another. These and other similar scenarios were possibilities that fortunately never materialized, but were nevertheless considered in our planning.

"...In general, the Thunder Platoon's lightweight and small M106 mortar carriers were one of the most mobile forces within the task force..."

This unnatural aspect of the Bosnian battlefield had a huge impact on Thunder Platoon operations. On the high-intensity battlefield, mortars are most often within supporting distance of, but behind, the front lines. The line companies provide protection to the vulnerable M106 mortar carriers. In the Posavina Corridor, there are no front and rear lines. The mortars often operated independently, conducting their own missions and providing their own internal security force — on firing points or checkpoints. The heavy mortars are accustomed to relative autonomy and were used in many cases like other maneuver platoons to conduct a variety of missions. Despite that, the mortars never relinquished their responsibility to provide indirect fires to the task force. The mortars also had to maintain the situational awareness to defend themselves, and the battalion had to plan to support them with external assets if necessary (i.e., a section of tanks or BFVs).

Terrain

Beyond the impact of the many minefields in the area, the terrain in the Posavina corridor, which is predominately a flood plain for the Sava River, did not affect the mortar platoon.[2] The rolling hills rarely masked or covered the mortar positions or roads. When they did, another more usable location was often just down the road.

In general, the Thunder Platoon's lightweight and small M106 mortar carriers were one of the most mobile forces within the task force. The area in which the task force was operating had many underclass bridges and roads that restricted the movement of the much bigger and heavier M2A2 Bradleys and M1A1 tanks. For this reason, the mortars were often the weapon system of choice to conduct presence patrols on the out-of-the-way, less-traveled goat trails in the sector.

IFOR established these patrols because it wanted the population to be aware that they were there to enforce the peace accord and protect the people, if necessary. For the mortar platoon, these patrols offered the added benefit of being able to stop and conduct training in their planned QRF firing points, reconnoiter new firing points, and practice hipshoots along their route to maintain their warfighting proficiency. The locals were often surprised to see a group of armored vehicles and soldiers spinning into action in their local school parking lot, but this served its purpose. The population recognized that we meant business, and the Thunder Platoon soldiers got a much-needed opportunity to train and retrain.

Troops and Equipment

By comparison to most of the other platoons in an armored battalion, the mortar platoon is a huge and strange beast. With a doctrinal strength of 36 personnel and 10 vehicles, it is over half the size of a pure tank company in personnel and vehicles. Stability operations missions are very manpower-intensive. The unit must perform all of the security, warfighting, and logistics requirements of high-intensity conflict, plus the myriad tasks that come with a peace enforcement mission. Whether overseeing minefield marking, bunker destruction, presence patrols, FWF site verifications, or the ubiquitous checkpoint manning, there is always one too many missions to perform — all in addition to normal duties.

Given the overwhelming number of missions, it should come as no surprise that the mortars operated almost exclusively in split sections. Thunder Platoon's 40 personnel and 11 vehicles were too much of a luxury to spend in one place. For that reason, Red section entered the area with four M106s and its command vehicles with D Company, 2-15 IN. Blue section, with two M106s and its command slice, was in support of the HHC at the TF base camp and TF TAC interchangeably. This task organization met with initial resistance from the platoon and its leadership. Under ordinary circumstances the sections are evenly split, but it became clear that this was the best solution. The heavy section, with 24 or so soldiers, was adequate to perform continuous checkpoint operations — particularly when tank platoons needed personnel augmentation to perform the same duties. Meanwhile the light section, with around 16 soldiers, could perform the indirect fire and guard force duties for the other elements. The composition of these elements rotated, so that no one would get into a rut, but the ⅓-⅔ split section usually remained throughout the deployment. It was an unhappy solution, particularly for those on base camp guard mount, but it served the battalion's needs well. It also highlighted the need for decentralized control of the mortar platoon and competent and responsible leadership to command its far-flung components.

The peace enforcement stability operations mission is well served by the composition of the mortar platoon. Well-trained 11Cs have the weapons

and experience to perform all of the regular infantry tasks, such as patrols and checkpoint operations. Their M16s, M60s, and .50 cals are adequate to settle or discourage most disputes. M9 pistols are woefully inadequate, and main guns a bit of an overkill for the remainder of the armored battalion. This does not suggest that mortarmen are the answer to all our problems. Nor does it offer the 11Cs as a ready force to do anything and everything — I assure you they are busy enough already. But it is clear that there are too many peacekeeping missions and not enough infantry to support them all.

The platoons that are still operating with old M106A2 carriers and M30 4.2-in. mortars would be better served with the new M1064 and M120 mortar, but fielding has been slow.

A final note about the equipment involves mortar ammunition and its very serious impact on the platoon mission. As described in the Mission paragraph, the FA often assumed the indirect role after a battle hand-off from the mortars. This is in partly due to the accuracy of the FA systems, but is more related to the ammunition available. Since HE missions were unlikely, unless a full-scale conflict broke out, that left smoke and illumination missions. Mortar smoke comes in only one variety, white phosphorus. Field artillery units have a High Concentration round in their repertoire. For the same collateral damage reasons, it is obvious that the likelihood of mortars firing WP smoke is very small. That left illumination as the only likely round to fire. While, in a show of force, an illumination round can show the enemy that they are in the wrong place at the wrong time, and should do their best to remedy the situation, I believe it is clear that the mortar platoon is artificially and extremely limited in its capability to perform its primary mission in these kinds of operations.

Time

The only luxury that the mortar platoon had in Bosnia was time. Time to do the job right. Fire missions were still practiced at combat speed, but the platoon usually had time to ensure deliberate planning and execution for each mission. The supporting artillery battalion PADDS team surveyed the QRF firing points, an unusual circumstance for the mortars, which increased the accuracy of our positions.

We developed a play book so that gun crews would know the orientation and position of their tubes, no matter where their firing point was, and what target they were aiming at. Firing points were reconned, cleared, and deliberately selected to support numerous targets.

There was time to prepare defensible and safe fighting positions, time even to make an otherwise cold, wet, and despicable checkpoint into a place to be proud of. There was time to do all of these things. The number one rule in peace enforcement operations is: Always improve your position. The challenge in future operations may be to do all of these things even when you do not have the luxury of the time to do so.

The Joint Endeavor operation for Task Force 4-67 and Thunder Platoon ended in late September and early October, 1996 when CONUS-based military police units relieved us in place. There may be more U.S. units who pull rotations in Bosnia-Herzegovina and the circumstances could be very different than those that Thunder Platoon encountered. Nevertheless, I hope that the lessons of the recent past will apply to the missions of the future.

First Lieutenant Clark C. Barrett was commissioned as an Infantry officer after graduating from the U.S. Military Academy in 1993. His military education includes IOBC, BFVLC, and the Airborne Course. He was assigned to 3-5 CAV as a mechanized infantry rifle platoon leader and battalion S4. In May 1995, he branch transferred to Armor. He has served in Bosnia as the mortar platoon leader, tank platoon leader, and tank company XO with 4-67 AR. He is currently the XO for D Co., 4-67 AR.

The author wishes to thank SSG (P) Manuel Madrid (Blue LDR) and SSG Donald Evans (Red LDR) for their professional service during Operation Joint Endeavor and their help, advice, and input during the preparation of this article.

Notes

[1]The term Stability Operations (STABOPs) is chosen over Operations Other Than War (OOTW). STABOPs better describes the nature of the mission in Bosnia-Herzegovina.

[2]While the Posavina flood plain is by comparison very trafficable for armored vehicles, many of the mountainous regions to the south greatly restricted IFOR movement.

TANK XO...*from Page 23*

wrote "The Armor Lieutenant and the M1A2," in the July-August 1995 issue of *ARMOR*, describing the company XO as the chief information conduit to higher for digital traffic on the IVIS. During 3-8 CAV(MBT)'s fielding of the M1A2, he served as the HHC XO.

[2]At this time, the closest thing to a C^2V in a digitized battalion is an M577 command post carrier with a dismount IGS (improved ground station) version of the IVIS, on a desk top, that has been plagued with compatibility and reliability problems in every exercise that it has been integrated to the M1A2 IVIS in 3-8 CAV. Eventually these problems will be worked out. Force XXI is also currently working on several C^2Vs recommended by the Armor, Artillery, and Infantry communities based on a variety of vehicle chassis.

[3]Whether the battalion XO or the battalion S3 assumes command during a battle is another argument, but for the purpose of my argument I accept that the man forward, in the tank, will be controlling the fight (thus, commanding) until reorganization is possible.

[4]Although many of you will strongly argue the issue of when information becomes intelligence to the conclusion that only a staff makes intelligence out of information, my point in that using the term Intelligence is merely to compare the XO's responsibilities at the company level to those of the staff at battalion level. His job clearly has similarities, at times, to the functions performed by many different staff officers at higher levels.

[5]To those of you who argue putting the XO in a tank is taking a gun out of the fight... where do you think that gun is when you take away his tank and put him in a C^2V?

First Lieutenant Daniel W. Peck is a Distinguished Military Graduate of the University of Miami, Fla., where he earned a BA in international business. He has served as the mortar platoon leader, an M1A1 HC platoon leader, an M1A2 platoon leader, and tank company XO in 3-8 CAV(MBT) at Ft. Hood. A graduate of ABN, AAS, IMLC, AOBC, CSSP, and the Motor Pool Operations Management course at Ft. Hood, he is currently attending AOAC.

The Tactical Decision Game (TDG):

An Invaluable Training Tool for Developing Junior Leaders

by Captain James D. Gonsalves, USMC

"Tactics: The art of leading troops in combat."[1] - Von der Goltz

Introduction to the TDG

Used in the Marine Corps to teach tactical thinking and decision-making, the tactical decision game (TDG) has evolved over the last few years as one of the most effective and efficient training tools in the Marine Corps' inventory. This is a training tool that the armored force should also start using to train its junior leaders, namely non-commissioned officers (NCOs) through company grade officers. As a tactics instructor at The Basic School (TBS) for three years, I saw first-hand how valuable TDGs could be in developing decision-making skills in second lieutenants.

In addition to field problems, sand table exercises, and terrain walks, TDGs were an integral part of teaching lieutenants "how to think." Instructors began most lectures in garrison with a TDG to stimulate discussion of tactics and techniques and, more importantly, to practice decision-making. Instructors also used TDGs to maximize training time, both in the field and in garrison, because the 15-minute TDG makes an excellent hip-pocket class. By the time a lieutenant graduated from TBS six months later, he was a veteran of hundreds of TDGs in addition to learning the basic techniques and procedures required of an infantry rifle platoon commander. The Marine Corps' Infantry Officer Course also uses TDGs throughout its 11-week course, with students averaging at least one TDG per training day.

This article is about the TDG as a training tool; specifically a tool to *teach* and *practice* tactical thinking and decision-making. Unfortunately, it is an under-used training tool in today's armored force. This article will discuss why the armored force should start using TDGs and will examine how to integrate TDGs into combat training. I think after playing just one game, most will see the TDG as a valuable and viable addition to how we develop our junior leaders. Finally, this article will propose a plan for how the Army can quickly and easily implement TDGs in

Situation: You are CO TM A, TF 1-10 AR. The TF is occupying hasty defensive position in preparation for a morning attack to the South. They are approximately 5 km to the north. You and a TF scout section are the screening force for the TF. You have two tank platoons and one mech platoon. Currently you have halted your company north of Knox. TF scouts are ahead of you conducting a route recon south along RT 166. Your mission is to provide early warning to the TF. You have permission to engage the enemy but are not to become decisively engaged. The enemy, which has the ability to mass up to company-size units of T-62s and BMP-1s, is not expected to attack. You have priority of mortars and FA. As you survey the terrain to your front, you watch the scouts cross South Bridge and head south along RT 166. Suddenly you hear MG and tank main gun firing west of the bridge. You try to contact the scouts but receive no answer. What is your plan?

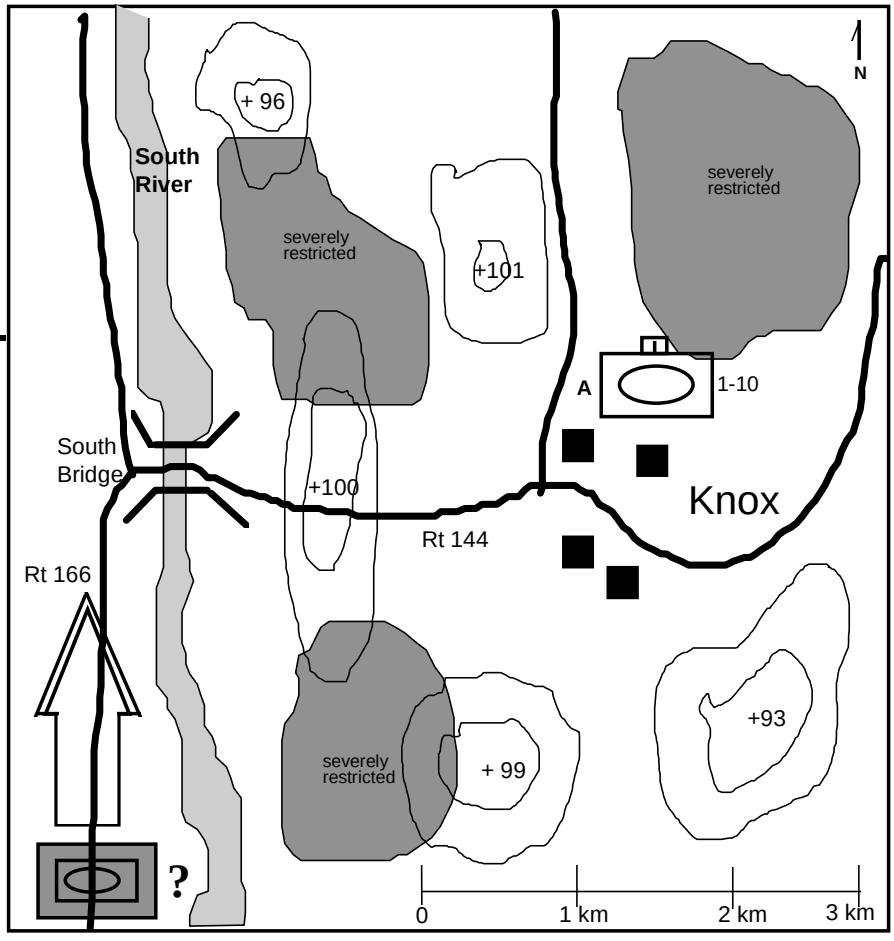


Figure 1

training its junior leaders for the challenges of the 21st Century.

"Tactical decision games are to field training as stretching is to tough PT."[2]

"TDGs have captured the imagination of Marines who see their potential for freeing tactics from the dead hand of the laundry list."[3]

What is a TDG?

