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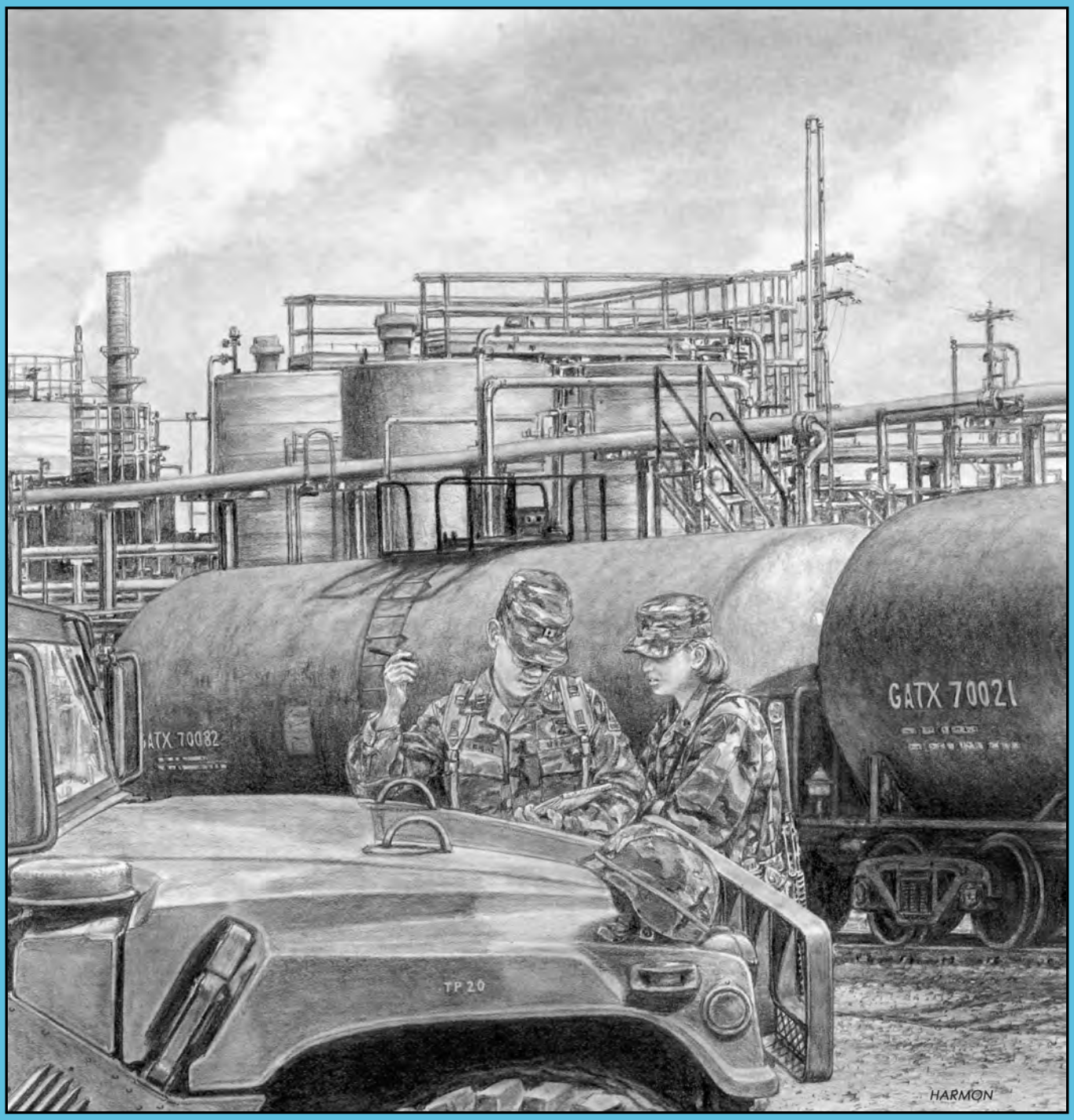

Homeland Security: A New Era of Defense *See Page 8*

PB 17-02-2 ***March-April 2002***

Saddle Up... Tonight We Ride

"I'm singing the song in my head." - Cassie Joan Daigle, age 5

Not long ago, my youngest daughter demanded a quarter to feed a nearby gumball machine. I replied that a quarter could be earned with a rendition of the "Daddy Song," a song that proclaims the greatness of its composer. The song is never sung without inducement or bribe. Knowing my daughter's fondness for bubblegum, I waited. Hearing nothing, I prompted Cassie and was informed that she was "singing the song in her head." It's painful to be outwitted by a five-year-old.

It's been a great ride; my family has thoroughly enjoyed its Army experience. Soon I'll exchange BDUs for civilian attire, and I look forward to the future. I'll be singing the Army song in my head. This is my final column, so I claim editor's privilege and will pontificate before hitting the release point.

Have Fun! Certainly, ours is a serious profession, but it is also a profession blessed with some truly funny people and characters. Is there anything more miserable than a leader absent a sense of humor? Nothing is more treasured in trying times than humor; it makes life more livable and tough experiences conquerable.

You aren't special; eschew the perks and privileges! Staying in the guest house when your soldiers are sleeping outside sends a message; sharing their hardships when you can sleep in comfort sends an equally powerful message. I knew a Brigade Three who drove around in a jeep sans doors even in winter rotations at Graf and Hohenfels. Most thought him touched in the head. I asked him what provoked his strange behavior; why not enjoy his vehicle's heater? The shivering major replied that it was his way of determining just how cold we were in our turrets and on the ground.

Along those lines, I suggest treating people with respect no matter the rank. A previous editor said it best, "Basic human dignity should not be a function of the design one bears upon his collar." When asked what he looked for in potential hires, a CEO said that he sought a person who treated the receptionist with the same courtesy and respect that he extended to the CEO. Not a bad criterion for determining whom you want on your team.

Don't Neglect the Home Team! Sergeant Major of the Army or general officer are worthy goals, but not at the expense of one's family. There is no way around unaccompanied tours, deployments, CTC trips, etc.; it goes with wearing the tree suit. However, it should not be an "either/or situation." Strike a balance and stay involved with the family. Wait until retirement before investing in these relationships and it may be too late.

My departure has spurred a bailout of sorts. Jon Clemens, our managing editor, is also retiring. His departure marks the end of an era. *ARMOR* has been molded, shaped, and assembled under his deft hand for over 17 years. Jon has forgotten more about editing than I or any other editor before me knows. This skilled journalist, writer, and editor has mentored many, myself included, in the job of editor. Jon says his own goodbye later. Readers and staff will miss him — fair winds and following seas, Jon.

Additionally, Rex Awesome is calling it quits. I'm not sure if the decision was voluntary or one imposed by a legal authority (probably the latter). Awesome is not sure where he will land. I've seen his resume and, based on that, I'd guess Bar Bouncer or Pornographic Film Star. I offer him the podium for last words:

Rex Speaks: I can't stand it! "Have fun," "Remember the family," what kind of crap is that? I can say "Bye" in less than ten words: See ya' on the high ground, bring some beer! Rex, out!

That said, I wish you all good luck, saddle up.

— D2

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the Secretary of the Army

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ARMOR

The Professional Development Bulletin of the Armor Branch PB 17-02-2

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Points of Contact

DSN prefix – 464-
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ARMOR Editorial Offices

Editor-in-Chief
MAJ Dave Daigle 4087
E-Mail: david.daigle@knox.army.mil

Managing Editor
Jon T. Clemens 4582
E-Mail: jon.clemens@knox.army.mil

Editor
Vivian Oertle 2610
E-mail: vivian.oertle@knox.army.mil

Staff Illustrator
Mr. Jody Harmon 3923
E-Mail: jody.harmon@knox.army.mil

Production Assistant
Kathy A. Johnson 2249
E-Mail: kathy.johnson@knox.army.mil

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U.S. Army Armor Center

Commanding General (ATZK-CG)
MG R. Steven Whitcomb 2121
E-Mail: steven.whitcomb@knox.army.mil

Deputy Commanding General (ATZK-DCG)
BG Robert W. Mixon 7555
E-Mail: robert.mixon@knox.army.mil

Chief of Staff (ATZK-CS)
COL Robert T. Gahagan 1101
E-Mail: robert.gahagan@knox.army.mil

Command Sergeant Major (ATZK-CSM)
CSM William J. Gainey 4952
E-Mail: william.gainey@knox.army.mil

Directorate of Force Development (ATZK-FD)
COL Henry Joe Hughes III 5050
E-Mail: joe.hughes@knox.army.mil

Mounted Maneuver Battlespace Battle Lab (ATZK-MW)
COL Dennis J. Szydloski 7809
E-Mail: dennis.szydloski@knox.army.mil

Office, Chief of Armor (ATZK-AR)
Aubrey Henley 5155
E-Mail: aubrey.henley@knox.army.mil FAX 7585