Before discussing why armor units should conduct TDG training on a regular basis, we need to define the TDG. The TDG is a tactical problem consisting of a short written scenario, a sketch, a requirement, and a time limit. The *written scenario* tells the players who they are, what they have for assets, defines their mission, and presents some type of enemy situation. The enemy situation is usually vague and incomplete, forcing the players to make assumptions. The written scenario is usually no more than a few paragraphs. The *sketch* allows the players to depict their graphics and present their plan to the group. The *requirement* is usually a written frag order to subordinate unit leaders. The *time limit* is normally less than ten minutes and is vital to the game since it provides the friction and pressure necessary to simulate combat.

At TBS, we gave TDGs to lieutenants after long hikes, after PT, after written tests, etc., anything to drive home the fact that in combat they will need to think and perform 24 hours a day. During the TDG, we played loud music, banged on trash cans (artillery), splashed water (rain), etc., anything to simulate the friction of combat. Once the time limit was up, the lieutenants presented their solutions to the group, under the direction of a controller or moderator. The moderator guided the critique by keeping the discussion focused on ***why*** the lieutenants made specific assumptions and decisions. Heated debates among the players were healthy and encouraged, for this was where most of the learning took place.

Groups can play TDGs in a seminar or force-on-force format. In the seminar format, players should draw their sketch on a VGT so they can present their plan to the group on an overhead. Players should write their plan and brief their plan as a frag order, to practice communication skills and order-writing under pressure. The moderator can ask questions such as: What were your priorities? What reports would you send to higher? What assumptions did you make and why? What about fire support? What was your intent?

As with planning an attack, when one starts with actions on the objective and works backwards, a TDG starts with the decision and works backwards.[4] This occurs through a detailed analysis of the decision *after* the game is over. Although the focus is normally on the planning process used to achieve a decision, TDGs force a decision up front. The group then thoroughly analyzes the decision during a detailed critique. This recognitional or intuitive approach to decision-making, forced during TDG training, is just as important as the analytical approach, especially when making tactical, versus technical, decisions. Since junior leaders will use both approaches to make decisions in combat, armor schools and units should teach and practice both methods. Figures 1 and 2 are examples of TDGs:

Although there are some TDGs in print,[5] Marine Corps' schools and units design most of their own TDGs. Designers should tailor the TDGs to the unit's goals, weaknesses, and training priorities. Scenarios should be realistic, challenging, and present some type of dilemma for the players. The scenarios

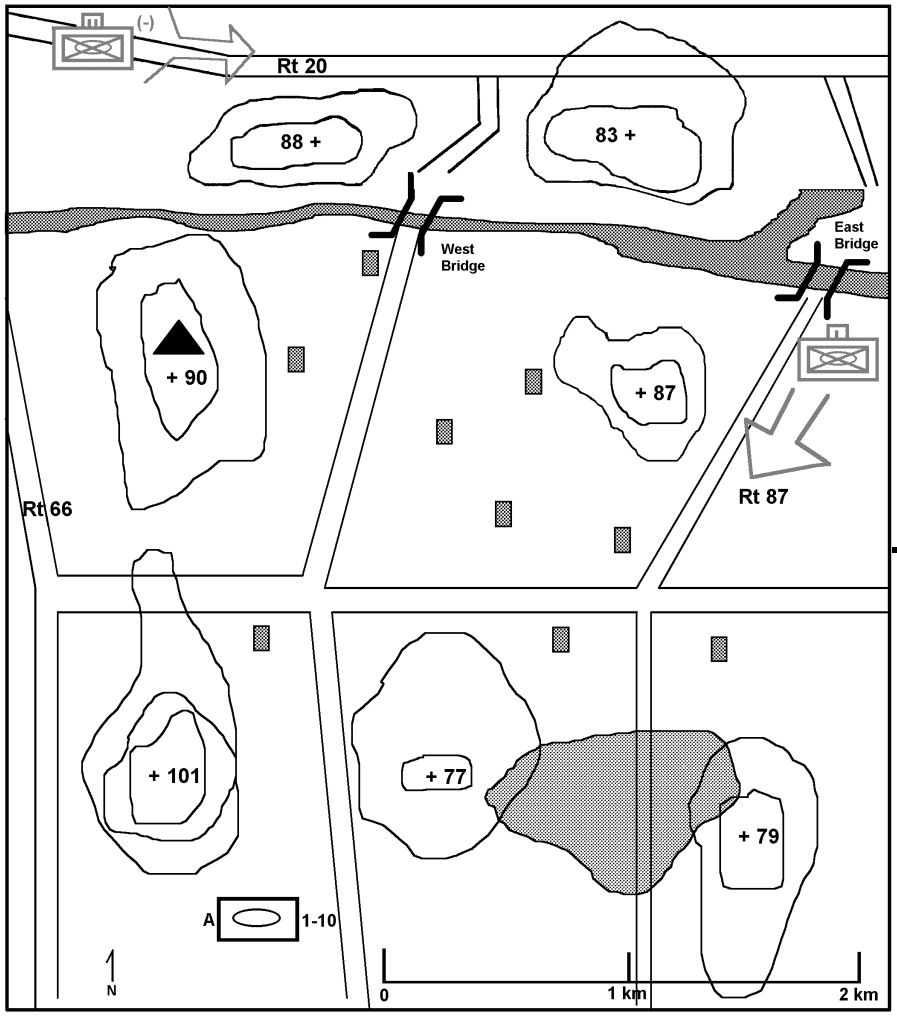


Figure 2

Situation: You are CO of Company A, TF 1-10 AR. You are the advance guard of the TF as it attacks north along Rt 66. The TF is approximately 5 km behind you, moving north along Rt 66 in a TF column. You have priority of FA and mortars, and there is one dismounted scout team in your zone on Hill 90. The rest of the TF scouts are screening forward and west of the task force. The enemy can mass up to battalion-size mech units, mainly consisting of T-72s and BMP-2s. As you approach Hill 77, you receive the following report from the OP on Hill 90: "Three T-72s and 6 BMPs have crossed East Bridge and are heading south along Rt 87. Also, there is a column of 20 vehicles moving west to east along Rt 20." What is your plan?

should read like a short story, complete with changing enemy situations, bad intelligence, poor communications, and lots of surprises. Designers can base scenarios on historical examples, combat or NTC experience, or tailor the scenario to focus on a specific teaching point, such as a principle of war or warfighting tenet. A good game forces the players to consider two levels up, prioritize, and think combined arms. Until the armor community develops a data base or library of TDGs, armor schools and units will have to design their own TDGs.[6]

"Coup d'oeil is the ability to look at a military situation and immediately see its essence, especially the key enemy weakness or weaknesses which, if exploited, can lead to a decision."[7]

Why conduct TDG training?

For those on the front line, training their units for combat, TDGs can augment existing training techniques. Here are ten reasons why armored units should conduct TDG training on a regular basis:

- Practice makes perfect. TDGs enable our junior leaders to sharpen their warfighting skills on a daily basis. Junior leaders can hone essential skills such as battlefield judgment, situational awareness, and intuitive and analytical decision-making by doing TDGs on a regular basis. Soldiers should play TDGs every day in garrison.

- TDGs are efficient. Although not a substitute for field exercises or other training techniques, TDGs are inexpensive and use few resources, yet their payoff can be extremely beneficial. Junior leaders can practice tactical thinking and combined arms at all levels with little expenditure of resources. At TBS, second lieutenants played games requiring them to make decisions from the standpoint of widely differing roles, from TOW platoon leaders to mechanized-infantry company commanders to tank battalion commanders.

- TDGs are effective. TDG training on a regular basis develops imagination and creativity, encourages initiative and action, and makes our junior leaders familiar with making tough decisions under pressure.

- TDGs improve implicit communication skills. TDGs teach leaders how their subordinates think and allow leaders to teach their subordinates how they think. Implicit communication is essential to success on the battlefield, and TDG training helps foster this. Imagine a company commander issuing and critiquing a TDG with his lieutenants. In an extremely short period, he will know how his men think, and they will learn how he thinks.[8] This is vital to a junior leader's understanding of commander's intent.

- TDGs make us better communicators. Junior leaders "issue" their solutions to the TDG as a frag order. This practice is invaluable to ensuring clear and concise orders under pressure. The moderator can then ask questions of the other players to see if the orders were clear.

- TDGs make us better tactical thinkers, both intuitively and analytically. We make decisions both intuitively and analytically and TDGs, especially during the critique, force us to practice both. This is important, especially during Military Operations Other Than War where junior leaders must make split-second tactical decisions that can have strategic consequences. TDGs allow us to put our junior leaders into these difficult situations over and over again before they have to do it for real.

- TDGs make us better tacticians. Every game forces us to think about and mentally execute tactics.[9] Most training at the company level focuses on techniques and procedures. TDGs can help fill this gap concerning the lack of tactics training below the company level.

- TDGs provide an excellent means to mentor and teach subordinate leaders. Company commanders, platoon leaders and NCOs are mentors, and TDGs provide an outstanding forum to discuss and teach tactics.

- TDGs allow us and our subordinates to practice warfighting two levels up. Tank commanders can fight companies, platoon leaders can fight battalions, and company commanders can fight brigades in a TDG.

- TDG training makes sense. Tactical thinking and decision-making are vital components of successful execution on the battlefield. TDG training on a regular basis will significantly enhance these essential skills, and thus better prepare our junior leaders for the rigors of combat decision-making. It just makes sense for the armored force to start integrating them into training.

"Nine-tenths of tactics are certain and taught in books: but the irrational tenth is like the kingfisher flashing across the pool and that is the test of generals. It can only be ensured by instinct, sharpened by thought practicing the stroke so often that at the crisis it is as natural as a reflex."[10]

TDG Training and the Armored Force

How does the armor force integrate TDG training? First and foremost, the Armor School in its courses — AOAC, AOB, and ANCOC — should start using them. Instructors should supplement their classes with TDGs throughout. TDGs are a great tool to introduce tactical concepts, promote discussion of tactics, and drive home teaching points. As we learned at TBS, lectures that integrate TDGs are more effective because TDGs make the classes more interactive and compelling. Finally, by using TDGs, captains, lieutenants, and future platoon sergeants will return to their units armed with a new tool to use in training ***their*** subordinates. The Primary Leadership Development Courses, Basic Noncommissioned Officer Courses, and local NCO academies should also try TDG training. NCOs must also think two levels up, be used to making decisions under pressure, and be tactically competent across the combined arms' spectrum. TDGs will make them better NCOs. Finally, the Army Internet Home Page should add a TDG site to allow armor leaders to download and post TDGs for training.

"The art of war requires the intuitive ability to grasp the essence of a unique battlefield situation, the creative ability to devise a practical solution, and the strength of purpose to execute the act."[11]

Conclusion

TDG training should become an integral part of how the armor force prepares to fight. Now, more than ever, we must arm our NCOs and company grade officers with effective decision-making skills that will enable them to make timely decisions despite friction and uncertainty. TDG training is a proven, cost effective, and efficient way to make this happen. Only through practice can we improve, and TDGs enable us to practice warfighting every day. Do not, however, take this author's word for it. Design a TDG; play it with your subordinates; then make your own judgment on the effectiveness of this training tool. Patton summed it up best when he stated: "A good plan violently executed *now* is better than a perfect plan next week."[12] TDG training reinforces this mentality in our junior lead-

For TDG Solutions, turn to Page 42.

ers better than any other training tool. It is time for the armor force to "violently execute now" some TDG training as it prepares its junior leaders for the rigors of combat in the 21st Century.

Notes

[1]FMFM1-3, *Tactics* (Washington: U.S. Marine Corps, 1991), p. 4.

[2]Major Kukuck, AOAC Intructor.

[3]Gudmundsson, Bruce, "A Short History of TDGs," *The Marine Corps Gazette,* April 1992, p. 65.

[4]From conversation with COL M. Wyly, USMC (Ret.) on 27 Jun 96.

[5]*Mastering Tactics,* published by the Marine Corps' Association and *The Marine Corps Gazette's* monthly TDG are great places to start.

[6]Major John Schmitt's article, "Designing Good TDGs," published in the May 1996 issue of *The Marine Corps Gazette* is an excellent guide for unit leaders to use.

[7]FMFM1-3, p. 87.

[8]From conversation with COL Wyly.

[9]Ibid.

[10]T.E. Lawrence, "The Science of Guerrilla Warfare," *Encyclopedia Britainnica,* 13th edition (New York: Encyclopedia Britannica, 1926) intro.

[11]FMFM1-1, *Warfighting* (Washington: U.S. Marine Corps, 1989), p. 15.

[12]George S. Patton, Jr., *War as I Knew It* (Boston: Houghton Mifflin, 1947), p. 354.

Captain James D. Gonsalves was commissioned from the U.S. Naval Academy in 1989. He served as a tank platoon commander, AT (TOW) company XO, scout platoon commander, and H&S Company XO with the 3d Tank Battalion, 1st Marine Division, in 29 Palms, Calif. He then served as a tactics instructor at The Basic School in Quantico, Va. Upon graduation from AOAC and CLC, he reported to the 2d Marine Division.

More Sheridan Memoirs

Dear Sir:

Burt Boudinot's fine article in the Jan-Feb 97 edition brought back some memories that I would like to share with fellow *ARMOR* readers. In late 1968, shortly after assuming command of the 2d Squadron, 4th Cavalry of the 4th Armored Division in Germany (later the 1st Squadron, 1st Cavalry of the 1st Armored Division), I was informed that my squadron would be receiving some "new armored reconnaissance vehicles called Sheridans." At that time, we had two M60 tanks in each armored cavalry platoon tank section, and those of us who had known the M41 light tanks wished we had them back. The scout sections had M114 recon vehicles (we were hoping that the new vehicles were replacements for these!); the infantry squads had M113 APCs; and the mortar squads had the 81mm mortar mounted in an M113 chassis.

A few days later, in a planning meeting at Grafenwoehr-Vilseck, we got the details of the impending changes and related requirements. We were told that General Polk, the CINC USAREUR/Seventh Army Commander, was being pressured to take these vehicles for all the armored cavalry units in his command, that he had fought it as long as he could, and had reluctantly agreed to take only enough for one divisional cavalry squadron for evaluation before agreeing to accept any more. My squadron had been selected as the evaluation unit, and several weeks later we began the process of turning in M60 tanks at our home station in Schwabach and receiving new equipment training at the Seventh Army Training Center (7ATC) in Grafenwoehr-Vilseck.

The initial orientation and training phase of the new equipment training (NET) program was presented by a team comprised of representatives from the Armor School, the Army Materiel Command/TACOM, USAREUR, 7ATC, and the vehicle manufacturer. From February through April, we shuttled crews and maintenance personnel between Schwabach and Vilseck for the NET. During that period, there were approximately 300 2-4 Cav personnel that attended about 10 different sessions of instruction, ranging from a four-hour block to a three-week course.

In late April '69, in Graf-Vilseck, we began to receive, deprocess, and train on our 27 new Sheridan Armored Reconnaissance/Armored Assault Vehicles (AR/AAVs). The troopers of 2-4 Cav were excited about these new vehicles and were eager to put them through the orientation phase, the gunnery exercises, and the following tactical operations evaluation.

Meanwhile, the squadron participated fully in the normal training and operational requirements of a divisional cav squadron — training and evaluating all the 4th Armored Division's 62 scout squads at a training site near Erlangen; training, evaluating, and live-firing our nine mortar crews in Grafenwoehr-Vilseck; getting "assisted" by the division's CMMI and AGI inspection teams; having our nine infantry squads participate in the division's mechanized infantry squad proficiency course (MISPIC) training and evaluation program near Erlangen; training and qualifying our three Redeye air defense teams; and other routine stuff.

As we proceeded through the modified tank gunnery tables I through VIII, we found that the Sheridan's combination of a conventional gun and a missile caused all kinds of training and maintenance problems:

First, the program to make M60 tankers into AR/AAV crewman and to add Sheridan-specific maintenance tasks to our already overloaded track and turret mechanics was no easy mission; this new vehicle was different! Further, the Sheridan evaluation program exacerbated an already strained personnel situation and we were forced to use personnel from other skill areas and train them as Sheridan crewmen and mechanics.

The concerns relating to the combustible cartridge ammunition brought about some new and unusual requirements — e.g., training the loaders to quickly remove the "condom" when loading the round was tricky, and the "no smoking in the vehicles" rule took on a new importance.

The Confidential classification of the missile system meant that each vehicle had to be secured with Sargent & Greenleaf locks, handled and administered like a secure document, and all the crews and maintenance personnel had to be cleared. Our motor pool in Vilseck was ringed with three strands of concertina wire and guarded 24 hours a day by guards with loaded weapons. OH, WHAT FUN! (This situation got me in deep trouble once, perhaps another story at another time.)

The missile firing, guidance, and control components were very sensitive to the recoil shock of the 152mm conventional round, to the sun — if it were shining from a particular angle onto the vehicle, and to the normal (rough) handling by tankers.

Because of the erratic behavior of the missiles at times, special range clearances of the Graf-Vilseck complex had to be carefully coordinated and integrated with Range Control. There were several missiles that flew off, out of control, never to be seen again!

The failures and maintenance incidents during the evaluation were not, in themselves, too bad. However, the shortage of trained diagnostic personnel and repair parts caused unacceptable down time. The presence of the manufacturer's rep and his special, high-priority resupply line pulled us through.

After the gunnery exercises, we put the Sheridan through its paces in a wide-ranging, demanding, armored cavalry field exercise, including swimming some lakes in the Graf-Vilseck complex. Its mobility was excellent, far exceeding that of the M114 and M113 vehicles and, therefore, it added a potent capability to the squadron.

Our evaluation highlighted the personnel, training, and maintenance "challenges" for the following deployments of the Sheridan to USAREUR/Seventh Army units; however, some of those challenges were never resolved satisfactorily.

Later in 1969, the Air Cav Troop of the squadron was selected to participate in the USAREUR Air Cav Troop Evaluation. After several months of dramatic changes in personnel and equipment, and an extensive training program for the air cav troop, the evaluation culminated in a total squadron operational readiness test. This was a fast-moving, intensive, cavalry maneuver exercise conducted over wide frontages and extended distances (over the German countryside

in the Hohenfels-Regensburg-Neustadt o.d. Donau-Beilngries area) to "stretch" and evaluate the air cav troop capabilities. In that exercise, the excellent mobility of the Sheridans in the ground cav troops was clearly demonstrated. But what impressed me most was the tremendous capabilities of a cavalry unit that has both air and ground capabilities. It can be awesome if employed correctly.

In October 1970, when I assumed command of 3/11 ACR in Vietnam, the Sheridans had been there for several years and Burt Boudinot's article aptly describes that phase of the vehicle's lifetime. The flechette round was great. It was commonly called the "nails" round because they had nailed many a VC to the trees and to the ground. The troops also effectively used it to clear out or blow away nearby areas suspected of harboring the enemy or AP mines. The canister round was often used in heavy vegetation to clear the way ahead of the track. For that reason, the Sheridan led the way through the jungle areas many times.

We had some problems with the durability of the engines and transmissions. I recall a visit by the PM for the system to try to solve the problems. I think he left believing that our "jungle-busting" usage was far beyond the developed capabilities of the system.

Hits by mines and RPGs were devastating. The light armor and aluminum content of the vehicle were penetrated too easily, the combustible cartridge ammunition would shatter and burn instantly, and the vehicles would be destroyed very quickly. Too many troopers went to Fiddler's Green or a hospital because of such incidents. It is my deep-felt belief that we should never use combustible cartridge ammunition in a combat vehicle.

As the Sheridan closes out its long history, the many, many users of the system will likely have mixed feelings about it — some good, some bad. It certainly has served our forces in a wide variety of roles, missions, and environments. Perhaps this is its greatest legacy — a versatile system that was employed in a wide variety of situations. In that regard, such a vehicle is fitting for cavalry, and we need a replacement — although with today's technologies, we surely can develop a much better system for our cavalry and light armor units.

COL FRANK E. VARLJEN (Retired)
Manassas, Va.

COL Varljen was commissioned in Armor in 1952 from Armor OCS at Fort Knox, and is a veteran of two tours in Vietnam and four tours in Germany. He served for a total of 10 years in five different armored cavalry units in Germany, CONUS, and Vietnam, and was later TRADOC's Senior Liaison Officer to USAREUR. In his continuing work to find solutions in the countermine business, he was instrumental in the development and fielding of the M1 tank Track Width Mine Plow and the rolling Anti Magnetic Mine Actuating Device (AMMAD) (also called the Improved Dogbone Assembly. -Ed.

"You Get What You Ask For..."

Dear Sir:

I read the latest edition of *ARMOR* with great interest, particularly the articles and letters discussing the Sheridan. As a tanker, I have been fortunate to have had many varied and rich experiences across the spectrum of Armor, including operational assignments, involvement in Armor-related modernization issues at HQ DA and, as an Acquisition Corps member, participation in the Armored Gun System (AGS) program. To one degree or another, the Sheridan and its replacement have been themes that have shaped and defined my professional career. The following comments are a personal testimony to my "love/hate" relationship with that little beast, the M551. In addition, I offer some related thoughts about requirements generation and future implications.

My earliest memories as a cavalry platoon leader in the mid-70s include feeling naked and exposed while sitting in a GDP position on the Czech border and patrolling the inter-German border in something that would barely stop a .50 cal. round. I can still conjure up vivid images of an onslaught of the Soviet horde that still fills one with foreboding about the chances of fighting and surviving against T62s in the M551. Other memories include the exhilaration of crashing about in Sheridans, conducting reconnaissance and screen missions on REFORGER, and charging across the desert at the NTC* — when it worked. We were constantly surprised and amazed at the frequency and variety of ways in which the darn thing broke. This was only exceeded by the energy expended to make the supply system respond, to otherwise find parts across a thriving maintenance underground that linked all Sheridan units, and the ingenuity to make repairs by any means, fair or foul.

As a member of the DCSOPS staff and bit player in the actions that resulted in the AGS program, I offer your readers some background to provide context to the discussion.

Multiple analyses, over time, indicated that any useful measure of M551 upgrade was not affordable and could not provide the combat utility to justify the expense. The platform could not be economically upgraded to meet survivability and logistics supportability requirements. This is even more true today than it was five years ago. The platform is worn out. The system has little growth potential. Component suppliers are out of business. Industry has little apparent interest in building small quantities of specialized hardware at reasonable and affordable costs. Arsenal production is similarly not economical. Sheridan's retirement was long overdue.

The formal AGS requirement included a very technically challenging package of firepower (105mm cannon to use NATO standard ammo), accuracy (M1-equivalent), high crew survivability (with modular armor, exceeding Abrams in some aspects), and Abrams level of mobility. All of that and it had to be packaged for air delivery, which in user's terms meant Low-Velocity Air Drop (parachute) delivery from a C130.

Because of the then-stated urgency of need, an unconstrained world-wide market survey of all possible candidates, wheeled and tracked, was conducted. Many of those alternatives, including some called out in the AGS article and letters to the editor, were investigated, found significantly wanting, and then eliminated when judged against the formal requirement. The AGS, as designed, tested, and initially approved for low rate production, directly reflected the formal requirements as executed, considering the immutable laws of physics, the state of technology and materials, and the necessary technical trade-offs.

Let me be perfectly clear: AGS was brought in at the promised cost, on time, and performed as advertised. The materiel development process, with daily user (TSM and 82nd Abn Div) participation, delivered what was asked for. AGS cancellation, which I know was a painful decision, was necessary in light of the tightly constrained resource environment and overall priorities of the Army. If, in 20/20 hindsight, the AGS requirement did not reflect what was then needed, then those of us in the Armor community working those requirements missed the mark up front. However, I think the requirements were right. In some measure, differing points of view on those requirements, even now, reflect more the state of the discussion about the warfighting role and value of light armor in general, rather than the AGS in particular.

The AGS chapter is closed, as are those about our previous Mobile Protected Gun System effort, and the Marines' experience with the LAV 105. As the Sheridan passes from the scene, we now wrestle with how to shape and equip early-entry forces and respond to outcomes from the QDR process. It is useful to reflect that we are now writing the next chapter that will define our evolving warfighting triad of doctrine, force structure, and equipment. We are at the front end of Armor's future, where many in the community are now working technology and requirements embodied in advanced concepts such as Composite Armored Vehicle (CAV), Future Scout Vehicle, Future Combat Systems (FCS), and the allied Future Infantry Combat System (FICV). Looking outside of the Armor "box," we must also recognize that the Crusader artillery system, as the only significant ground system in current development, is the present "technology carrier" for many elements of any future ground combat weapon systems. We must, prior to final decision, be sure about what we want these systems to do.

In summation, I offer a lessons-learned spot report: You get what you ask for in this business (materiel and combat developments), so be careful what you ask for. As an institution, once we ask for something and carefully set priorities, we must all understand our part in the materiel development and acquisition processes and remain steadfast along the way. That is the only way to bring programs successfully to fruition. While change is inherent in a process that is a sequence of refinements to an estimate, indecision and unneeded changes always increase costs and lengthen program schedules. We can meet challenging requirements. We can't meet those that are incomplete or unstable. "Better is the enemy of good enough."

How can we do it better? I see great promise in Integrated Concept Teams (ICT), as embodied in the TRADOC "Blackbooks." ICTs can provide added rigor, cohesion, and stability to requirements definition,and prioritization as well as acquisition strategies. We must all make the ICTs work and follow through on the outcomes. The stakes are too high and the dollars too dear to do otherwise.

GEORGE E. MAUSER
COL, Armor
Via e-mail

*In the early days of NTC, O/Cs used the Sheridan in force-on-force training as well as live-fire exercises.

COL Mauser has served in cavalry, armor, and mechanized infantry units in CONUS and USAEUR and as an O/C at NTC, technical test officer of ground combat systems at Aberdeen Proving Grounds, and Product Manager, AGS Armaments. He currently commands the TACOM-ARDEC Fire Support Armaments Center, Picatinny Arsenal, N.J.

Task Force Reserve Operations In Restricted Terrain

by Captain John J. Faria

"Visual estimate; swiftness; onslaught"

-Marshal Suvorov

The Task Force Reserve

According to FM 71-1, the task force reserve will, "Move in the depth of the task force formation. Its general location and possible missions are normally specified."[1] Typical missions for the reserve include assuming the mission of the main effort, attacking from a different location, supporting attacking company team(s) by fire, providing flank security, protecting key intersections and bridges, and blocking a counterattack.[2]

The reserve in severely restricted terrain[3] has all of the same missions, but, these missions are much more difficult to accomplish. In severely restricted terrain, the task force normally will attack in a task force column. The reserve will typically be the trail element, often five to seven kilometers behind the lead element. In the defile, the frontage of the task force is often only one to three hundred meters. In other words, the task force main attack may be a single tank or tank platoon wide.

In order to successfully operate as the task force reserve, the company team commander must carefully analyze the task force mission and commander's intent to determine the most likely mission. Concurrent planning is a key skill. The team commander cannot wait for the one hundred percent solution from higher; he must prepare his own eighty percent solution based on the warning order and his own knowledge of the situation.

Route Security

Generally, the reserve commander's first mission will be to secure key terrain on the road march from the assembly area to the line of departure. Upon receipt of the movement order or warnord (warning order), the reserve commander must determine how to use his limited assets to secure the route. The enemy threat is most likely from light infantry and special operations forces overwatching hasty obstacles. The commander should do a careful map reconnaissance to determine the most likely positions from which light forces can conduct antiarmor ambushes along the route, and key choke points where a properly emplaced hasty obstacle can stop the task force.

With a typical task organization of three tank platoons, an engineer mobility squad, and four Bradley Stinger Fighting Vehicles (BSFV), the reserve can be tasked with the clearance and security of a 20-kilometer route. Through field experience in Korea and numerous simulation exercises, I found that each platoon must be given a specially tailored mission and organization. (Figure 1)

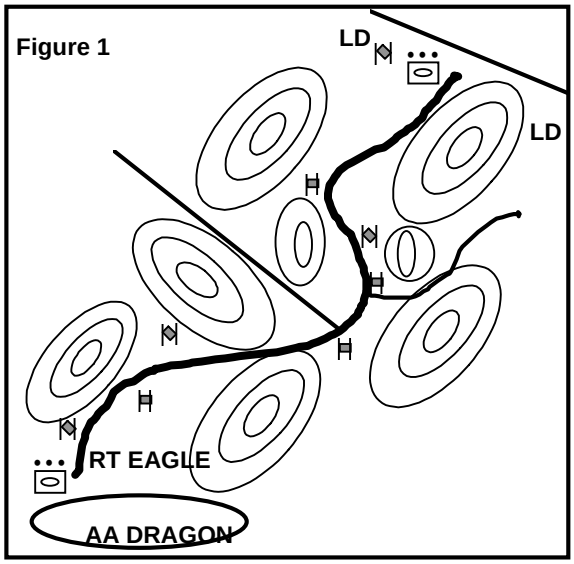
The lead element consists of a tank platoon with two plows and a mine roller, a BSFV, and the mobility squad. The lead platoon, under the commander's control, will clear the route of obstacles, conduct hasty bridge and ford classifications, and secure the line of departure by fire. The BSFV provides protection against enemy air threats during any forward passage of lines.

The second tank platoon, with three BSFVs, will secure key intersections, bridges and choke points. The BSFVs will dismount Stinger teams to provide ADA coverage of the route, while the Bradley will be employed as a ground combat asset to secure key terrain against dismounted threats. The tank company commander must work closely with the ADA platoon leader to ensure the ADA umbrella covers the entire route. The third tank platoon, with a mine plow and roller, serves a dual purpose. The platoon will patrol the route to ensure it remains open, and if necessary, escort CSS assets to resupply the task force. It is important to note that enemy special operations forces and light infantry may allow mechanized forces to pass unmolested, and try to attack CSS assets as they move forward.