Special Assistant to the CG (ARNG) (ATZK-SA)
COL Randal Milling 1315
E-Mail: randal.milling@knox.army.mil

TRADOC System Manager for Abrams (ATZK-TS)
COL James H. Nunn 7955
E-Mail: james.nunn@knox.army.mil

TRADOC System Manager for Force XXI (ATZK-XXI)
COL Timothy D. Cherry 4009
E-Mail: tim.cherry@knox.army.mil

Assistant TRADOC System Manager
Soldier - Mounted Warrior (ATZK-ATS)
LTC J. B. Iddins 3519
E-Mail: jeffrey.iddins@knox.army.mil

Directorate of Training and Doctrine Development (ATZK-TD)
COL Keith A. Armstrong 8247
E-Mail: keith.armstrong@knox.army.mil

U.S. Army Armor School

Director, Armor School (ATSB-DAS)
LTC David M. Pratt 1050
E-Mail: david.pratt@knox.army.mil

Armor School Sergeant Major (ATSB-CSM)
CSM James E. Dale 7091
E-Mail: james.dale@knox.army.mil

NCO Academy (ATSB-NC)
CSM George DeSario Jr. 5150
E-Mail: george.desario@knox.army.mil

16th Cavalry Regiment (ATSB-SBZ)
COL John Antal 7848
E-Mail: john.antal@16cav.knox.army.mil

1st Armor Training Brigade (ATSB-BAZ)
COL John L. Ballantyne 8736
E-Mail: john.ballantyne@knox.army.mil

LETTERS

Thoughts on the Tracked M113 Versus the Wheeled LAV

Dear Sir:

The Jan-Feb 2002 *ARMOR* was interesting, informative, and — in the case of "Murphy's Laws of Armor" — rather amusing.

In his article, "Employing Armor in Low-intensity Conflicts," 2LT Noah Kanter provides much information I have not seen elsewhere, in a well-written overview of Israeli and Russian experiences. Unfortunately, his closing paragraphs contain some significant errors and omissions.

2LT Kanter describes the M113 as "too heavy," and favors the LAV because it is "a lighter, more mobile vehicle." The truth is just the opposite, however. The M113 is about 500 pounds lighter than the Marines' LAV I, and weighs roughly *5 tons* less than the LAV III.

Also, the ability of the tracked M113 to negotiate adverse terrain and crawl over improvised obstacles is superior to the wheeled LAV. (For some interesting comments by a cavalry commander regarding LAV III mobility during Army tests, see "The New Art of Combat," *Jane's Defence Weekly,* 11 October 2000.)

In addition, LT Kanter compares "the ability [of the LAV] to carry nine soldiers, as opposed to the six of a Bradley," while conveniently ignoring the fact that the M113 was designed to transport *11* infantrymen. Lastly, he says, "I do not propose that we form a motorized army..." Actually, by advocating an armored force equipped solely with wheeled vehicles, a motorized army is precisely what he is proposing!

There were also some inaccuracies in the letter by LTC Larry Altersitz ("Tank Guns on a Howitzer Chassis..."), who — like myself and others — thinks that "the M113 should be the vehicle of choice for the IBCT." The M113 has several advantages over the LAV III, not least of which is that it is already in service, and could have been used to equip the IBCTs more than two years ago.

The one major drawback to the M113 family is the lack of a variant that mounts a large-caliber, high-velocity main gun. LTC Altersitz's proposal to revive the M108 self-propelled howitzer, or to install an M109 turret with a 105mm howitzer onto an M113 chassis, simply "won't fly" — at least not on a C-130, as the M108/M109 hull and turret are about two feet too wide to fit in that aircraft's cargo bay.

One possibility that seems to never have been considered is to install a 105mm tank gun on the M113 chassis. Since the deck heights of both the LAV and M113 are approximately the same, and the LAV III mobile gun system (MGS), with its low-profile turret (LPT), fits into the C-130, the same should be true of an M113/LPT. Because of the low weight of the M113, and the high recoil of the 105mm gun, this is likely not a feasible option, but there is some doubt that the M68 cannon can even be successfully mated to the 19-ton LAV III. MOWAG, the company that designed the LAV series, reportedly asserts that it would be necessary to have a much heavier (and possibly larger) chassis for such a weapon system to be workable. If true, it means that the Army is expending precious resources on a goal that can't be achieved.

Since the MGS is intended primarily to provide direct fire support to infantry, not to fight tanks, perhaps a more practical armament would be a breech-loading, 120mm gun-mortar. This dual-purpose weapon can be employed for both direct and indirect fire, and — due to a maximum elevation of 80-85 degrees — is ideal for the high angles of tire needed in urban combat. To be able to engage tanks would necessitate the development of a HEAT round, or perhaps a vehicle mount for the Javelin missile.

I know that the idea of a 120mm gun-mortar is not going to be enthusiastically welcomed by tankers, even though it has some useful characteristics. Nevertheless, it may be the only viable choice for a direct-fire weapon that uses standard ammunition, and can be successfully integrated into a light armored vehicle chassis.

One final point: I truly hope that the leadership will reconsider the decision to equip the Brigade Combat Teams with the limited-mobility LAV III instead of tracked vehicles, which would have mobility better suited to full-spectrum operations. If this does not happen, then I fear that in the future we may see a replay of the destruction of Groupement Mobile 100, another force that chose wheels over tracks for much the same reasons that the LAV III was selected for the U.S. Army...

STANLEY C. CRIST

Armor in LIC Article Offered Good Overview, Flawed Conclusion

Dear Sir:

I wish to comment on the article "Employing Armor in Low-intensity Conflict: Some Lessons for the U.S. Armor Force" by 2LT Noah Kanter (*ARMOR*, Jan-Feb 2002).

The bulk of the article (an overview of Russian experience in Afghanistan and Israeli experience in Lebanon) is interesting and full of thought-provoking observations and insights. Unfortunately, all of this good work is compromised by the final "Lessons for the U.S." portion, which is factually muddled and seems merely to cheer on the Army's decision to procure LAVs. The author generalizes LIC, generalizes all tracked vehicles, and then sweepingly advocates the LAV as a solution. This is utter folly.

First, LIC is militarily and politically complex. Russian experience in Afghanistan has many parallels to U.S. experience in Vietnam. Modern armies confronted poorly equipped guerrilla forces that constantly evolved and improved, especially through outside assistance. The enemy ambushed targets of opportunity and faded away into rugged, inaccessible terrain. Firepower was applied liberally, but the real problem for the military was a lack of a clear objective. Neither the U.S. nor the Soviets sought to conquer a country. Instead, they tried to defend and stabilize the existing (some might say "puppet") governments.

Israeli experience in Lebanon was even more restricted. That situation morphed into a security mission during a guerrilla insurgency in a MOUT environment. Responding with conventional firepower into crowds of civilians is not an option.

Is there a role for armor in LIC? Simply consider the opposite. Could Russia or Israel have done better without armor? Of course not!

Now, let us consider armored vehicles. Tanks have superior firepower and protection. They are designed for shock action. They destroy enemy forces at long range and can maneuver while under enemy fire. Armored personnel carriers (APC) provide some protection for infantry but are (generally) poorly armed. Infantry fighting vehicles (IFV) tend to be in-between, having better firepower and protection than APCs, but far less than tanks. Tanks are heavy, IFVs are intermediate, APCs are light. Though their road speed may be limited to about 40 mph, all have excellent cross-country mobility and maneuverability thanks to their rugged tracked drive trains.

The Light Armored Vehicle (LAV) is wheeled. In firepower and protection, it is essentially a wheeled APC, though it is larger and heavier. It has a higher road speed, but its cross-country mobility is lower due to ground pressure, tire slippage, turning radius, etc. Its wheeled drive train is much more exposed and vulnerable to battle damage.

Both APCs and LAVs can be upgunned and uparmored equally. Both can accept 25mm cannon turrets, making them into IFVs. Both can mount 40mm Mk-19 grenade machine guns. Both serve as a basis for a family of vehicles, to include mortars, antitank missiles, air defense weapons, howitzers, ambulances, etc., etc. In all cases, the APC version will be smaller, lighter, and with superior cross-country mobility while the LAV will be larger, heavier, and with higher road speed. Neither approaches the shock action of a main battle tank.

One can discuss LIC tactics forever, but combined arms doctrine clearly demands a mix of systems. The author's examples touched on the successful contribution of airmobility, light infantry, armored infantry, mortars, air defense (automatic) weapons, and tanks, as the situation dictates.

Having succinctly presented so much information, why the author then ignored it and how he arrived at so flawed and narrow a conclusion is beyond me.

CHESTER A. KOJRO
LTC, Armor, USAR (Ret.)