Attack From a Different Location

The second likely mission for the reserve is to "attack from a different location." This constitutes perhaps the most difficult and dangerous mission of the reserve in restricted terrain. In severely restricted terrain there is often only one avenue of approach available for the task force, usually a narrow defile. If the main attack is unable to advance, the task force commander does not have the luxury of introducing multiple companies into the fight along the

Figure 1



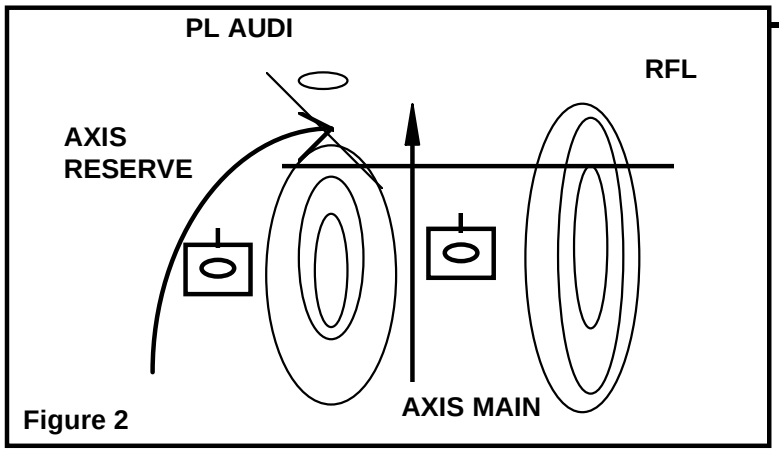


Figure 2

axis of attack. Often, if the lead tank platoon is unable to advance, another platoon cannot be committed much less another company.

In order to successfully prepare for the attack from a different direction, the reserve commander must begin his planning early. His first task is to conduct his own IPB. Of critical interest are lateral routes that will allow him to maneuver his company behind likely enemy locations. The key is to avoid the conventional wisdom as to what constitutes a tank-capable route. Often, the only available route into the enemy's flank or rear will be a "goat trail" only a single tank wide, over rough terrain. The reserve commander must do everything within his power to become familiar beforehand with the terrain where he is likely to fight. Terrain reconnaissance during peacetime is far more valuable than a map recon during war.

The reserve company commander must be aggressive in seeking out enemy information during the battle. It is unlikely that the scout platoon will be tasked to reconnoiter routes for the reserve, however, with prior coordination, the scouts can conduct hasty reconnaissance of routes identified by the reserve commander during his zone recon for the main effort. Prior to his commitment, the reserve commander must have as clear a picture as possible of his routes and the enemy situation to the task force flanks.

The final major planning factor in this type of attack is to avoid fratricide. All company teams and fire support teams must be aware of the reserve's attack route and objective. These should be identified as no-fire areas. In addition, restricted fire lines should be coordinated (preferably before the battle) to avoid fratricide. A method in use by the Dragon Force is to designate companies as direct fire "hot" (free to fire) or "cold" (will not fire). As an example, when the committed reserve crosses Phase Line Audi, they are main gun hot and the lead company team is main gun cold. (Figure 2)

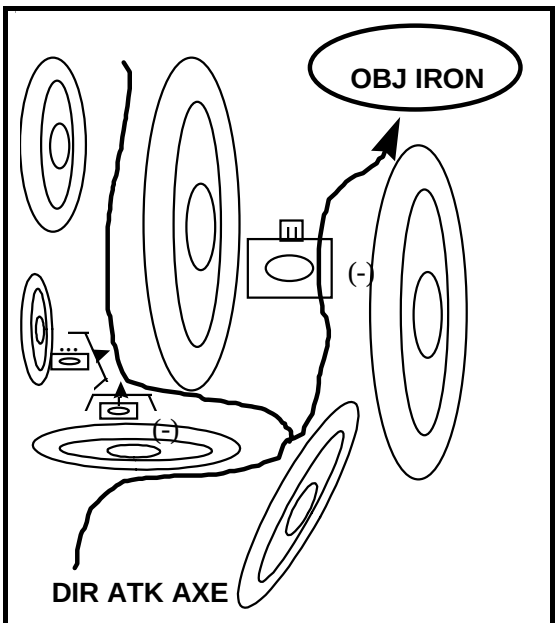


Figure 3 Block a Counterattack

The successful use of the reserve to conduct an attack on an alternate axis requires in-depth planning and IPB by the reserve commander and close coordination with the scouts and lead company team. In addition, careful staff planning must smoothly integrate air and artillery support.

Block a Counterattack

A key mission of the reserve in the offense is to block counterattacks, either on the flanks, or during consolidation. The key to this mission, like all other reserve missions, is prior planning and IPB. The success of the reserve team in the blocking mission is determined by how quickly they can transition from a column formation to a line, or an "L" shaped ambush at attack-by-fire positions on defensible terrain. To facilitate success, the reserve commander must first identify likely enemy counterattack routes. (Figure 3) Next, he must do a careful terrain analysis to determine the intervisibility lines that provide the best defensible terrain, and distribute likely attack-by-fire positions to the task force and his platoons. Finally, the reserve company must rehearse the rapid transition from a company column to a company line.

Assume the Mission of the Main Effort

Assuming the mission of the main effort is the most intricate and difficult reserve mission in the offense. All leaders in the reserve team must be familiar with the mission of the main effort, and must plan for and rehearse it. What makes the mission most difficult in restricted terrain is physically getting to the battle. Unlike open terrain, where the reserve can pass around the committed unit, the reserve may very well have to pass through the committed company when in restrictive terrain, possibly while in contact with the enemy.

In order to pass through a unit in contact, the mission must be rehearsed at the task force level. Using FM communications, the two commanders must determine a battle handover line for the direct-fire battle. If possible, the lead company platoon with the best support-by-fire position should operate on the reserve team command net to facilitate accurate delivery of direct fires. Finally, one fire support team must assume control over all indirect fires. During the passage it is often advantageous to have the stationary FIST control indirect fires while operating on the reserve unit's command net.

In the defense, the reserve mission is no less difficult. The reserve commander and task force commander must identify a central location for the reserve, allowing them to be committed to more than one blocking position. The reserve must rehearse movement to all possible attack by fire positions, under daylight, night, and MOPP 4 conditions. All tank commanders should be familiar with routes into and out of their positions. The reserve com-

mander must coordinate with the team commanders he is likely to reinforce, in order to determine the best routes into their defensive sector, with minimum masking of fires. If time permits, the unit should conduct a full-scale task force rehearsal on the ground in order to familiarize every soldier in the task force with the reserve's likely movement.

Conclusions

Under the best of conditions, the reserve has the most challenging mission in the task force. In restricted terrain, the mission is further complicated by limited routes, numerous passages of lines sometimes while under direct and indirect fire, and the risk of fratricide. The reserve commander must conduct rapid parallel planning and a thorough IPB (Intelligence Preparation of the Battlefield). He cannot wait for the task force order to prepare his team. The reserve commander must coordinate with all the commanders in the task force for passage of lines. Leaders in the reserve element must be familiar with the mission of every unit in the task force, all routes in the task force area of operations, and must maintain constant situational awareness. Like most missions, the keys to the reserve's success are prior planning, detailed rehearsals, and flexibility. As the great Russian General Suvorov once said, "The reserve commander must be capable of conducting a quick visual estimate, attacking with swiftness, and crushing the enemy with the onslaught of his forces."

Notes

[1]FM 71-1, *The Company Team*, p. 3-13.

[2]Ibid., p. 3-13.

[3]FM 34-130, *Intelligence Preparation of the Battlefield*, p. 2-15.

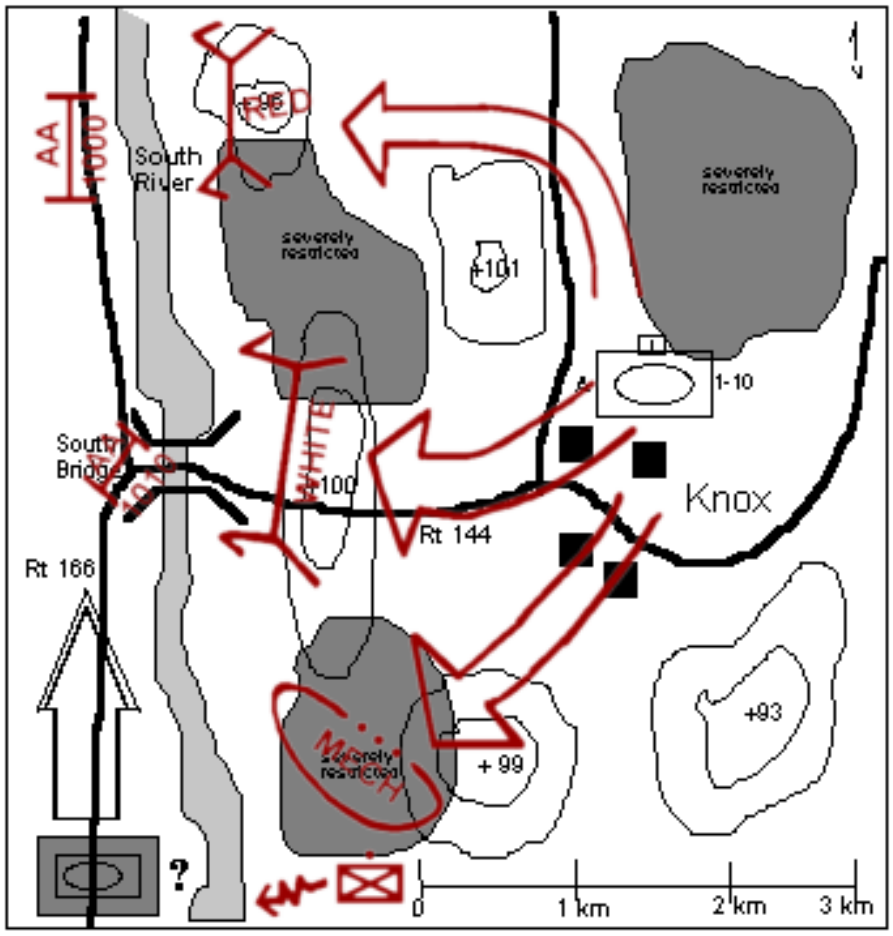
Captain John Faria is a 1989 graduate of the U.S. Military Academy. He has served as a tank platoon leader and tank company XO in 3d Battalion (Airborne), 73d Armor, 82d Airborne Division, to include during Operations Desert Shield and Desert Storm. He served as S3 Air and B Company Commander, 2-72 Armor, 2d ID, and currently commands HHC, 2-72 Armor.

TDGs: Suggested Solutions

SCENARIO 1

FRAG: "Guidons, Guidons, this is Black Six. Scouts have been engaged by a unknown size enemy force south of the bridge along Rt 166. My intent is to develop the situation and at a minimum keep the enemy west of the river. Red, establish ABF on Hill 96 orient west. White, establish ABF on Hill 100 orient South Bridge, Mech establish a blocking position in the trees just west of Hill 99 — protect our left flank and see if you can get eyes on situation to the south. FO, give me a linear target at the road intersection of Rt 166 and Rt 144 and another linear target west of hill 96 along RT 166. XO, call battalion with an update and let them know if it is larger than a company-size force, we will force him north along Rt 166. Also, get me that scout platoon on the radio. I will be with White. All platoons have permission to engage after positive identification of enemy. Remember we have a friendly scout platoon to our front! Move out...!"

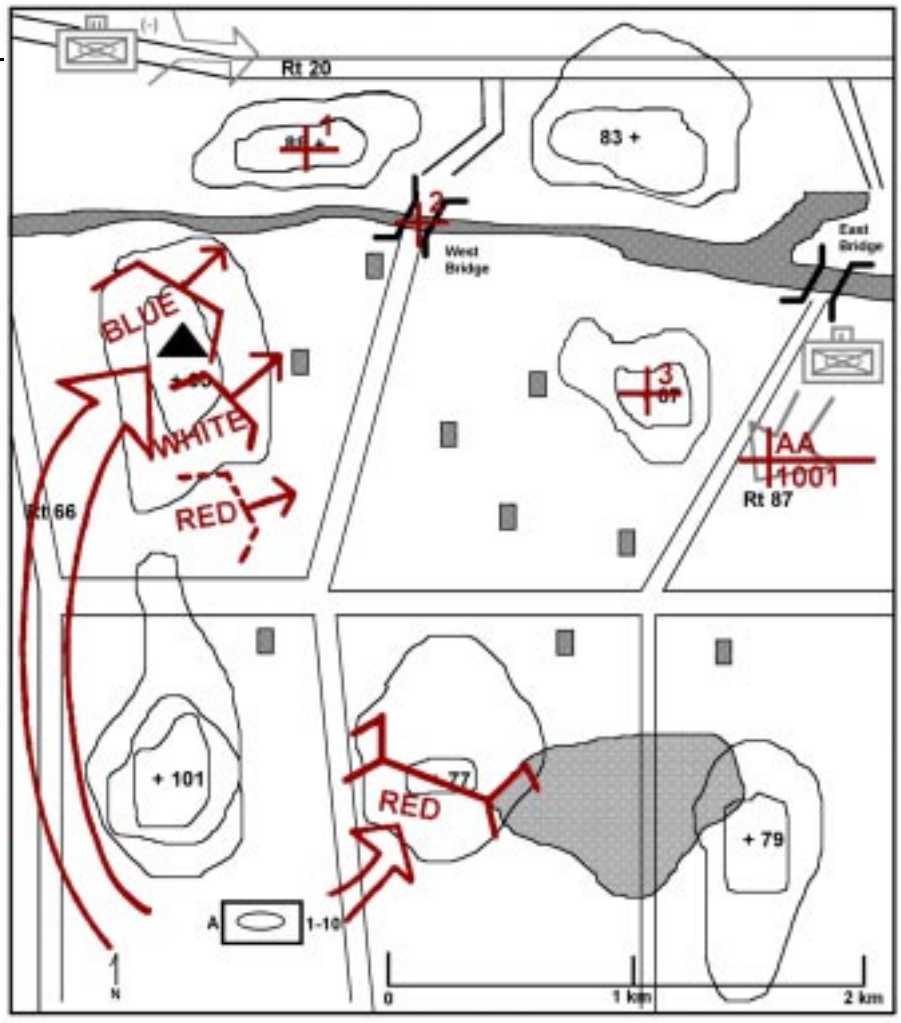
Rationale. While my first reaction is to rush across the bridge to save the scouts, running the company into a kill zone would only make things worse. Still, aggressive action is vital and I feel that we must be in a position to not only accomplish our screening mission, but also be able to cover or facilitate the scouts' withdrawal. I chose to move west because I feel that at a minimum I must keep the enemy (assuming that it he is able to fight through my screen) along one avenue of Approach (AA), even though the area around the town of Knox would make an ideal company size engagement area (EA). By denying the enemy



force the south bridge and forcing him north along Rt 166, I will facilitate the task force's ability to meet this unexpected threat. Hopefully, my mech platoon will be able to quickly (yet safely) find out some information on the scouts and, as the situation develops, we will be able to act more aggressively in ensuring the scout platoon's safe withdrawal.

SCENARIO 2

FRAG: "Guidons, this is black six. We have 3 T-72s and 6 BMPs to our north vicinity East Bridge. Also, there is a battalion (-) size element north of the river vicinity Hill 88. I want to stop the battalion (-) north of the West Bridge, so it can be destroyed by the task force. Red, establish a SBF — overwatch from Hill 77 and cover our move to Hill 90. Orient on the enemy company (-) moving down Rt 87. Do not let the T-72s and BMPs interfere with our movement. Blue and White follow me to Hill 90. Once we are set, Red move and tie into our southern flank. Blue, orient TRP 1 which is Hill 88, White orient TRP 2 which is the West Bridge, and Red orient TRP 3 which is Hill 87. FIST move with Red and give me immediate suppression on the enemy vehicles moving down RT 87. XO move with RED and coordinate with higher, we are going to need some serious help up here, OUT."



Rationale. While the most immediate threat to my company is the enemy force vicinity the East Bridge, the biggest threat to our task force (TF) is the enemy battalion (-) which I am assuming is trying to find the safest route south across the river. I see Hill 90 as the decisive terrain and will race to occupy it before the enemy battalion (-) can cross the river. From Hill 90 I should be in a solid position to fix the battalion (-) to allow the TF to maneuver to either destroy or bypass. Having my two tank platoons "follow me" is the quickest way to do this in this situation. When Red suppresses the enemy company in the east, this should make the West Bridge an even more likely AA for the battalion (-). Although I am accepting some risk in the east, indirect fires as well as a few tank platoon volleys should be sufficient to force that enemy company to go to ground. I will then focus entirely on the battalion (-) trying to cross the river. My XO has the most important job since coordination with the other companies and higher is crucial to our success.

Forest or Trees... *Continued from Page 21*

activities into a cohesive operation. The key to doing so is to have a firm understanding of the objective. It is often said that "Some cannot see the forest for the trees." Those who value process over principle have this difficulty.

This article could not have been written had not a group of dedicated historians established The Army Military History Institute, appropriately co-located with the Army War College at Carlisle Barracks. Nor could I have done so without its dedicated, cooperative, and helpful staff. The history of battles provide helpful tactical lessons, but so do collections of doctrinal literature, not the least of which is to guide doctrinal development and assist in establishing materiel acquisition priorities. It can save precious resources and time by avoiding "reinventing the wheel."

MG Edward Bautz, a 1941 graduate of Rutgers University, began a brilliant career serving in the 4th AD during WWII, including Normandy and the relief of Bastogne, advancing from platoon leader to battalion commander. He later commanded the 25th ID in Vietnam and on a later tour was MACV secretary to the general staff. In addition to combat, his long service also includes assignments in combat development, Army training, and personnel management. He served with the constabulary forces that policed postwar Germany, where he later returned as DCG, VII Corps. A graduate of C&GSC and the Army War College, he has also served on the DA staff, and was an early leader of the then-new Combat Developments Command. He also served as vice director for operations of the Joint Staff, JCS.

Light Cavalry Table XII

by Captain Larry Reeves

When the 2d ACR reorganized into its current configuration in 1993 (HMMWV scout and anti-tank platoons), the main emphasis was focused on equipping the regiment to fight alongside fellow XVIII Airborne Corps units. *How* the regiment would fight has been, and still is, an ongoing debate. Gone are the days when the regiment would close with and destroy an advancing enemy on the rolling German plains. We are now faced with determining when and how to engage the enemy with M2 .50 caliber machine guns, Mk-19 automatic grenade launchers, and HMMWV-mounted TOW launchers.

In order to alleviate some of the inherent problems the light cavalry faces, such as no good shoot-on-the-move capability and rather poor observation platforms, the regiment has adopted the SCAT (Scout/Anti-tank) platoon concept. Instead of having two 10-HMMWV scout platoons and two 4-HMMWV anti-tank (TOW) platoons per cavalry troop, the SCAT configuration combines the scout and anti-tank platoons into four 7-vehicle platoons, each consisting of 5 scout vehicles and 2 TOW vehicles. A squadron's training density at Ft. Chaffee, Ark., in February '96 presented an invaluable opportunity to validate the SCAT concept upon return from a five and a half month deployment in support of the United Nations Mission in Haiti (UNMIH). Table XII was one of several events that could help confirm or deny the concept of organization.

The Table XII was designed and resourced like a heavy cavalry Table XII, without the night fire. The 12 SCAT platoons would conduct a 6-hour maneuver and live-fire, bounding in between four different ranges spread across 12 kilometers, and engaging targets as presented. This was not a roll-on, roll-off range exercise. Each section within the maneuvering platoon would bound from OP (observation post) to OP under a tactical scenario, establishing OPs wherever they felt they could observe assigned NAIs. This concept added a degree of realism, but also added an increased risk factor, because no set locations were identified.

The exercise was designed to train platoon-level battle tasks that are inherent to a troop conducting a moving flank guard. These tasks are 1) conduct TAA procedures, 2) conduct a tactical road march, 3) conduct a forward passage of lines, 4) conduct a moving flank screen, 5) conduct an anti-armor ambush, 6) conduct direct-fire planning, and 7) troop-leading procedures. The squadron produced a troop-level matrix order that was briefed (and amended) by each troop commander to his platoon leaders. After receiving his order (24 hours prior to LD time), the platoon leader began his troop-leading procedures and mission planning. A platoon-level rehearsal was conducted with the commander and one observer/controller (O/C) present to ensure the platoon leader had a firm understanding of the mission. Once the rehearsal was complete, the O/C conducted a range/safety brief with the entire platoon.

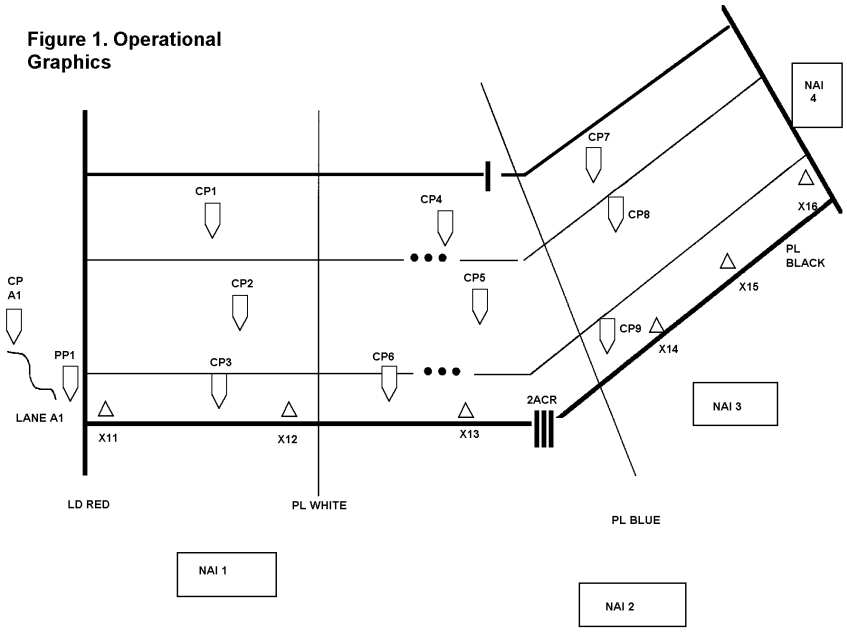
During the troop-leading procedure, the platoon received a LOGPAC in the TAA. Included in the LOGPAC was the platoon's Class V allocation for the exercise, which the platoon sergeant then had to distribute to each vehicle according to the assigned mission. Since the platoons did not receive their basic load, the ammunition breakout became a significant planning factor that bore either good or bad results during the exercise.

The exercise began with a squad from the platoon conducting a link-up and coordination for the forward passage of lines with the O/C. The platoon (-) then began its tactical road march, culminating with the passage of lines. During the passage of lines, the platoon was given a fragmentary order (FRAGO) from its troop Tactical Operations Center (TOC) stating that enemy movement had been detected near the first OP. The platoon then moved to and occupied the OP and began working to deny an enemy avenue of approach leading into the OP.

At that point, the platoon was met by an engineer company LNO (from the regiment's 84th EN Company), who was to oversee the demolition work and to ensure proper safety precautions were followed. The platoon employed a ring and line main charge, simulating a cratering charge on a trail entering the OP area. After reducing the obstacle, the platoon began its moving flank screen. This action began after receipt of another FRAGO that sent one section to the next OP.

At this OP (Fig. 1), the section established an OP that would be able to observe the assigned NAI. The section leader had the freedom to emplace his OP wherever he felt he could observe

Figure 1. Operational Graphics



the NAI and interdict enemy movement with direct fire. The section O/C intervened only if the OP and vehicle hide and firing positions were unsafe. This allowed the section leader to use his best judgment in placing his OP without the help of the engineer tape and position signs we have all seen on gunnery ranges. Once the OP was established, the range OIC (separate from the O/C) began presenting targets, which consisted of one BRDM, one truck, and two dismount targets. The targets were arrayed to simulate enemy movement, trying to find the OP's flank.

In the meantime, the second section had begun movement to a position further along the flank to occupy an OP there. The scenario was scripted so that while one section was moving, the other was engaging targets. By the time the first section completed its engagement, the second section was arriving at its OP. The second section was presented the same target array as the first, simulating enemy reconnaissance probing the squadron's flank.

While the second section made contact, the first section received a FRAGO, sending it to establish a battle position (BP) in the vicinity of the second section. It was to set a battle position oriented into the NAI where the second section had made contact. Once the second section had completed its engagement, the first section began to arrive at its BP, about 500 meters from the second section. From there, the platoon would gain contact with a heavier reconnaissance element (three BRDMs, two trucks, and several dismounted targets) that, again, simulated the enemy attempting to find the OP's flank. At the conclusion of the engagement, the platoon received its final FRAGO, sending them to another position, where the platoon was to conduct an anti-armor ambush.

After the platoon arrived at the anti-armor ambush site, the leadership conducted a reconnaissance of the area. The position was a 600-meter long small knoll located on the edge of the Ft. Chaffee impact area. The platoon leader was shown his TOW target, which doubled as the artillery and mortar target group. The platoon then went about establishing the ambush site, setting the TOW firing positions, AT-4 firing positions, and Claymore positions. Upon establishing the site, the platoon leader initiated the ambush with a call for fire through his troop FIST, targeting the "hostile" targets which simulated a Forward Security Element. Once the platoon leader adjusted fire, the TOW engaged the main armor target; i.e., the lead tank in the column. Upon destruction of the target, the AT-4's volley-fired against smaller armor targets. E-type silhouettes were placed in the impact area buffer zone to simulate a dismounted attack against the position. The platoon engaged the targets with M16A2 and M203 fire. To cover the withdrawal, the platoon detonated the Claymores against the dismounted threat. The exercise ended with a platoon-level AAR facilitated by the O/Cs.

The exercise brought several strengths to light. First, it validated the SCAT concept. The addition of the two TOW HMMWVs gave the platoon increased killing capability as well as a solid observation platform. Secondly, Table XII validated the squadron's gunnery standards and training. The squadron's master gunner, SFC Ron Swasey, spent countless hours refining the standards, scenarios, and training requirements well before and throughout the gunnery density. Table XII, along with Table VIII, validated this work. Finally, the exercise showed a high level of competence and leadership by the squadron's platoon leaders, platoon sergeants, and section leaders. Each platoon executed the mission with audacity and fury.

Table XII, however, also exposed some areas that need improvement. First, as light cavalrymen, our engagement criteria and current weapon systems do not allow for decisive or protracted engagements. One way for the regiment to kill armored targets is the anti-armor ambush. Table XII showed the need to improve our ambush execution standards. Secondly, soldiers and leaders alike felt like more training time should be devoted to AT-4 and Claymore employment. These weapons are linchpins in the proper conduct of the ambush.

The Table XII was a rousing success for several reasons. First, it was cheap and efficient. The squadron used existing resources (targets from previous gunnery tables, SAABs, etc.) without incurring additional costs. Second, it forced the SCAT platoons to "train as we fight." Leaders were forced to think on their feet without the benefit of a canned scenario. Also, each platoon had to employ every soldier, vehicle, and weapon system without the benefit of identified firing points, routes, and other administrative gunnery issues normally associated with a Table XII. Third, the squadron was able to conduct multi-echeloned training, from the individual soldier, to the platoon chain of command, to the troop commander and his TOC. Finally, the squadron trained a METL task in conducting the moving flank screen. The event was not allowed to override the need to train individual and collective and platoon battle tasks. For example, if a section failed to accomplish a task to the published standard, the section was held up or restarted to allow for proper training and execution prior to moving to the next level of training.

The soldiers who participated in Table XII found the training enjoyable and challenging. The squadron learned valuable lessons in SCAT employment and training, and the leaders found new training focuses that will help them at their next CTC rotation and beyond. The success, however, does not lie with the planners of the exercise. It lies with the soldiers, NCOs, and officers who participated in Table XII and executed it to a higher standard than was envisioned. Hard, challenging, and well-planned training is always key to success, but it is driven at the level of the junior leader, who has to execute the plans put before him.

Captain Larry Reeves was commissioned as a Distinguished Military Graduate from the University of Arkansas at Little Rock in 1989. After AOBC and SPLC, he served as a scout platoon leader during Operations Desert Shield and Desert Storm in A Troop, 1st Squadorn, 7th Cavalry, 1st Cavalry Division at Ft. Hood, Texas. He later served as the A Troop executive officer and squadron assistant S3. After AOAC, CLC, and Airborne School, he was assigned as the squadron maintenance officer for 1st Squadron, 2d Armored Cavalry Regiment at Fort Polk, La., and served in that position during the squadron's deployment to Haiti in support of the United Nations mission there. Upon return, he was assigned as the assistant S3 (Plans). He is currently the commander of Troop A, 1/2 ACR.

The Heavy Brigade in Restricted Terrain

Division Reserve Operations (Defense)

by Lieutenant Colonel John L. Arata

In Korea, even on relatively flat valley floors, visibility is restricted by man-made features and the land's contours. Rice paddies and their dikes also restrict mobility.

- All photos by the author

"Division reserve. No sweat," thought Major Misconception, the brigade S3. "When I was a battalion 'three,' we were the brigade's habitual reserve, and that wasn't too tough. Occupy an assembly area or battle position in depth, and be prepared to attack into the brigade engagement area to finish off the enemy, or pick up 'leakers' through the main defense. After all, a brigade is just a battalion on steroids..."

WRONG! Contrary to popular opinion (and unfortunately, contrary to some of our field manuals), the heavy brigade is not merely a big battalion. The brigade headquarters must set the conditions for success — for its assigned task forces, as well as for its parent division. Divisions can compensate for brigades that abrogate this responsibility... if there is sufficient suitable terrain to allow the movement and proper positioning of assets in spite of the brigade.