The Author Responds

Dear Sir:

I would like to thank both Mr. Crist and LTC Kojro for their comments on my article, "Employing Armor in Low-Intensity Conflicts." I would especially like to thank Mr. Crist for his factual corrections to errors I made in the article. I stand corrected.

Mr. Crist, LTC Kojro, and I all agree that low-intensity conflict is something that the U.S. has not sufficiently addressed. Moreover, all of us realize that LIC will place limitations on how we will employ our armored forces. Additionally, all of us agree that an armored vehicle suited for potential LIC would ideally have a certain level of protection, mobility, firepower, and transportability in addition to a modest logistical train.

Unfortunately, we do not live in an ideal world. Political, economic, and technical issues make it difficult, if not impossible, to create the "perfect" LIC armored vehicle. Rather, we must decide which features we are willing to sacrifice in favor of others. Reasonable students of armored warfare can and will disagree as to which compromises we should make and those which we should not. As a credit to our profession, the debate continues and I am grateful for the commentary which this discussion has generated.

2LT NOAH KANTER
nckanter@hotmail.com

Chat Room Buddies May Have Been Mystery Authors of "Murphy's Laws"

Dear Sir:

I saw the article "Murphy's Laws of Armor" in the January-February issue and would like to claim credit as the author. The "laws" started out as a set of observations over a series of years while I occupied the positions of tank commander, platoon sergeant, and master gunner in 3/185 Armor and, after that 1/18 Cavalry.

In February 2000, I posted my observations to the Usenet newsgroup alt.folklore.military and solicited additional items. Here is a link to the original post:

http://groups.google.com/groups?hl=en&selm=oe6k9sg63ara8rarteqkm3q61dl0cgt8em%404ax.com

The final version (which made it to *ARMOR* magazine) includes both my original items and those added by the following people:

Richard Adams (formerly 1/18 Cavalry, now 2nd Brigade, 40th ID)

Scott D. Hann (formerly 1/15 Inf.)

Jorge Castro (unit unknown)

Sean Murphy (19D - unit unknown)

Pete C. (Unit and MOS unknown)

The following were people who posted using 'handles' rather than real names:

"Yeff' (former USAF)

'Ceejay'

MSG COLIN CAMPBELL
HQ, 40th ID (M)

Empowering Company Commanders: Now It's Time; Here's a Way

Dear Sir:

CPT Chris Connolly's article, "Chasing the Mythical Commander's Week," (Nov-Dec 2001) offers an accurate snapshot of life as a company commander in today's armor force, especially in 4ID (M) at Fort Hood, Texas. Many such commanders are doing great work in the Army, executing the company-level taskings, training, and operations directed to them by multiple echelons of headquarters, both over them and "around" them. But perhaps such commanders hoped for more from — and have more to offer to — the Army and its soldiers.

Army transformation is far from over, and if rational thought prevails, the Army just may realize that tactical information networks and situational awareness imply a need for fewer headquarters and larger spans of control. This means reversing the trend toward smaller companies and battalions while proliferating additional headquarters for CSS.

A road map for reshaping the Army to empower company commanders and create a force structure that offers scaleable land power options for combatant CINCs should include:

- Eliminating the division, DIVARTY, and DISCOM headquarters.
- Establishing organic combined arms battalion and company MTOES.
- Pushing CSS units back into the brigade and battalions.
- Enlarging battalion scout and mortar platoons.
- Adding an engineer or infantry platoon to each tank company's existing three platoons.

But tactical transformation will not be enough to fully release the energy and creativity of the Army's future company commanders if they remain busy garrisoning a Civil War-era basing concept whose rationale has long since disappeared. The strategic consumption of training time and other resources devoted to manning and guarding the commercial infrastructure on modern military bases is simply Napoleonic, as company commanders like CPT Connolly will tell you in charts, slides, or rock drills of what their soldiers actually do on the modern military "fort."

It's time to go beyond Base Realignment and Closing (BRAC) and eliminate the installation as we know it. Only by "moving the fences in" to only core military assets such as training areas, arms rooms, and motor pools will commanders and their soldiers escape the garrison tasking machine.

MAJ MIKE STOLLENWERK
Santa Monica, Calif.

Some Background on Early Auxiliary Power Units

Dear Sir:

The back cover article about the Under Armor Auxiliary Power Unit, from the Jan-Feb 2002 issue, is incorrect in stating that the WWII auxiliary power units were "crude add-ons." On the contrary, the auxiliary power units inside the M3- and M4-series medium tanks, as well as the subsequent M46-early M48 series, were well thought out and were an integral part of the vehicle design. The M3- and M4-series medium tanks had the unit located inside the crew compartment, where it not only supplied electrical power when the batteries were low or the main engine was off, but also could be used as a source of heat during the winter months. With the introduction of the M26, the APU was moved to the main engine compartment, where it remained until the advent of the M48A3. The fuel economy introduced by the M48A3 and M60-series allowed the Army to drop the APU as unnecessary, since the diesel engine could be kept running at idle to keep the tank electrical equipment in operation. It was not until the introduction of the M1 that fuel economy again became an issue and the need for a cheaper way of operating the electronic equipment became evident.

CHARLES R. LEMONS
Curator,
Patton Museum of Cavalry & Armor
Fort Knox, Ky.

Auxiliary Power Units: Remembering the Early Days

Dear Sir:

I am writing about the Jan-Feb 2002 back cover article on the Under Armor Auxiliary Power Unit (UAAPU) that is being fielded for the M1A2SEP tanks at Fort Hood. This addition to the tank is an obvious asset, saving fuel and running quietly to extend operational capability and avoiding thermal detection.

The article refers to auxiliary power units as "pony engines." Some veteran tankers may have said that, but in my ten-year experience

with the M48-series tanks, we called them "Little Joe's." They ran on MOGAS, as did the main engine. They also had a pull starter feature similar to your lawnmower that would start the APU even if the batteries were so discharged that the main engine would not turn over.

The same APU was used in the M88 Recovery Vehicle to power the hydraulic system as well as provide electrical power. The units were dependable and interchangeable.

CW4 (RET.) PAUL A. LOACH
2/185 Armor
CAARNG

More Auxiliary Power Unit Memories

Dear Sir:

In September of 1962, I turned in my typewriter to become a gunner of an M48A1. We had a gasoline-powered generator in the right front of our engine compartment. It was fueled from the main gas tanks and could be started from the driver's compartment or by a recoil starter accessed by lifting a grill door.

One other thing I remember is that one of my duties was to stand on the back deck with a CO2 extinquisher whenever we started the main engine. The exhaust came out over the back deck and was used to heat our steel pot full of water in front for bathing, shaving, or heating our C rations.

JAMES R. MILLER
SFC (Retired)
Stoughton, Wis.

Editor's Note: Because of confusion in the information we received, the UAAPU in the photo at right on the back cover of the Jan-Feb 2002 is upside down.

Civilians Replacing Master Gunners Could Free MGs to Lead Troops

Dear Sir:

As the Armor community becomes more technologically advanced, and future armored forces are focused on deployability and digitized capability, it's time to take a look at a program that has become outdated. Master gunners have been in existence for over 20 years now, from the M60-series through the M1A2 SEP.

The master gunner has always been the NCO on the spot to correct vehicle malfunctions and crew training. He is the one on the range, in the tower, directing range operations and engagements. He is always there to assist the commander in any way possible to help the unit — be it a single crew or a division — to put steel on target.

Now I think it's time to take a good hard look at what a master gunner really does for a living. Not what the duty description says, or what the local commander thinks he should be doing, but what he really does, what he is capable of doing, and what he has been trained to do.

Most battalion master gunners, and certainly company master gunners, rarely use what is trained in master gunner school, with the exception of machine guns and obtaining discreet CCFs (for which a very nifty sheet has been developed). The maintenance aspect of the master gunner's role has now been simplified by self-diagnosing equipment and line-replaceable LRUs. Almost all of the unit certifications (TCE, AGTS and UCOFT I/O) are certified outside the battalion. DRB, OPTEMPO and Force Protection Missions preclude any type of rational gunnery training cycle…. Why send an NCO to school for three months of extensive and difficult training (more if he is to become M1A2, M1A2 SEP and UCOFT/AGTS I/O and Senior I/O certified) when the job can be given to, and accomplished by, the same NCO who is probably already doing the mission anyway without the identifier?

We depend more and more on contractors to train our tankers on both new and old equipment. OPNETT, OMNETT, FBCB2, MCS, UCOFT I/Os (in Korea) are a few examples that are currently in effect Army-wide. Let's take a look at replacing the master gunner with a contracted civilian permanently assigned to the battalion or higher. He goes to school once, keeps current, and won't be affected by sources other that the commander. He will not be PCS'd or ETS'd, or concerned about his time in a staff job or a TDA assignment. More importantly, this would leave our most competent NCOs free to lead their crews or platoons. This may not be "The" answer but it is "An" answer to the question.

I am not criticizing the competence or abilities of those of us who have served, or are currently serving, as master gunners. The point is, do we really want or need that high-speed NCO in the tower, the MILES warehouse, or making tracking charts? Wouldn't we rather have him leading his men?

SFC CRAIG MCINTOSH
Battalion Master Gunner
2-8 Cav, 1CD

Training Killers

Dear Sir:

I am writing with regards to "Breaking the Reconnaissance Code" by CPT Eric Shaw (Nov-Dec 2001) and CPT T.J. Johnson's response to the same article in the January-February issue. I will attempt to address the root issues brought up in the two pieces.

The first issue is the need for a dedicated reconnaissance platform within the Army. Reconnaissance is non-branch specific and. therefore, has no branch chief to look out for its best interests, which have been overlooked to an extent. The Army needs to place more emphasis on reconnaissance at the unit level. The need for a thick-skinned, large wheeled vehicle, with a formidable weapon and thermal capability is a must for matching the mission to the capabilities of scouts. Capable scouts should not be handcuffed by improper equipment. A dedicated recon vehicle would be a good start in improving what should be the task force or brigade commanders' "bread and butter."

The rubber meets the road with the BRT or task force scouts, not with satellite or UAV reconnaissance; we must not over-rely on high technology. A good scout on the ground can both acquire and process intelligence, unlike the duo of high-tech equipment and a rear-echelon analyzer.

The next issue then becomes how to improve the skills of a scout unit, or any unit, once they have the proper equipment. In order to improve, one must look at how you are training and what you are training. I will focus on the how, not the what, because in this case, the egg is needed before you can have the chicken. The method of how we train our warfighters is not efficient or as effective as possible. Send the leaders of fighting units to "right seat ride" with OPFOR units in order to understand how fighting day in and day out, year round, improves a unit, both before and after LD. Allow OPFOR leaders down to platoon level to mentor and discuss with their counterparts regularly. Eliminate the handcuffs that degrade the OPFOR from providing the toughest, most lethal enemy available. Provide more iterations and repetitions to the training unit during their time at a CTC. Repetitive training is much more important than providing more time for planning and preparation in the current Army daily operating environment. Once improvement is made on how we train, then we can look at what we are training.

CPT Johnson's weak response to why OPFOR scouts are better than BLUFOR scouts is a typical excuse that, unfortunately, is a dominant belief throughout BLUFOR units. The OPFOR is an educated, thinking, living, and breathing enemy. The OPFOR strives to get better everyday and sustain its strengths. The OPFOR is not robotic at executing a Plan X, Y, or Z as believed. Every mission is different because the enemy and situation differs every single day. The excuse of losing to a cheating OPFOR is just that, an excuse. The OPFOR has a lesser challenge in beating the BLUFOR than they do in holding themselves to a high standard of MILES and ROE compliance in order to avoid such bogus claims of cheating. It is true, the OPFOR knows their land very well, just as any enemy would, just as the evil-doers in Afghanistan. But the OPFOR knows something far more important than the lay of their land; they know the art of using the land to their advantage. Using the terrain is an art, and once you can paint, it does not mat-

Continued on Page 47

Major General R. Steven Whitcomb
Commanding General
U.S. Army Armor Center

Training Changes Are Armor Conference Focus This Year

Over the past few years, we have tackled many critical topics for the Army during our annual Armor Conference. The Armor Conference has served as fertile ground for an annual crop of thoughts, questions, and solutions to the challenges that face soldiers across the operational spectrum. These important meetings have focused our collective energies and have helped us to lead the Army in areas such as technical innovation, doctrine development, force design, information empowerment, and battlefield effects integration. As we looked back at these past victories, we decided to channel this year's efforts on one of the most important topics in our Army: training.

Never has the need to focus on sharpening the Armor spearhead through realistic, demanding, and *appropriate* training been so necessary. Every unit in the mounted force can recite a litany of problems involving training management, scarcity of training resources, and measuring training effectiveness. Additionally, commanders and soldiers today find themselves facing an ever-increasing requirement for proficiency across a broad range of skill sets. The scout who serves in a legacy force unit today can find himself in an IBCT tomorrow and an Objective Force unit in the future. Additionally, the need for soldiers to participate in other necessary missions — such as peacekeeping, homeland defense, recruiting, or instructing, with all the requisite skills — will not diminish. The ability to design, track, manage, provide, and resource training to the specificity needed today requires a "*system-of-systems approach*" that can only be described as the Objective Force. An Objective Force training system will have the robustness necessary to allow us to train effectively today, yet start producing soldiers with Objective Force skills and traits well before the fielding of the first Unit of Action. The Objective Force warrior will fight on legacy equipment and exploit its capabilities to the fullest potential. However, today's legacy warrior is not fully prepared to fight the Future Combat System. Given this assumption, the rapid transition to training that will produce Objective Force warriors makes sense and should take precedence over all of our other efforts.

For those who come to the Armor Conference, and for those who cannot, the concept of transforming our training systems to meet the demands of the Objective Force should dominate our discussions. I must admit that in true NTC fashion, "I don't know what I don't know" when it comes to establishing the system architecture and support that will enable this training system. We will need all of the intellectual and technical abilities of the mounted force to solve these problems. However, what I can do is offer some insights into what I believe the Objective Force training system will look like and talk about some changes that will need to be made. Hopefully, my simple ideas will serve as a catalyst for better ideas from the force.

Life-long, Continuous Training

Training in the future cannot remain segmented into institutional blocks, operational blocks, and functional blocks. Today's "one-size-fits-all" training at the training base will have to be changed to allow training that is personally designed for the soldier and his future assignments. Institutional training will have to extend beyond the walls of the schoolhouse into the soldier's operational or functional assignment. Utilizing web-based, forward-based, or distance learning options, the school must reach forward to assist in this life-long learning process. The Army's schools and unit commanders must work together to seamlessly weave individual training into tailored packages that keep the soldier current, interested, and prepared while not becoming onerous in his work schedule or intrusive into family life. Training support, especially in the form of training support packages, must be available for every level of

"...what would happen if the aviation school graduated an aviator with the proviso: 'We've given him the tools necessary to fly and he has demonstrated his potential for flight worthiness — now he must go and prove himself to be a flyer?'"

training from individual to brigade-level collective training. The linkage between schoolhouse and operational unit must allow for the rapid transmission of ideas and experiences from every level to the training developer. Preferably, this information will be available through the Internet and downloadable into a common use format.

Beyond Knowledge-based Training

We will have to move away from knowledge-based/knowledge-retention training and into experience-based training. Knowledge-based training is derived from reading books, sitting in a classroom, student discussion, or watching some form of presentation. Experiential learning comes from performing a task, under conditions as close to actual combat as possible, to standard, with enough repetition to master proficiency. How would you rather train a football team, have your players watch ESPN, or have them scrimmage an increasingly competent opposing team? We will still teach our players the playbook, but Objective Force training will be an intense scrimmage more often than the current 18-month rotation.

This requirement will drive us to develop entirely new training aids, devices, simulations, and simulators (TADSS) for our training. We must create conditions that accurately replicate the fear, confusion, and intensity found on the battlefield. Our simulations in constructive, virtual, and live settings need to be "emotional experiences." Training platforms and systems must also come with their own embedded training capability. We don't need another conduct of fire trainer. We need a platform that has conduct of fire training capability built right into the machine. Embedded training capability will ensure that commanders are never again separated from their ability to train, whether in garrison, in the field, or at war.

The requirement for combat realism will also drive us to insist on multi-echelon, multi-grade, combined arms training at every position above initial entry. Resident schools, in particular, must be leadership- and battle command-centric. We must develop leaders in a battle school and allow them to gain experience in the execution of battle command. The old cavalry axiom of "never go somewhere you haven't been before" has never rung more true. The first time a platoon leader gives a platoon order to a group of sergeants cannot be in his first unit — it must in the training base. Equally, the first time a company commander has to make a difficult decision during the intensity of combat must not be when our sons and daughters are in harm's way.

Information Operations and Intent Training

These changes will produce leaders that are imbued with a warrior ethos right out of the training base. But a warrior ethos must be met with a change in mentality, and a change in culture. Future training will have to teach future leaders not *what* to think but *how* to think. Leaders must be trained to think in terms of information requirements right from the beginning. If information is the empowering element of combat power, then the importance of information exploitation must become the integral part of our mission planning process. This means developing the ability to articulate CCIR, PIR, and EEFI to subordinates while being able to quickly recognize and focus on fulfilling the information requirements from the higher echelon of command. This will generate the need for intent and information requirements rather than lengthy orders. Objective Force warriors honed by this type of training will have the confidence and adaptability to accept intent and information requirements and turn them into rapid and violent execution.