Let's face it. As our heavy forces become heavier, and our supporting arms "heavy up" too, we begin to restrict our ability to use terrain. Our tanks, infantry/cavalry fighting vehicles, howitzers, and other tracked combat vehicles are best able to maximize their mobility, firepower, and shock effect when they can deploy into appropriate formations and move rapidly across the battlefield. Similarly, our wheeled logistical vehicles need suitable routes on which to move, or our combat forces will quickly be brought to their knees.

Now consider operating in an area where a single two-lane road (with no shoulders, many small bridges crossing unfordable streams, and transiting many small villages) is simultaneously the main supply route for two brigades, the evacuation route for casualties, damaged equipment, displaced civilians/refugees, and prisoners of war, and is the division reserve's counterattack route. Sound like a recipe for gridlock? It is, unless every brigade headquarters is in the game, and acts in coordination with the rest of the division. One five-ton truck on the road at the wrong place or time can unhinge the timely commitment of the division's reserve.

Field Manual 71-100, *Division Operations* states that the primary purpose of the division reserve is to provide flexibility and retain the initiative through offensive action. The secondary purposes of the reserve are to reinforce the defense of committed forces, contain enemy forces that have penetrated the FEBA, react to rear area threats, relieve depleted units, and provide for continuous operations. In order to fulfill these requirements, the reserve force must be able to rapidly concentrate its combat power at the critical point in the division's sector.

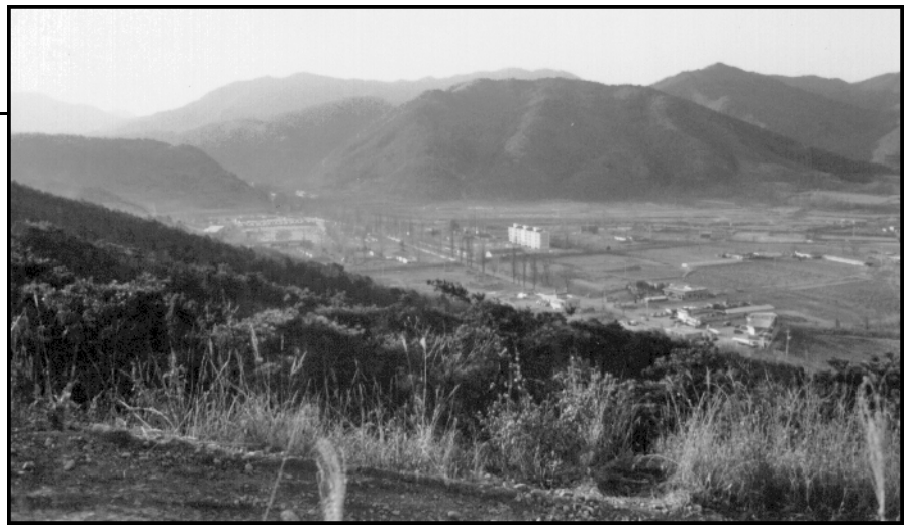
In restrictive terrain, the difficulty of moving a heavy force quickly within the division's sector is likely to drive the division commander to retain a larger reserve than he would otherwise, and to position it at multiple sites throughout the division's sector in order to reduce the time required to deliver a task force to any given point. Let's assume that the division commander has decided he wants to be able to rapidly concentrate and commit a two-task force-sized reserve within the division's sector. To achieve the flexibility and desired speed of commitment, he has decided to place three task forces in assembly areas across the division's sector. How do we constitute this reserve force?

Two methods of constituting the reserve come to mind. First, the division commander could structure the division's defense with three brigade combat teams in the Main Battle Area (MBA), and direct each brigade to maintain a task force in reserve, with a division "string" requiring the division commander's authorization to commit them. We'll refer to this as the "virtual reserve" option. Second, the division commander could structure the division's defense with two brigade combat teams in the MBA, and the third in positions/assembly areas across the division's sector as the division's reserve. We'll refer to this as the "reserve brigade" option.

The Virtual Reserve

The virtual reserve option, then, gives the division commander a brigade combat team's worth of task forces, but

without the command, control, communications, computers and intelligence (C4I) structure to employ them as an integrated, cohesive force. Some would argue these task forces could be commanded by the assistant division commander for maneuver (ADC-M), using a portion of the division's C4I structure, when the need arose. On order, the virtual reserve would be activated, task forces chopped to division control, and the reserve could be rapidly repositioned or committed in a division counterattack. Anyone who has attempted to change task organization "on the fly" will quickly recognize several significant areas of concern. First, and arguably most critical, is that as an ad hoc unit, the division's reserve will have rarely, if ever, trained together prior to commitment. Its C4I structure and staff may be a "pick-up" crew culled from the division staff at the last moment. This arrangement certainly negates the "train as you will fight" precept of FM 25-101, and by the ad hoc structure of the C4I system and of the unit itself, negates our ability to develop and exploit the potential strength of our combat function "Battle Command" for the reserve force. Additional concerns with the "virtual reserve" include logistical support for the task forces, dedicated field artillery, air defense artillery, engineer, intelligence/electronic warfare (IEW), and military police headquarters (and units) for the planning and execution of the reserve mission. These concerns are resolvable, but the resolution will likely result in more ad hoc relationships, splitting unit focus at a critical point in the battle (since the reserve is rarely committed when things are going exceedingly well). The committed brigade commanders won't want to part with support slices of air defense or engineers for the departing (reserve) task forces in the middle of the fight.



Much of Korea's terrain is typified here - steep, untrafficable slopes bounding narrow valleys, often less than 1,000 meters wide, and containing streams, rice paddies, or built-up areas.

The Reserve Brigade

The reserve brigade option lessens many of those concerns, but has its own constraints. In this option, the division commander gets a brigade combat team's worth of task forces, along with a trained infrastructure capable of performing all the combat functions required in FM 100-5, *Operations*. While the brigade combat team may not have all the unit assets required for combat operations (notably field artillery, engineer, and/or IEW), there is a battle staff present and trained to plan for their proper employment once those assets are made available. Additionally, as a major subordinate command (MSC) of the division, the brigade and its staff is used to coordinating with the division staff, which may not be the case for subordinate task forces. The constraints in this option revolve primarily around the use of the available terrain — terrain management and setting the conditions for the successful commitment of the division's reserve forces.

There is a finite amount of good terrain available for use in any division's sector — even if 100 percent of it is good. As noted before, heavy forces and their supporting infrastructure tend to do best in trafficable terrain. Radars, sensors, command posts, and other communications sites tend to compete with one another for terrain, with certain elevation and line-of-sight characteristics. In severely restricted terrain, you may be unable to deploy more than one company team into battle formation at a time, with the remainder of the task force's company teams strung along behind as they move up a defile.

The supporting infrastructure (observation, mobility support, etc.) may be unusable if not emplaced in advance of the reserve's commitment. This, then, is where the brigade headquarters is invaluable in restricted terrain; in ensuring the supporting infrastructure that allows the successful commitment of the combat task forces is planned for and emplaced. The remainder of this article discusses planning considerations for the reserve brigade method of establishing the division's reserve force.

Setting the Conditions for Success

So what must the brigade staff do to ensure the division will be able to successfully commit its reserve force at the decisive time and place? The following are some of the critical areas they must consider:

- Positioning task force assembly areas to allow rapid deployment within the division's sector.
- Controlling reserve force deployment routes.
- Planning for changes in the division's task organization/asset handover at the time of reserve force commitment.
- Positioning supporting assets to facilitate reserve force deployment and initial operations.
- Planning for the employment and control of the reserve forces throughout the division's sector.

Positioning Task Force Assembly Areas

This may appear to be a "no-brainer," but the difficulty in doing this properly increases as terrain trafficability decreases. The goal is to position the task forces so they may rapidly move to reinforce or counterattack anywhere within the division's sector. In restrictive terrain, the key to this mobility is to be positioned within reach of a road complex that supports rapid lateral and forward movement and deployment. These positions must also be relatively close to the projected areas of employment. Therein lies the difficulty. Those same trafficable sites along road complexes are the sites we use to position our howitzer batteries, combat trains/UMCPs, etc. Additionally, we

M1A1 passes through a "rock-drop" point obstacle on a division 2-way supply route.

must consider the likelihood the enemy will target road complexes such as these for reconnaissance efforts, and may thus pinpoint our reserve's location more easily.

Controlling Reserve Force Deployment Routes

These routes may or may not be in use as supply routes; in restricted terrain, it is almost certain they will be. Each route should be assigned to the "using" reserve task force, which will conduct route reconnaissance and security operations to deny the enemy's ability to emplace light infantry or special operations forces (SOF) along the route to interdict the movement of the reserve), ensure mobility (assuming that the brigade's habitual direct support (DS) engineer battalion has not been task-organized elsewhere), and maintain absolute control of brigade assets moving on the battlefield.

Route Reconnaissance and Security

Much of this will depend upon your expected threat. In restricted terrain, a small light infantry or SOF unit can interdict your use of a route through direct attack, observed indirect fires, or countermobility operations. Of these three, the last is the least likely to occur if the route is in continuous use. However, even if the route is in continuous use, the task force must reconnoiter it before moving significant forces on it, and must deny the enemy the opportunity to observe the route. The brigade and task force reconnaissance and surveillance (R&S) plans must be fully coordinated and developed with this in mind. R&S assets must be used to verify enemy actions along the deployment route(s), as well as in the reserve's expected areas of employment.

Controlling Route Usage

As mentioned earlier, one five-ton truck on the road at the wrong place/time can unhinge the employment of the division's reserve. (Imagine your southbound supply truck with its water trailer jackknifed in a "rock drop" point obstacle. Now imagine the northbound logistics package (LOGPAC) that gets stopped by it. Then include the northbound reserve task force behind the LOGPAC, enroute to conduct the division counterattack. Move the supply truck immediately, and you *still* have a significant delay in employing the reserve.) The brigade's DS engineer battalion may be able to provide some turn-outs to assist in clearing the route of damaged equipment, but they will not be able to turn that two-lane road into Interstate 65.

Changing Task Organization/Asset Handover

As the division's reserve force is committed, it is likely to have additional assets "chopped" to it. Link-up with these assets may only require the change of a radio frequency or a code (if the asset, such as a radar or sensor, is already sited to support the reserve force's commitment). It could also entail the physical movement of a unit to a link-up point on the ground where it would then join the reserve force's formation (as in the case of NBC reconnaissance, decontamination or smoke elements, engineers, air defense, or field artillery). In the latter situation, one technique is to position these assets forward along the reserve force's deployment route(s) so they may be folded into the march column as it moves forward. If these assets are not capable of providing for their own security or defense, the reserve may have to use a portion of its force to reconnoiter, quarter, and secure positions for these assets in order to ensure they will remain viable when needed for the reserve's commitment.

Positioning Supporting Assets

The previous point brings us to the positioning of supporting assets, specifically the artillery radars, IEW sensors, communications infrastructure, logistical installations, and command posts to facilitate the reserve's deployment and initial operations.

Ideally, all these assets will be emplaced so that they support the MBA forces and the probable areas of commitment for the reserve forces. In practice, at least a portion of this infrastructure will have to be repositioned to support the reserve once it has been committed, especially if it is to be used to counterattack to any significant depth. Again, these assets should be repositioned as early as is practicable to allow them to "set" and support the reserve's commitment.

This early repositioning also helps to solve potential traffic control problems, as these assets may have to use (or at least cross) the reserve's deployment route(s) as they reposition. Unfortunately, there is never enough "stuff" on the battlefield, and some assets supporting the MBA units may not be able to start supporting the reserve's counterattack until it is launched and enemy contact is made. Assets could potentially echelon in this case, with a portion displacing to support the reserve while a portion continues support to the MBA units.

If this is not possible, then these assets should be given priority to move to their new sites once they are able to "chop" from MBA support to counterattack support.

Communications

Communications support deserves special comment at this point. As stated earlier, C4I nodes must compete for

limited suitable terrain. To further complicate matters, it is conceivable the brigade may have task forces operating in separate defiles, hindering direct FM communications. Retransmission sites can become the key to maintaining digital fire support linkages and FM voice communications. Again, terrain management, site reconnaissance, and site security are important considerations. In extremely restricted terrain, the brigade may have to put a "string" on task force retransmission assets in order to ensure critical nets remain operational across the division's entire sector.

Command Posts and Logistical Support

When committed, the reserve may be moving into or through a highly congested MBA. If the brigade has been successful in planning for the initial sites of the brigade support area and the brigade main command post, they will be able to support/control at least the initial phases of the reserve's commitment and operations from those locations.

If the reserve is to counterattack to a significant depth on the battlefield, then the brigade main command post will have to bound forward to maintain communications, act as the brigade's asset and information coordination and clearing center, and plan future operations. The brigade tactical command post (TAC) will likely be echeloned forward of the brigade main command post to control the current battle. The brigade support area (BSA), being a space-intensive installation, will most likely not be able to move forward in its entirety.

As the brigade combat team moves forward, the forward support battalion (FSB) may have to echelon support through the use of forward logistical elements (FLEs). In severely restricted terrain with minimal lateral supply routes, the BSA may have to remain to the rear with FLEs echeloned forward on multiple routes to ensure timely support to the task forces.

Planning for Employment and Control of the Reserve

The intelligence preparation of the battlefield (IPB) is going to be an immense effort, since you must consider employment of the reserve anywhere within the division's sector. You must have the graphic control measures from the division, each brigade, and each task force/squadron posted on your maps. This should help you to understand the current battle conditions and locations as the reserve is committed.

The division, each brigade, and each task force/squadron must also have the reserve's graphic control measures posted, on at least one map in the command post. This exchange of graphics and information can help in avoiding situations where the reserve force encounters an unexpected mine/wire/crater/ditch across its deployment route. The reserve will also be better prepared to enter a brigade or task force area on commitment (as a counterattacking or as a reinforcing force) if it can quickly exchange information with the MBA unit using common graphics for reference points and locations.

Graphical Control Measures

The reserve brigade must plan for operations in an area initially assigned to another unit or units. Those units will have developed graphic control measures to support their operations. Those graphics may or may not support the intended operations of the reserve in that portion of the division's sector. If they do not, the brigade is faced with the task of issuing additional graphical control measures which allow rapid focusing of combat power without cluttering up the operations overlay.

One of the keys to successful reserve operations is the development of graphics that support the many employment options for the heavy brigade within the division's sector. Graphics offer a simple means for the commander to control his forces on the battlefield.

More important, however, is the role that they can play in relation to the enemy. We have found that, when reserve graphics are tied to the IPB, our ability to react/counteract to enemy actions is greatly enhanced. Having the S2 and S3 jointly develop the IPB, and tying the operational graphics to that process, has resulted in an improved understanding and use of the terrain in developing the scheme of maneuver and a better linkage between the scheme of maneuver and the reconnaissance and surveillance plan.

Target! Cease Fire!