This intent-based training will replace our current process-based training. We will no longer grade students on their processes ("Well, your unit was annihilated, but your order checked all of the blocks…"), but rather their product ("You completed your mission by operating effectively within commander's intent…"). This kind of tactical understanding is reached through doing, not through seeing; through talking less and fighting more. Graduation must equal competence, not potential performance. Think about it: what would happen if the aviation school graduated an aviator with the proviso: "We've given him the tools necessary to fly and he has demonstrated his potential for flight worthiness — now he must go and prove himself to be a flyer?" While this sounds ludicrous, until recently the training base graduated lieutenants who had never led a platoon and captains who have never led a company attack. The training base continues to graduate majors who had never written, and then executed, a battalion order under battle-like conditions.

Conclusion

These are some, but not all, of my thoughts on Objective Force training. The Armor School is taking a proactive approach to Objective Force training. We have already started the move toward experienced-based training by executing a new training methodology and by conducting multi-grade, multi-echelon training. We are not going to sit idly by; we are going to implement effective training whenever we find it. Clearly, we still have miles to go to develop the kind of training we need in order to produce the soldiers we will require for the Objective Force. This column is too short to list all of the things we must undertake to make our "transformational training" equal our "transformational effort." My purpose is to get you, the Mounted Force soldiers, talking about these thoughts on future training. At the Armor Conference, we will examine some of these ideas, and look at many other things. For those of you who are coming, we look forward to seeing you and talking about the future of training. For those of you who can't make it, we hope to hear your ideas and read about them in the pages of this magazine.

FORGE THE THUNDERBOLT!

Conducting Homeland Security: Moving Swiftly into a New Era of Defense

by Major Mike Pryor with Lieutenant Colonel Ronnie D. Johnson

The call came from my battalion commander and AGR Deputy Director for Training and Mobilization in my state. "I need you in here ASAP," he said, "You will be doing mission contingency planning for critical infrastructure sites in the state…."

"What time do I report?"

"This afternoon, as soon as you can get here. I've got one of the captains stopping to pick you up on his way here."

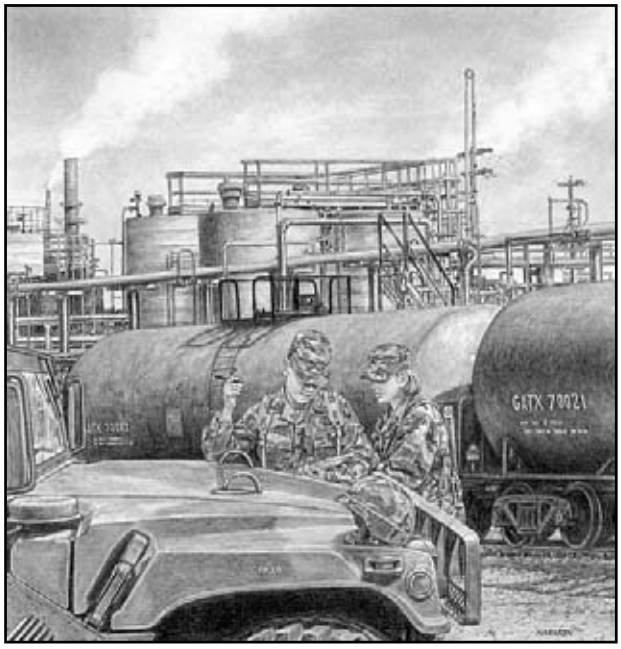
"Fair enough, sir. I will see you soon."

That phone call, on September 18, 2001, initiated the first of my three separate tours of duty planning Homeland Security (HS) missions for my state. It is highly illustrative of the nature of this new mission that it began with no written doctrine or necessary guiding terms and definitions. As my battalion commander said when I arrived at his office, *"…We are making this out of whole cloth — there's just nothing already written on this to go from…."*

Indeed, the planning and missions I was involved with should have been written and rehearsed no later than September 10, 2001 — we just did not know that at the time.

This article will discuss the nature of planning and executing missions for HS, which, as I found in a very recent Army document, is defined as "*…the preparation for, prevention, preemption, deterrence of, and defense against, aggression targeted at United States territory, sovereignty, domestic population, and infrastructure; as well as the management of the consequences of such aggression; and other domestic civil support….*"

Since we are all in the infancy of this most important of efforts, I believe it is important to discuss how it was done in my state and to share tactics, techniques and procedures (TTPs) useful in accomplishing this new mission. My personal perspective comes from conducting reconnaissance for and drafting three site security contingency plans (CONPLANs), assisting in drafting my state's OPORD for Operation Noble Eagle's airport security mission, and observing the deployment of airport security support teams during the heightened state of national alert on or around 31 October 2001. My battalion commander has also weighed in with comments and suggestions.



I also write this article with reference to several remarks made by General Eric K. Shinseki, Chief of Staff of the Army (CSA), to the Association of the United States Army's Seminar this past November 8th. I believe his comments about transformation of the Army are highly pertinent in the context of HS. Right off the bat, the CSA's comment below sums up my initial deployment well, and is an indicator of the kind of response units should be prepared to provide for HS missions:

> ***"…So we are going to go faster — to win today's fight against terrorism, and to win all those fights yet to be defined in our future, we have to go faster... Where we used to deploy in weeks and months, we must now deploy in hours and days…."***

(General Eric K. Shinseki, AUSA Seminar, Washington, D.C., November 8, 2001.)

I wish to stress that homeland security is evolving an order of magnitude even as I type these words. If ever there was a need for a sense of urgency, I cannot think of a better time or place because this mission holds implications for us and the lives and property of our families, friends, and neighbors.

Arriving On Station and a First Mission

When I reported to my battalion commander at the state training office, his in-briefing was short and to the point. Along with a captain ending his tour as an NTC Project Officer, I was brought in to draft CONPLANs for the security of key and critical infrastructure in our state. This was to be my first time drafting plans at the state level. A key point to make here is that planning to secure key and critical infrastructure in the state should be a state-level staff mission. The state's military department (along with local, state, and federal law enforcement agencies) is responsible to the Governor, and ultimately the President, for the defense of these sites as the military first responder. They serve as the echelon of command that provides logistical support for any overall task force command structure that commands and controls these missions. In my state's case, it is the military department and the Office of Emergency Preparedness

(OEP) that have ties to the managers of the state's critical infrastructure and local government and law enforcement agencies. And for any designated task force command structure, state-drafted CONPLANs facilitate the commander of troops' orders process. An overall challenge here is that the state training office is not organized with a planning cell because they function primarily to coordinate training and training support matters already planned for by subunits (the major commands, or MACOMs) in their state. There is no G3 Future Ops staff available for HS campaign, operational, and contingency planning, so in order to conduct the planning mission, the state has to mobilize augmentees.

Prior to my arrival, the state's training office, key state directorate heads, and the Adjutant General (TAG) conferred to determine what were to be designated as "key" and "critical" infrastructure assets within the state. This is perhaps the first instance where new doctrinal definitions had to be crafted. For the purposes of prioritizing support, the TAG and state staff determined that 'key' assets held some national and/or strategic implications, and 'critical' assets held state strategic and/or economic implications. The recommendations for assets to be listed came from existing state military files that required significant updating, institutional knowledge of state infrastructure by our OEP, and from agencies who contacted the state's OEP, or the Governor's or TAG's offices directly.

Based on the criteria above, the list was compiled, sites were categorized as 'key' or 'critical', and then they were prioritized, based on the Governor's and TAG's intent and the overall impact each site might make to national and state security. We contacted 5th Army and the National Guard Bureau on September 18th to provide them with this list, classified as SECRET – NOFORN. I recall that, since the draft of "The List," various state political and military offices have had to define for several facilities and corporations what was meant by 'key' and 'critical' and how that translated into prioritization of our support to them. It seemed, too, that EVERYONE wanted additional security, which is perhaps a bit of an overstatement, but not too far off the mark. Without these initial definitions, however, we would not be able to explain to some companies why they could not be immediately supported while their next-door neighbor, in a similar industry, could be. (For instance, you might have two crude oil processing assets in your state whose fence lines abut each other. One processes 10,000 barrels of oil per day for local distribution. The other one pumps 10,000,000 barrels per day throughout the United States. Common, military sense dictates the latter would have priority for support and the former might not. But that kind of logic still had to be explained numerous times.)

Simultaneously, we began to coordinate, through our OEP, for meetings with critical infrastructure security and site managers. The OEP has a combination of institutional knowledge of personnel at these sites and holds close ties to local (parish) OEPs and agencies.

Avenues of Approach (AAs):

- Hard – Surfaced/gravel routes (RTEs) into site
- Cross-country routes into site (fields, trails, footpaths, etc.)
- Water-borne routes into site (i.e., rivers, streams, bayous, swamps, etc.)

Observation:

- Inter-visibility (IV) lines along AAs out from the site (recon once occupied)
- Best locations from which to observe IV lines above (recon once occupied)
- Best places from which the enemy (EN) can observe the site/last place short of IV line EN can pull off of AA before IV line/open areas where mortars could unmask and fire on site (recon once occupied)

Key Terrain:

- CLASS I and water locations
- Emergency CLASS III (diesel) locations
- Possible CLASS V storage area/unit CP location
- Local hospitals in the area
- Possible maintenance/vehicle storage site
- Possible areas to billet troops
- Local police and fire stations
- Possible locations EN can acquire transportation (public service, utilities, truck rental, truck stops, airports, marinas, etc.)
- Utility and water lines into site
- Closest local media outlets (TV, radio, newspapers)
- Locations of concern for possible local terrorist threat
- Hazardous materials on site

Obstacles:

- Natural/manmade obstacles in place around site
- Obstacle material in the local area
- Obstacles necessary to limit access into the site

Cover and Concealment:

- Natural/manmade cover and/or concealment around site

Table 1 – Initial IPB Checklist

My state's military leadership knew instinctively that any work we did would be a joint, multi-agency effort that included local political, governmental, and law enforcement agencies. Not doing so might produce hurdles too significant to clear and could undermine the security process.

Before we could conduct site security visits, however, we had to have a checklist of some sort to go by. Since this effort was designed to protect a piece of ground, I thought we should use an OCOKA-like (**O**bservation, **C**over & Concealment, **O**bstacles, **K**ey Terrain, and **A**venues of Approach) checklist. I looked at what we were doing, however, and determined the proper order to answer site questions was actually AOKOC. Taken from the IPB checklist we used, Table 1 is a list of what we were looking for when we went to a site.

Answers to AA questions help define how a terrorist or terrorist group might infiltrate a site. Based on any local terrain situation, the three types of routes listed may not cover all eventualities. Conspicuously absent from this list are air AAs. This is primarily because the Air National Guard has the overall mission for that battlefield dimension. What is helpful about this section from a planning perspective, (for both us and potential enemies) is that many of the answers to these questions are found in a good atlas or local map. This is beneficial to units because there is a dearth of military maps for areas in the state not associated with military facilities. But you still must 'see the dirt' to completely appreciate the terrain situation.

As a note here, we went to my civilian employer at the Louisiana Department of Transportation and Development – DOTD – and requested some Global Information System (GIS) mapping and product support. The state of Louisiana is one of the most GIS product-covered states in the nation in terms of databases available. Louisiana's DOTD possesses many products we could use to aid our reconnaissance. Assistance from DOTD is one of several instances where close (and personal) ties to local governmental agencies have been invaluable to mission accomplishment.

You will notice after each sub-topic under the "Observation" section a note in parentheses that says '…recon once occupied….' This could actually be accomplished by an initial recon team and be annotated on an IPB checklist. However, we found that there were so many sites to visit with our limited planning cell that we deferred this action for a later time. I personally think this was not a detractor, however. I believe a local commander of troops on the ground should always define his own battlespace. It is, after all, his turf and his responsibility.

The "Key Terrain" section included locations to find pertinent classes of supply, maintenance, medical, and local law enforcement and fire department support.

Locations of utility and water lines into the site need to be known by the security force, along with the effect they have on the site's overall operation. I added 'Closest Media Outlets' under the assumption the greater the proximity to the media, the more likely a site was to be a target. 'Locations of concern for possible local terrorist threat' is something that local law enforcement is again in a better position to answer. Based on threat patterns of organization, potential terrorists have to meet somewhere in order to craft their plans, and tend to do so where they are the most comfortable. Finally, the locations of any hazardous materials on site have to be known for purposes of unit force protection. The short-shrift we all tend to give NBC individual and collective training needs to end. These types of hazards — both from what might be a threat on site to what might be introduced separately by a terrorist — demand we know how to work in an NBC environment. To this end, Civil Support Teams (CSTs) are invaluable for the information they possess on-hand or have access to. Were I King-for-a-Day, I would provide a CST Team for every state and also to enhance active duty unit deployment as far down as the battalion level. Consequently, my reconnaissance of sites included one of the NCOs from our state's certified CST. This soldier has access to chemical hazard modeling software and information on protective equipment that is needed to enhance force protection.

Louisiana Army National Guardsmen protect an infrastructure site in their state.

Locations where terrorists can obtain less-suspicious transportation that might possibly allow them access to a site are something of a difficulty in the scheme of contingency planning. It is investigative in nature, and as such, more of a law enforcement tasking than one for a commander of troops on the ground. It does, however, allow a local commander to focus his observation on particular AAs wherever there is a clear indicator of more of a threat from one direction than from others. Of particular interest here is that most of this information, to include maps to these location, can be found using 'Yellow Pages' — like search engines on the Internet. Key questions individuals must answer in this regard might be:

- How far out from the site should I look?
- Wouldn't a terrorist steal a vehicle farther away — as in maybe the next state — for use at your local site as that would be less obvious?
- When would they steal it? Twelve hours before they attacked? Twenty-four?

From the documentation each company provides to the government by law (such as Tier II Reports, and MSDS and MPR sheets), a recon element can orient on potential hazards in the area that will require further inves-

tigation. Call this preventive NBC reconnaissance, if you will. Keep in mind, too, that if hazardous materials are present, the on-site unit has to learn and rehearse emergency procedures should there be a release.

Obstacles information is pertinent to either narrowing enemy AAs or eliminating them. Natural and/or manmade cover and concealment concurrently defines both friendly and enemy-use areas since the advantage in such terrain always lies with the occupier. Both of these sections also serve to assist any commander of troops' definition of his overall battlespace.

Armed with a prioritized site listing, having conducted the necessary coordination with OEP to visit these sites, and possessing an initial IPB checklist to take and complete, we began to conduct our site security inspection mission. Our TAG's intent, stated prior to the first coordination meeting, was that any mission we were to undertake would be to *augment* a site's existing security posture, not to take over the site's security operations. With this as the initial, ice-breaking posture and language at all meetings, any fears held by security and site managers that we were coming in to take over their operations were put to rest. At least I assume so, as none were ever expressed and we have had nothing but the best of relationships with each site we visited. In these meetings, great pains were also taken to ensure that representatives from nearby local and state government and law enforcement agencies were present so as to build a site security coalition. We believe that this is critical to any site security mission's success.

We discovered four, key lessons learned once we began our site security recons. First, something was missing in our IPB checklist. We had to have answers to two additional, key questions:

1. What are the national military implications of this site, and how would its loss disrupt the national military strategy?

2. Where are the site's Single Points of Failure (SPOFs)?

The answer to the first question both defines the need for troops and the site's priority on any critical asset list. Going back to my example above, the loss of a 10,000,000-barrel-per-day crude oil site would have a significant impact on the national economy and the availability of fuel for the military. Such a facility would likely be very high on any prioritized list of assets to secure. At the site, you also need to know the SPOFs. This is another term that needed defining. We believe these points to be any one, particular thing that — if it ceased to function — would bring normal facility operations to a halt. As such, these points need to be safeguarded as part of the overall site security plan in order to assure uninterrupted operations. The answers to these two questions are now spelled out in any state site security CONPLAN we write.

Secondly, our prioritization as 'key' or 'critical' did not properly define the overall infrastructure system. As we continued to recon, it became apparent to my battalion commander that there was a significant level of interconnectivity to these sites. When you understood that one site fed others, who in turn supplied others, etc., and that the loss of one or another particular site could halt other critical infrastructure operations, it was not too difficult to see the logic in restructuring and re-prioritizing our critical infrastructure list. By way of illustration, return to the theoretical 10,000 and 10,000,000 barrels-per-day crude oil facilities I mentioned above. When you initially listed them, the 10,000,000-barrel site might have been placed on your list of 'key' assets. The 10,000-barrel site might possibly have been placed on your 'critical' asset site. Also on your 'key' asset list was a large power-producing facility. You did not realize until you began to recon that the power facility provides all power needs of the 10,000,000-barrel site, as well as three other, similar-industry sites placed on your 'key' asset list. The correct answer then becomes to change your 'key' asset list, placing the 10,000,000-barrel site, the three other, similar-industry sites, and the power-producing facility all in the same 'tier' of the overall 'key' asset list. The fact that the power-producing facility also supplies energy for the 10,000-barrel site simply means their power source might receive increased security support simply by association. It does not, by default, mean the 10,000-barrel site needs to be moved up the prioritization ladder.

A third lesson we learned with each site security reconnaissance was that we did not know everything we needed to in order to properly define the security support requirements of that facility beforehand. So we had to: tour a

facility; learn how it is operated and what its SPOFs and vulnerabilities are; determine how it is linked to other infrastructure; and compare each site to all others. Only after this was done could we then properly justify the prioritization of our infrastructure asset list. I cannot stress enough that you have to physically visit these sites to appreciate the magnitude of the mission you may have to undertake to secure them. It is also why the thought occurred to me, on the very first recon, that any unit with a potential mission to augment security at a site should have its leaders visit them as well as soon as it is practical. This process underscores why reconnaissance is one of the key steps in our troop-leading procedures.