No operation is ever as simple as it seems, and I have not provided a universal solution to the problem of planning for heavy force reserve operations in restricted terrain. What I hope to have accomplished is to have provided the reader with insights into some of the challenges of these operations, as well as some of some of their potential solutions.

Author's Note

The author wishes to acknowledge that the majority of the information presented in this article is a distillation of procedures developed and lessons learned by the members of the Iron Brigade Combat Team, 2d Infantry Division, Republic of Korea, over the past two years.

Lieutenant Colonel John L. Arata was commissioned in 1979 with a B.S. degree from Ohio State University. Since then, he has served in a variety of assignments, to include troop commander in Germany and CONUS, tank battalion S3 in CONUS, assistant professor of military science at Purdue University, and as the commander, Headquarters Company, U.S. Army at Fort Myer, Va. He earned an MSA degree from Central Michigan University in 1994, and graduated from the Air Command and Staff College at Maxwell AFB, Ala. in 1995. He was assigned as the S3, 1st Brigade, 2d Infantry Division, in the Republic of Korea when this article was written, and is currently assigned to the Operations Group, National Training Center, Fort Irwin, Calif.

century is provision for the input of junior leaders who, after all, will be the senior leaders implementing our emerging doctrine. Providing a firm link and ensuring consideration of the new ideas should probably be one of the key roles of the school commandants. You're providing a good forum. Keep up the good work.

JOHN C. FAITH
MG (Ret.) U.S. Army

Thoughts on Excellence in Armor

Dear Sir:

I enjoyed CSM Davis' informative article, "A Reflection of Success: The Excellence in Armor Soldier," (Jan-Feb 97). I was an EIA participant in one of the early classes back in 1985. As I crossed the bows into the officer corps, I took all of my enlisted knowledge with me and applied it aggressively. I have encouraged my eligible soldiers to enroll and learn from the program. I also keep a close eye on my colleagues to make sure that these guys are on tanks, and not driving HMMWVs. We tend to want to take squared-away guys off tanks and make them drivers.

CPT B.B. CRAIG
Cdr, A Co, 1-67 Armor
Ft. Hood, Texas

In-Service Recruit Program Cautions

Dear Sir:

There is apparently some misconception in the Regular Army about the "In-service Recruit Program." The majority of in-service recruits that have been assigned to my unit have decided to just quit soon after arrival. They are under the impression that they can take it or leave it with no consequences for going AWOL from the National Guard. This seems to stem from the idea that the National Guard is not really a part of the Army, and it is OK to quit. This is not the case at all.

When you leave the active Army and are thinking about joining the Reserve Component, you must take into account the following. First of all, you are entering into unemployment and may have some difficulty. The National Guard and Reserves is a part-time job and will not always make ends meet. The different states usually have their own benefits above the usual school benefits; you will have to contact the National Guard representative in your state for details. There may be some restrictions, and you may have to serve a term longer than your remaining service obligation to get some state benefits. For instance, in Ohio you must serve six years in the Ohio National Guard for 60% of your tuition to be paid by the state at an approved institution in Ohio. Approved institution means a state-funded school like Ohio State or Cincinnati Technical College; there are many all over the state. It can be a good deal if you are ready to buckle down and study. The affiliation bonus is usually for a specific critical MOS, and the town with a guard unit with that MOS may be a long drive each weekend. You should take that into account when thinking of the National Guard. Also, the uniforms you were issued in basic training will belong to the National Guard if you become an in-service recruit. Yes, you are responsible to have your whole initial issue upon reporting to your Guard unit. On the plus side of this, you usually will be too far from an active duty clothing sales store to maintain your uniforms. In the National Guard, you will not receive a clothing allowance, but you will get direct exchange (DX) of your initial issue as well as TA-50.

There are some other misconceptions that must be cleared up about guard service, especially for the 19-series CMF soldier. You must pass the APFT once a year - not a watered down APFT, but the real McCoy as stated in FM 21-20. This level of physical fitness may be difficult to maintain when you work a civilian job all week, and the time to stay in shape may elude you. We do not change the standards. Most guys tend to grow horizontally when they leave active duty and first come into the Guard. We are required to meet the standards of AR 600-9; do not come into the Army National Guard and get fat. If you received any affiliation bonus or state benefits and are discharged for being overweight or failing the APFT, you will probably have to pay it all, or a prorated portion, back.

You tankers will still be responsible for TCGST skills, a decent reticle aim on the M-COFT if you are a gunner, and all of the other skills tankers need, active or reserve. You scouts will have to maintain all of your skills as a scout and possibly learn some new ones. You will only have one weekend a month and approximately two uninterrupted weeks a year to train and maintain these skills. This may be even more difficult because the training facilities are not usually as available as they are on active duty. Your unit may have to get on a bus and drive long distances to training sites. It is not always easy to be in the Guard.

We are not the beer-drinking, inept, weekend warriors we are so often stigmatized as. You have to measure up to the same standards that you have always measured up to on active duty, with very little in the way of resources.

The last thing I want to do here is talk anyone out of being in the Reserve Component after serving on active duty; we need your expertise. The National Guard and the Reserves may be a big help to you when you get out, and maybe you will want to stay to retirement, but don't forget that you are still a solider, so come ready to soldier. If you do not want to soldier, or are just tired of soldiering for a while, do not become an in-service recruit. If you decide that ISR is the way to go, come ready to face the challenges and you will reap the rewards. If later you decide that the Reserve Component is what you want, see a Guard or Reserve recruiter after you have stabilized your civilian life. Whatever the case, do not become an In-Service Recruit only to just quit when you get to your Guard or Reserve unit; AWOL here is just like AWOL there, and there are consequences to pay for it.

JOHN A. JETT
SFC, OHARNG
Readiness NCO/MG

A Look Back at WWII Procurement

Dear Sir:

Since my last message was rather long, I decided to defer additional comments on the development and fielding of new equipment that was in place in the '30s and '40s. The only way to understand why it typically took so long to get something really new in the hands of the troops is to learn how the process worked. I don't know how this process works today, but the salient point is that it was the user who made the crucial and ultimate decisions. Ordnance is expected to translate user needs into appropriate specifications with advice as to what is best, recognizing that compromises are the order of the day. For example, you cannot get heavier armament and still get a lighter-weight vehicle. If you want to transport a tank in a plane, it can only weigh so much, and it has to fit inside.

There were 10 steps prescribed for standardization of equipment. First came the decision, approved by G4 of the General Staff, that a specific need for a new or improved item existed. Second was the statement of the military characteristics that the item must have to serve its purpose. This statement was drawn up by a board of officers of the using arm, such as Infantry or Artillery. On each board, an Ordnance officer was one of the members. The third step was the formal initiation of a development program. The Army Service Forces had to approve classification by its type, nomenclature, and a model number, beginning with the letter T. Following the official classification, the project became the responsibility of the appropriate unit of the Research and Development Service to work out.

"The next five steps in peacetime tended to be long drawn out, as the test upon the semiautomatic rifle in the 1920s and 1930s show. First, the men who had designed and built the pilot model subjected it to a series of engineering tests. Each component had to correspond to the specifications. A model that met these requirements was then labeled 'service-test type' and was ready for the next process — service testing. Service tests, conducted by a board under control of

Longtime Reader...

Dear Sir:

Thank you for sending me the January-February issue of *ARMOR,* and for all the past copies you have sent.

I am now in my 95th year, and after reading *ARMOR* with great interest, I always send it on to the librarian of The Tank Museum at Bovington. I now feel it would be helpful if you would send my copy directly to them.

With my thanks and good wishes.

Lady Kathleen Liddell Hart
England

the using arm or occasionally by troops in the field, were to determine the suitability of the equipment for combat in the hands of ordinary soldiers." (page 241, *The Ordnance Department: Planning Munitions For War,* 1955, Office of the Chief of Military History) Such tests almost always revealed that modifications were needed, and after these were incorporated into the item, the using service resumed testing. Modifications for complicated equipment, such as tanks and artillery, could run into the hundreds. The next stage was extended service tests. Major items were usually tested by tactical units.

From these tests came production in some quantity, "limited procurement type." If it was GO, recommendations were made to the Army Service Forces for standardization, and an M number and name resulted. "Nevertheless, in developing most new items, when time was lost needlessly, it was in the course of service testing, modifying, retesting, and extended service testing. If, instead of being submitted to prolonged tests against dummy targets in the United States, new materiel could be shipped to the active theaters for battle trial, then, the Ordnance Department contended, a dual purpose would be served: the research and development staff would have indisputable proof of weaknesses and strong points of the new equipment under real, not simulated, combat conditions, and the armies in the field would have the use of weapons, usable even if far from faultless. Later modifications could be made with greater certainty. Here was a variation of the Ordnance pleas of the 1930s protesting the refusal of the War Department to standardize materiel until it was nearly perfect as possible. Ordnance engineers concurred in Colonel Studler's statement of 1940: 'The best is the enemy of the good.' For years, the Army Ground Forces resisted this approach of shipping new materiel overseas not yet wholly proved. General McNair 'repeatedly objected to issuing materiel possessing even minor defects of design.' " (pp. 241-243)

Regarding the development and standardization of the 76mm gun to replace the 75mm gun for the M4 tank, the process described above was extraordinarily condensed in a period of less than one month by 10 September 1942 — months before General Patton landed in North Africa in November 1942. Ordnance had been alerted previously to the experiences of the British with the Sherman in fighting off Rommel and the developments of the Germans to up-gun their tanks, the Panther Mark IV, and the monster Tiger with its 88mm gun.

Regarding the comments of Lewis Sorley in your Jan-Feb 97 issue of what LTC Creighton Abrams wanted and the reaction of an unnamed Ordnance officer who was so concerned about gun tubes wearing out too fast rather than trying to get tank commanders what they needed, I think it not unusual to find blokes anywhere in any outfit at any time who don't get the message. But, if higher velocity gun tubes wore out faster than replacements could be furnished, what then? Would it be better to stick a while longer with a lower velocity gun than have none at all? Such trade-offs are always something to be dealt with, and you'd like to think that there are guys around who do the right thing when it is time to upgrade and field equipment, and not wait until it may be too late. Going back to the story of the incredibly rapid standardization of the 76mm gun that then-LTC Abrams wanted in 1944 when Ordnance had completed the work in 1942, now whose ox should be gored?

Finally, General Marshall, the Chief of Staff, commented in 1945 on what he considered unjust criticism aimed at the Ordnance Department: "In some of the public discussions of such matters (the quality of American ordnance) criticism was leveled at the Ordnance Department for not producing better weapons. This department produced with rare efficiency what it was asked to produce, and these instructions came from the General Staff, of which I am the responsible head, transmitting the resolved views of the officers with the combat troops or air forces, of the commanders in the field. (See pg. 258, same source).

I hope that what I have provided will put to rest the extended dispute of who was responsible for what, and when, concerning the undergunned Sherman.

COL GEORGE EDDY (Ret.)
Via e-mail

Tank Dispersion in Formations

Dear Sir:

After submitting the articles on M1A2s and Smart Ammunition... the question I asked myself is how far do we REALLY want to spread our formation? The calculations I used in the article were based on straight line distance with line of sight (LOS) to all enemy vehicles in their formation (i.e. the Saudi/Kuwaiti/Iraqi desert). Using backwards planning of a sort, I then figured how far we could spread out and still target the enemy's formation.

An article in the Jul-Aug 96 *Military Review* by BG (Ret.) Wass de Czege on the Mobile Strike Force (MSF) concept seems to indicate that a key planning factor in future force deployment is targeting. ("...Although the MSF never totally achieved it, all 800 fighting vehicles and 2,200 support vehicles in the average division could be theoretically attacked and defeated in a ten-minute engagement by weapons organic to or in support of a single MSF brigade...") If we get caught up in a strictly targeting mentality, we begin to think like the Air Force, which still has never won a war single-handed. What we need to figure may well be a different matter when we look at the platoon leader deployed with his platoon in the field.

Maybe we should determine our dispersion based on how much area an M1A2's gunner's primary sight (GPS) and commander's independent thermal viewer (CITV) can simultaneously "see" at our desired engagement range, and multiply times four. Y (GPS degree field of view) + (CITV field of view) x 4. Geometric calculation of the cone formed with a base of x-meters at the far end from our main gun with sides equal to the distance we wish to observe/engage shows us how much one tank can see and target at any given time. Multiplying times four to allow for the rest of the platoon and ensuring our vehicles' 'cones' overlap might reveal for us how much we truly want to disperse. What do the master gunners say?

If the idea behind doctrinal distances is mutual support and not targeting capability, then I only figured half of the equation I should have offered. It really bothers me that writers in *ARMOR's* editorial page have not attacked my methods as I believe only CRITICAL analysis will yield true answers.

CPT MIKE PRYOR
Via e-mail

"Bandits": What's In a Name?

Dear Sir:

I am researching the origins of our battalion nickname, the "Bandits," and need some help from *ARMOR* readers. My research indicates that the Bandit nickname was used by 1-32 Armor (Elvis's unit) here in Friedberg since at least 1963, and was adopted by 4-67 Armor when the battalion redesignated in 1988. I am also trying to learn the origin of the unofficial crest that we use, which is a white skull on a black diamond superimposed over the Armor insignia.

I can be reached at DSN 324-3441 (Germany) or by E-mail at CreedR@email.hanau.army.mil, or write me at Unit 21104, Box 36, APO AE 09074. Thanks for any help you can render.

CPT RICHARD D. CREED JR.
Friedberg, Germany

BOOKS

Into the Storm: A Study in Command by Tom Clancy with General (Ret.) Frederick M. Franks, Jr., Putnam, N.Y., 1997. 532 pp. $27.50.

General George Marshall purportedly said there were three things he looked for in a soldier's baggage which would indicate a commitment to the profession: A field manual showed dedication to tactical competence; a piece of sporting equipment showed devotion to physical fitness; and a good reading lamp showed a desire to grow as a soldier and a person.

Field manuals are plentiful, and it's easy to keep fit in a health-conscious society, but browsing through a bookstore will usually present budget-constrained soldiers with their toughest choice. Should this visit's pick be a work of history or a biography? Should the selection be a piece of military theory or philosophy? How about a break with an intriguing read of an accomplished novelist?

In his newest book, *Into the Storm: A Study in Command,* Tom Clancy (with retired General Fred Franks) has tapped all these areas. The result is a fascinating blend of a first person account, a third person narrative, a compact analysis of military philosophy and warfighting theory, and an absorbing piece of history. And, like many of Clancy's works, it is sure to be a best seller because it is a damned exciting read.

Clancy's first volume in a new set of works — this will be one of a series which will eventually address the lives of several flag officers who commanded during Desert Storm — *Into the Storm* is a compelling account of the life of Army General Frederick M. Franks, Jr. More than a biography, it gives the reader background and relevance that some of the current 'as told to' works never approach. For as fascinating and dramatic as Franks' life is, his story — told by both Clancy and Franks — serves as a vehicle. His tragedy and triumph on and off the battlefield become a mirror reflecting the injury, the rehabilitation, and the eventual victory of the Army as an institution in the second half of the twentieth century. What's best? The book will prove thought-provoking for both civilians who have never worn a uniform and professional soldiers who have dedicated their life to serving the nation.