Finally, we learned that each site has several, potential security levels that we must plan for. It did not take us long to determine there were at least three basic tasks and purposes corresponding to particular security levels any deploying unit might have to execute. One might be to '*…provide a visible security presence… to deter a possible attack*….' This is the least restrictive-to-the-workforce level of support we can provide that still allows for an increased, overall facility security posture. It also requires deployment of fewer soldiers. Another possibility is to '*…secure the site to assure no Threat intrusion*….' By far, this is the most restrictive-to-the-workforce level of support we can provide. A point of order here is that our presence still needs to be in concert with the site's security policies and plans of local law enforcement officials. But this mission posture is likely to require checkpoints and roadblocks that keep individuals from entering a facility unless they are necessary to facility operations. This, in effect, requires a 'Black and White List' similar to those produced for deployments to the NTC, JRTC, or CMTC. I believe those lists to be the purview of the facility management and

law enforcement agencies. Facility management provides the 'White List' because they tell us who comes in to support operations and who is due to make deliveries for operational support. Law enforcement agencies (with facility input) in effect write the 'Black List' through the intelligence updates they provide. They also dictate specific individuals or groups whose entry into a site is unauthorized. And a final, possible task/purpose for a task force is to '*…(conduct) evacuation, search and rescue, and security missions to assist with mitigation of the effects of an attack or disaster*….' Under developing Army definitions, this latter task/purpose seems to be a 'Consequence Management' (CM) mission. In my book, this is the worst-case scenario because it means we failed to acquire the proper intelligence picture to posture against, and therefore deter, an attack. Not being able to describe the magnitude of such an event beforehand, this mission may require a small number of troops we would deploy for the first two threat conditions, or it may take many times more. Regardless, it would certainly stretch the bounds of soldier and leader individual and collective training and experience.

We were on Day Four of initial site coordination meetings when the overall state mission evolved….

At the conclusion of my first, solo recon of a key infrastructure site for the purposes of drafting its security plan, I returned to give a short briefing to my battalion commander/state Deputy Director for Training and Mobilization. He let me finish before he said, *"…OK. Now, shift gears. We have a requirement to stand up an airport security task force based on the President's comments yesterday about placing Guardsmen in the airports to increase security and public confidence. There has been an initial meeting already with the directorates, and they have all been tasked to provide us with their annex to the order by noon tomorrow. You and the boys are going to spend the weekend putting the order together for the TAG's approval by noon on Sunday. Questions?..."*

I did not need to ask any. I have been my commander's S3 for four years and through our NTC rotation. I understand and completely believe in his desire to retain flexibility to ensure success in every endeavor. To borrow from comedian Eddie Murphy, I am the very picture of Gumby. This was another time and place defined by one of General Shinseki's comments to the AUSA Seminar:

> *"…While operations were planned as sequential events on a linear battlefield, we now look to master continuous and simultaneous operations on noncontiguous and distributed battlespace in the future…."*

As we were in the process of contingency planning for multiple critical infrastructure sites, which might need to be manned *tomorrow*, we now had to simultaneously plan for deployment of a security task force spread across the state in multiple airports.

As we began to receive the directorates' annexes, the task force, dubbed Task Force Noble Eagle (TFNE) was already making moves to stand up. Defining the very essence of agility, email and telephonic messages went out to each major command (MACOM) telling them to solicit volunteers to be interviewed, selected, trained, and deployed for the mission. It was a Friday afternoon, and interviews were to commence on Saturday morning and continue through Sunday. Our TFNE commander (a deputy United States Marshal), his command sergeant major (a state policeman), and the state's Active Guard and Reserve (AGR) command sergeant major, would lead the interview team. Over two days, they flew via Blackhawk helicopter to several sites around the state, interviewing more than three times the number of volunteers called for by the mission. To facilitate command and control, the state was divided into several regions, most of which included more than one airport. Regional commanders were then assigned to oversee security support chains-of-command in each airport.

The NTC Project Officer that picked me up from work on September 18th was selected as the operations officer for the TFNE and was hot on the trail of coordinating training events, locations, and support. A site was selected, complete with billeting, classrooms, and weapons ranges. The TFNE operations officer tied in directly with the regional Federal Aviation Administration (FAA) representative to coordinate for required FAA classes prior to deployment.

Monday was reserved for SRP of the selectees. The task force's FAA training was scheduled for the Tuesday and Wednesday after the interview weekend, making our state one of the first two to receive the mandatory training sessions. The day after FAA training was completed, the unit would fire 9mm pistol qualification. Because of the unique nature of the mission and its proximity to civilians, the TFNE leadership reassessed weapons qualification

Guardsmen completed 9mm pistol training to civilian police standards.

requirements. Due to the task force commander's and CSMs' experiences in their full-time employment, it was quickly decided that traditional weapons qualification would not meet the mail. They determined that, for this mission, the Professional Officers' Skills Test (POST) qualification course was more appropriate. This qualification standard is the same that all police officers complete and involves such tasks as engaging targets from behind a barrier. This qualification regimen raised the qualification standard and actually eliminated a few soldiers from the potential deployment list.

The unit completed the FAA training and weapons qualification by Thursday, one week after the President's announcement. Our state OPORD was completed to provide for the direction and support of the mission on schedule, and the mission support apparatus was set in motion. My only other direct encounter during the airport security effort was a detail to travel to the New Orleans airport to receive a request for National Guard support signed by the airport's security manager. This request would make its way through the state and federal government chain and acts, in all instances, as the justification for the funding of each mission. Until that date, all visits to any site had been conducted in low-key, civilian clothing, but in this case and on such short notice, I traveled in BDUs. By then, everyone who worked in the terminal had heard Guardsmen were inbound. I believe I experienced probably the best moment of the entire tour of duty when the airline workers there warmly greeted me, wanting to know when we were coming and saying that they were glad we were on our way. After receiving the letter and learning more of the intricacies of our national economy — and by extension, our national defense — as it pertains to airports, I walked out, feeling obliged to move down the concourse and thank several of the airline workers for their perseverance in this critical time.

The entire airport security mission, currently ongoing, has its own complete story of lessons learned. But I would not be paying proper respect to our state's (and other states') volunteers for this mission if I did not quote a base tenet of General Shinseki's entire campaign to transform the Army, again from the AUSA Seminar:

> *"…More than equipment, more than technology, transformation… is all about our soldiers — they remain the centerpiece of our formations…."*

I believe this quote also extends to the great employers, schools, and especially families, whose support underscores each volunteer's effort. If it were not for their patience and understanding, this mission — and others as they have and will become necessary — could not be accomplished.

'…The End of Tour One, and Notes From Tour Two…'

By the time our troops had deployed to the airports, I was moving toward the end of my first tour of duty planning for HS missions in Louisiana. I was told to continue my work on a particular site security plan to ensure its completion before I returned to my job with DOTD. A few notes on sidebar conversations from this last week and during my second, short tour of HS duty are noteworthy…

> *"…And even as we describe the future capabilities and characteristics we seek, we remember that we are a nation at war… and an Army readying for battle…."*

General Shinseki's comments here could not be more prudent. It did not take long for questions about the airport security detail's training readiness with their units to surface.

Soldiers have to maintain NCOES training levels even while they are deployed for this duty. That is why such efforts as PLDC video tele-teach for the first, combined, active Army and Army National Guard Sinai observation mission were begun. In the case of our TFNE soldiers, it was determined that those deployed soldiers could still attend their scheduled NCOES training. But if that training was scheduled for dates during their deployment, they would either have to reschedule their class or be removed from the task force and replaced when it was time to attend their course. As a bottom line, the TAG and the state command sergeant major did not want to penalize an individual soldier for volunteering for duty. They also did not want to adversely affect a unit's USR Personnel Rating by not allowing a soldier to attend their required schooling. This is one reason that TFNE is always prepared to conduct initial soldier training for airport

security deployment. (They also conduct refresher training at regular intervals, to include requalification with weapons.)

I learned on my second, short tour that critical collective training already scheduled within units was just as important as NCOES requirements for members of TFNE. Coming from the tank battalion in the 256th Infantry Brigade, my commander and I quickly realized that the airport security element's period of duty would encompass our annual tank gunnery qualification. Less than 10 crews' tank commander and/or gunner positions were affected by deployment. But if all of those crews did not fire with the battalion, we would not meet our annual STRAC requirement of qualification for at least 85 percent of the battalion's assigned tank crews. For our unit, this is not an option as we are currently part of the Major Theater of War Backfill strategy until next year's NTC rotation guides another heavy unit into the chute. To our soldiers' and the TFNE staffs' credit, they worked out airport schedules in order to allow these key soldiers to attend drill with their units for mandatory training events such as the Tank Crew Gunnery Skills Test, our upcoming Tank Crew Proficiency Course, and the gunnery MUTA-9 scheduled in the coming months.