There are myriad high points in both the story and storytelling. The book begins at the VII Corps Command Post on the eve of the ground attack into Iraq, then flashes back through the years, experiences and preparations that made Franks a great commander. Interspersed are primers — not too complicated to confuse the civilian reader but filled with gems that had me reaching for my soldier's notebook on numerous occasions — about maneuver warfare theory and doctrine, the recent history of our Army and how it got to where it is, what it takes to prepare a large organization for combat, and some tips on leadership of people. The book ends with a chapter on Franks' final posting as the Architect of the Future Army: Commander of Training and Doctrine Command.

Appropriately, the focal point of the work is a detailed history of VII Corps' actions during Desert Storm told in the first person. This long-awaited recounting comes at the reader in intricate detail; it makes up 322 pages of the work. For those wanting to get beyond button-collector history and dive into battlefield discourse, you will find it in the chapters that relive the "Jayhawk's" finest moments. And, for those who have waited for General Franks' answers to the undeserved professional lambasting he received in the It-Doesn't-Take-a-Hero ambush, you won't be disappointed.

There are a few low points. Franks' experiences in Vietnam should have been told in the first rather than third person (he gives an indication in the acknowledgments that this was a subject of contention with the publishers), and it may be tough for the average Clancy reader to follow the battlefield actions of all the units that were part of VII Corps: maneuvering large mounted forces is, after all, sometimes tougher than brain surgery. But these are minor issues when considered in the context of the work as a whole.

In one of the chapters, Franks describes how he took five books along with him when he deployed to Saudi Arabia (you'll have to do some reading to find out which ones they were, but it is interesting that even when packing for war his actions proved true to General Marshall's admonishments). Knowing this, I predict most will read *Into the Storm* for pleasure, many will return to it as a reference work, but there will be some — in the future when our army again goes to war — who will take this work to the battlefield as a reminder of how great commanders accomplished the mission.

LTC(P) MARK P. HERTLING
Chief, Armor Branch

Men, Ideas, and Tanks: British Military Thought and Armoured Forces, 1903-1939 by J.P. Harris, New York, St. Martin's Press, 1995. 342 pages. $79.95 cloth, $24.95 paper.

Most armor officers know that Colonel Ernest Swinton, author of *The Defence of Duffer's Drift,* invented the tank in the early days of the First World War, but reactionary British generals, especially Field Marshal Sir Douglas Haig, prevented full use of the tank to break the stalemate of the trenches on the Western Front. When tanks were finally used *en masse* at the battle of Cambrai on 20 November 1917, Haig's shortsightedness in failing to leave a tank reserve as an exploitation force prevented tanks from achieving a decisive victory. During the interwar years, J.F.C. Fuller and B.H. Liddell Hart were voices in the wilderness of British defense planning, promulgating the idea of blitzkrieg, which was ignored by their own High Command but adopted by Guderian and the Wehrmacht to decisive effect in the Second World War. Most armor officers know these facts. In *Men, Ideas, and Tanks,* Sandhurst lecturer J.P. Harris disproves all of them.

Harris traces the idea and the reality of tank warfare from its beginnings in an H.G. Wells science fiction story published in 1903 ("The Land Ironclads") to the tragic position in which the British Army found itself in 1939. The nation which had invented the tank, first employed it in battle, and led the world in tank development until the early 1930s, found itself on the verge of armored warfare with inadequate armor doctrine and inferior tanks — and nothing better on the drawingboard.

Men, Ideas, and Tanks convincingly demonstrates how fragile is the process of innovation in a military organization, how important the support of senior officers is in making innovation become an accepted part of the institution, and how serious the effects of neglecting innovation can be. At a time when the U.S. Army is itself in the midst of a revolution in military affairs, and defense expenditures will be at best stagnant for the foreseeable future, these lessons are immediately relevant to our own Army. History may not repeat itself, but it often rhymes, and in the wake of the Cold War, the international system and America's security situation may more closely resemble Britain of the 1930s than we might think.

By the way, while no one person should be credited with the invention of the tank, Winston Churchill's role was the most central in this as in so many other areas. Haig devoted more resources to the tank than its early performance demonstrated it deserved. Mechanical shortcomings in the tanks of the day prevented exploitation at Cambrai, which was, in any case, as much a victory of improved artillery tactics as it was of massed armor. J.F.C. Fuller and B.H. Liddell Hart vastly exaggerated their own role in the development of armored doctrine in the inter-war years, being wrong on many central points, including the necessity of combined arms formations. The weaknesses of British armored forces in 1939 were primarily due to the British government's failure to accept that the Army should play a role in France against Hitler until it was almost too late. And many of the failures of British armor against Rommel were a result of poor training and doc-

trine developed by the Royal Tank Corps in the inter-war years. Armor — and armored — officers should read this book.

CPT JOHN NAGL
Oxford University

SAS Survival Guide by John Wiseman, Harper Collins Publishers, Glasgow. 1993. $7.50.

If you're looking for a compact, easy to understand survival guide, then John Wiseman's *SAS Survival Guide* is a great one. The author has instructed at the SAS survival school for 26 years, and his book cuts through the BS and gets right to the important stuff. It's organized and illustrated extremely well, with major sections on shelter, camp craft, food, medical, and rescue. Color photos of edible plants, diagrams of shelters and traps, and illustrated first aid steps add to the book's substantial text. Best of all, it fits in an ammo pouch. If you need a survival guide, the *SAS Survival Guide* is about as good a value as they come.

By the way, I took the book to Africa, where I checked out the section on eating termites — (a topic with which I now have first-hand experience!). Mr. Wiseman likes to boil or roast his termites (as most proper English do), while many varieties are quite tasty raw.

MAJ KEVIN B. SMITH
HQ, EUCOM

With Churchills to War — 48th Battalion Royal Tank Regiment at War: 1939-45 by Peter Gudgin, Sutton Publishing Limited, Phoenix Mill, England. 193 pages. $18.99.

From duty as an officer with the battalion, Peter Gudgin has relied on memory and personal memorabilia to depict training and combat by one of London's two territorial tank battalions. From exercises on the Salisbury Plain and in the hills of Scotland, the 48th Battalion, Royal Tank Regiment (48RTR) soldiers and their Churchill tanks emerged well-prepared for fighting in Africa and in Italy.

The 48RTR first entered combat on April 21, 1943, working with infantry to take Longstop Hill, ending five months of military stalemate and opening the way for the Allied victory in northeast Africa. In the process, soldiers of the 48RTR were first to capture intact the German "Tiger" tank, with its deadly 88mm main gun. Almost one year later, with greatly improved infantry-armor coordination, the 48RTR helped break through the "Gothic" Line in northern Italy and then crossed over the Senio River in Christmas week, 1944. Several 48RTR Churchills literally supported a two-girder bridge for tracked and wheeled vehicles at the Senio. By the war's end in Europe, the 48RTR was within sight of Venice.

Admirers of the Sherman tank may find Gudgin overly effusive about the virtues of the Churchill. However, with its hill-climbing ability and a large crew compartment affording easy exit if hit, the Churchill proved readily adaptable to the challenges confronting the 48RTR. Gudgin admits that the Churchill proved no match for the new German "Tiger" tanks.

JOHN CRANSTON
Radcliff, Ky.

DRIVER'S SEAT (Continued from Page 5)

in a variety of assignments, including drill sergeant, recruiter, and AC/RC advisor. Leaders must counsel their soldiers on the importance of assignment variety and avoiding patterns, such as back-to-back TDA assignments. If you are nearing completion of a TDA assignment, contact your assignment manager and ensure that your follow-on assignment is back to a TOE warfighting unit. Armor NCOs must be proactive partners in the assignment process.

Fitness remains a key indicator of ability to perform in stressful situations. The promotion board looked critically at such items as a soldier who meets height/weight standards and scores well on PT tests at home station, but suddenly gains weight and shows a significant drop in PT score when attending NCOES courses. The Armor Branch is doing well in this category, but we must continue to focus on maintaining standards at home station.

While official photographs were not generally a problem in Armor, there appears to be some apathy in updating photographs. Soldiers who send their records before a promotion board with a black and white, or outdated photograph are sending a negative signal to board members. Old photographs place questions in the mind of board members when reviewing the soldier's records like: What, if anything, is the soldier hiding? Does he really measure up?

The soldier's official military personnel folder (OMPF) is another area which needs emphasis. The board noted a number of promotion packets with orders for awards which were not noted on the soldier's DA Form 2-1. Failure to update civilian education information is another area which needs more focus. Errors on the OMPF cause the board member to be on alert when evaluating a soldier records.

The area that we are all continually reminded of is the importance of the NCOER, particularly the raters and senior raters comments. Raters are not helping the NCO by using subjective and "fluffy" comments which are not substantiated by factual information. Solid performance over the long run, not occasional instances of excellence, bring the solid NCOs to the top. Senior raters must focus on potential, not on past performance. Those raters who focus on performance, and never mention future assignment potential or schooling, lose their vote on the future of Armor and may even cost a deserving soldier a promotion. Superior ratings coupled with comments like, "In time will make a good sergeant major" are confusing and may be indicative of poor counseling during the rating period. Senior raters must be forthright and specific regarding the potential of the rated NCOs. Your comments are helping to choose the future leaders of the Armor Force.

The Armor Force has quality, technically competent NCOs who are able to meet the challenges of the future. We, as leaders, must ensure that our soldiers are afforded every opportunity to become the best-trained and utilized force possible. We must ensure that we mentor our quality NCOs, with primary focus on the importance of performance in a variety of tough assignments, but never neglect those areas that could be used as a discriminator later in a soldier's career. It is obvious that the competition for promotion will continue to be tough. In keeping with the whole-soldier concept, a soldier's willingness to sacrifice, pay attention to detail, and to enhance his horizons will be a clear indicator of the type NCOs we want to lead the Armor Force into the 21st Century.

Have You Seen Me?

by Sergeant Major Timothy E. Maples

I am the Goodrich Riding Trophy, the symbol of the Draper Armor Leadership Award and property of the Draper Armor Leadership Fund. Since 1924, 13 of my number have been misplaced due to reorganizations, reflaggings, or other similar actions by Department of the Army. I remain the property of the Draper Armor Leadership Fund for life and am only entrusted to the care of others during that unit's existence. Your help is needed to return all the unaccounted for, misplaced, misappropriated, or otherwise wandering Goodrich Riding Trophies to the Chief of Armor, Fort Knox, Kentucky. Your assistance in this matter will be greatly appreciated by the Chief of Armor, the Draper Armor Leadership Fund, and all the soldiers entitled to compete for the award.

The Draper Armor Leadership Award was established in 1924 by LTC Wickliffe P. Draper as a plan to competitively test the leadership of small cavalry units. In 1928, LTC Draper established a trust fund of $35,000 to perpetuate the award. The only units authorized to compete for the award are: companies and troops of armor battalions and cavalry squadrons. Combat support, combat service support, HQ and mechanized infantry units, air cavalry, and attack helicopter units are not eligible.

The Goodrich Riding Trophy, the symbol of the award, resulted from a conversation between Major L.E. Goodrich, Cavalry Reserve, and General Malin Craig, Chief of Cavalry, in 1926. Major Goodrich originally donated $50,000 to sponsor a mounted service ride. However, the final outcome was the bronze equestrian statue pictured. A. Phimister Proctor, one of America's leading sculptors, was commissioned to design and sculpt the Goodrich Riding Trophy. Proctor, whose specialty was sculpting animals, especially horses, produced the masterpiece of a cavalry trooper astride a horse in full gallop, attacking with a drawn pistol. Proctor used a Sergeant Wotiski and his mount "Peggy" as models during the completion of the sculpture.

From 1928 to 1940, platoon-size competitions were held at various locations throughout the United States. The year 1939 saw a new dimension added to the competition: mechanized cavalry regiments sent their representatives, thus signaling an end to the era of horse cavalry and the termination of their domination of the cavalry competition. The competition was suspended during World War II (1941 to 1946).

In 1955, Army Regulation 672-73*, Decorations, Awards, and Honors – Armor Leadership Awards,* was published, thus formalizing the Draper competition and officially naming the award "The Armor Leadership Award." The regulation stated that tests would be conducted to determine the best platoon in a designated armored division. In 1960, the regulation was changed to reflect: "The commander of each armored and infantry division, armored cavalry regiment, separate armored brigade, and armor group of the active Army, Army National Guard, and the United States Army Reserve will select annually the outstanding tank company, tank troop, or armored cavalry troop of his command." Since then, the regulation was changed only once, in 1980, with little impact on the basic regulation. In 1991, Department of the Army, in concert with the Commander, Training and Doctrine Command turned the responsibility and administration of the Draper Armor Leadership Award over to the Chief of Armor at Fort Knox, Kentucky.

It is no longer feasible to conduct a unit field exercise at one location to determine the Armor Leadership Award Winner. Instead, competing units are examined on their overall performance by the parent command throughout the calendar year (Jan-Dec). The winner is selected by the major command and the appropriate data forwarded to: Custodian, Draper Armor Leadership Fund, The Office of the Chief Of Armor, Fort Knox, Kentucky 40121 by 31 March of the following year.

The Draper Award program also recognizes individuals for their demonstrated leadership ability while attending courses at Fort Knox. The outstanding leadership graduate from AOBC, AOAC, ANCOC, and BNCOC are recognized for their contributions and efforts while students. Additionally, the Drill Sergeant of the Cycle, Instructor of the Cycle, along with the trainee who demonstrates the most leadership skills during OSUT receive recognition for superior performance.

Each awardee receives an individualized wall plaque that depicts the Goodrich Riding Trophy, engraved with his name, rank, and award time frame; a book entitled "Leadership," containing a collection of leadership articles published in *Journal of the United States Cavalry Association, Cavalry Journal, Armored Cavalry Journal,* and *ARMOR Magazine* throughout the years; and finally a certificate, suitable for framing, depicting the Goodrich Riding Trophy with a pocket card imprinted with his name, rank, and unit of assignment signed by the Chief of Armor.

The Goodrich Riding Trophy is not a permanent award to the unit or a permanent part of the lineage and honors of that unit. It is the property of the Draper Armor Leadership Fund and must be returned when the unit is reflagged, permanently stood down, or the unit becomes no longer eligible to win the award. Please assist the Chief of Armor and the custodian of the Draper Armor Leadership Fund to recover the lost Draper Riding Trophies. If you have a sighting or any other questions about the Draper Armor Leadership Award, the POC is SGM Timothy E. Maples. He can be reached by writing Commander, USAARMC, ATTN: ATZK-AR (SGM Maples), Fort Knox, Kentucky 40121-5000; telephone DSN 464-1321/1439 or commercial (502) 624-1321/1439; FAX DSN 464-7585, commercial (502) 624-7585.

PIN: 075353-000