I mentioned above my 'second tour.' After almost two weeks back at my 'civilian' job, I was called in again when the President and Secretary Ashcroft announced a heightened state of alert was necessary for the nation just before Halloween. This call came even as we were deploying soldiers to six critical infrastructure sites around the state. On that Monday afternoon, I was returning from a computer training class when I received a call telling me to 'Stand By.' I returned to work and notified my supervisor and section head of the phone conversation, and went home for the night. On Tuesday morn-

ing, I was almost half way to work when the call came asking me to turn around, go to a particular site and conduct the initial recon. I was to meet with the site's staff, tour the facility, determine their needs as far as augmenting their security force, and report back to my battalion commander at the state training office. As I was doing so, members of my brigade's MP platoon were mobilizing for duty at this location. After reporting to my commander, I continued on to my brigade headquarters in order to directly brief the task force (MP platoon) commander. Having done so, I finished the day drafting the security plan at my brigade headquarters, and acted as a liaison of sorts between their Emergency Operations Center and the state training office.

I traveled on Thursday to another infrastructure site to conduct a further recon. After that initial meeting and recon, I continued to state headquarters to deliver the first CONPLAN I had written and verbalize what I would write for the second one. I also thought I would receive further assignment to conduct another site survey. As you can tell from above, and depending on the site itself, it takes about 48 hours to complete an initial site survey — one day to recon with the site security manager, and one day to draft the CONPLAN.

Instead of being detailed for further critical asset reconnaissance, my commander hit upon what was bothering me on Tuesday as I learned our soldiers were deploying to these sites. To meet mission requirements, we deployed our initial forces within 24 hours to all six sites. But these soldiers had not completed individual, leader, and collective task training pertinent to the missions at hand. My task was therefore to assist him in determining what those tasks were.

In the grasping-for-straws mode, I initially came up with the chart at Figure 2, at right, as a means of beginning to define the training problem:

Homeland Security Missions/Personnel/Percentages of Mission Type

Location/ THREATCON	Stationary CPs	Roving Patrol	Defend	QRF	C2	Command Post	MED Spt	LNO
Site 1 – I	8				1		1	
Site 1 – II	16	11		4	1	1	1	1
Site 2 – IA	12				1		1	
Site 2 – IB	20	44		8	1	2	2	1
Site 2 – II	24	77		11	1	2	2	1
Site 3 – I	6	2			1		1	
Site 3 – II	14	4	11	4	1	2	2	1
Total # of Soldiers	**314**							
Soldiers Required by Mission	100	138	11	37	7	7	10	4
Percentage of Mission	***31.8%***	***44%***	***3.5%***	***11.8%***	***2.2%***	***2.2%***	***3.2%***	***1.3%***

By rank order and type of missions:

1. Roving Patrols/Inspections (Mounted and Dismounted)
2. Stationary Checkpoints
3. QRF
4. Defend a Position
5. Medical Support
6. Command Post Ops
7. Unit Command and Control
8. LNO

Figure 2 – HS Facility Support Missions

The 'Percentage of Mission' above was my round-about-logic method of attempting to show my commander what was called for on actual sites and, because it was done most, required a higher prioritization of training effort. Upon showing it to my commander, his response was, *"…Great. Now tell me the individual, leader, and collective tasks that go with each mission…."*

Immediately prior to me pulling out a library of MTPs, I remembered an earlier conversation with members of my unit's Training and Support Battalion (TSBn). They mentioned that TSBn soldiers had trained the Texas Army National Guard's forces mobilized for installation security of military posts in Texas. Through the trappings of modern technology, in short order we received a PowerPoint presentation detailing the tasks my commander sought. From this list, we determined what tasks were METT-TC-pertinent to our training situation, and then matched them to time required to conduct the training. I received support in this endeavor from my battalion's AGR XO, master gunner, and training officer. We determined that individual and collective tasks could be accomplished in one, MUTA-4 (weekend) period, leaders' training could be completed in one additional MUTA-4 period, and a task force HS STX could be conducted over a further, 36-48 hour period. All three training events were necessary in order to meet task, conditions, and standards for properly training our soldiers for HS missions. I must return to General Shinseki's quote above where he reminds us we are an '…Army readying for battle….' We still, as an armor unit, must maintain an annual, minimum proficiency level of Tank Table VIII qualification and platoon maneuver proficiency. The HS tasks and events are also training requirements that I do not believe are going to end in the foreseeable future.

The individual, leader, and collective task list was prepared and state training guidance was issued to the MACOMs. The MACOMs received further guidance to stand up Ready Reaction Forces (RRFs) prepared to provide HS mission support. When it made its way down to our battalion, we were tasked to prepare a force that could deploy *within hours*. That tells me, as an old-timer on the planning side, to train at least 30 percent more soldiers than are required by the order, and as an optimum, everyone in the battalion. To meet the initial requirement, however, we are training the requisite soldiers to deploy our

RRF. In order to meet the goal above for HS training requirements in this new era, I am highly likely to recommend the training schedule in Figure 3, at right, to my commander for TY03.

As a lead-in to a most important comment, I need to underscore my unit's new requirement to '…prepare a force that could deploy within hours….' The two requirements I see as necessary for attaining this end are, first and foremost, possessing good threat intelligence, and second, having a unit of trained and prepared soldiers. We are going to train our soldiers to standard. But the current intelligence situation requires some comments here.

Our entire nation should know that we are being observed. It is one of several sources of the continuous state of increased vigilance under which our nation currently exists. During General Shinseki's AUSA speech, he said of intelligence and transformation:

> *"…We're talking about… capabilities that will give ground force commanders real-time intelligence, real-time situational awareness, and robust capabilities to fight on our terms…which enable us to watch an enemy think, sense his worries, undercut his confidence, attack him where he's vulnerable, and accelerate his collapse…."*

We, as the military, do not have all of the capabilities mentioned above that lead to the actions we would take to defeat this enemy. But we have to develop them. Yesterday. And I would argue for a host of reasons that we, as a nation, do not hold the operational mindset to meet that which the General says intelligence will enable us to do. But we have to learn and adopt it. Again, yesterday.

Since September 11th and the onset of daily intelligence briefings, I have noted several instances of infrastructure and site surveillance. Some of these incidents have been very skilled and extremely difficult to detect, so we are likely to have missed a significant percentage of these events. There is absolutely *no* reason to recon unless the reconnaissance objective holds some kind of purpose in your scheme of activity. So if we are to defeat terrorism before any more attacks occur, we have got to have a good means of sharing intelligence across the spectrum of military, governmental, law enforcement, and public sectors at all levels.

It is one thing to gather and analyze intelligence. It is another challenge entirely to disseminate it. As has been reported in the news, law enforcement agencies have had to radically change how they operate. To this end they provide intelligence that feeds into what I like to call 'The Daily Classifieds.' When on duty, I always read them so I can establish and modify the picture in my head of what potential threats we are dealing with. But some of what they provide, and a lot of what DoD presents, in my daily readings are classified. That means we cannot share it — with the management at sites we are charged to protect, with law enforcement in some cases, and with the public at large. This puts all of us who read the information in a very awkward position. To work on this productively, several ideas have come to mind:

- All units down to at least battalion level need to stand-up secure means of communication.
- All units must develop a method of securely transporting classified intelligence information to their RRFs deployed in the field.

Accomplishing these two solves the initial problem of our units not having the intelligence they need to both prepare for their HS mission properly and to implement necessary force protection measures for unit survival.

- If it is possible, come up with ONE daily source of classified information all government agencies can draw on and work from. This may require a new security classification definition of some sort. But we need a common sheet of music to all sing the same tune.
- Find a means of alleviating the awkward position in which soldiers reading classified information find themselves. This means actually providing an unclassified version of those same 'Daily Classifieds.' The challenge here is that the unclassified version cannot be so scrubbed of substance that it is not pertinent to assisting a site and local law enforcement with their security missions.
- Develop an emailing (or other means of transmission) list for the unclassified intelligence version that includes the critical infrastructure sites, government agencies, law enforcement, and the public as a whole.

I might be out of line to suggest that for the last three ideas above Secretary Ridge's Office of Homeland Defense could serve as our common source, but I feel obliged to do so anyway.

I am a simple, sometimes humble tanker, but I do know this. If we fail to provide a solid intelligence picture at all times, we are going to have more casualties on our home soil. The time to move out down this path has already come and gone. We now have to act quickly just to catch up to any terrorist

AUG 02 – AT02 Recovery; Leaders' Training for CTT and Individual Weapons Qualification (IWQ)

SEP 02 – CTT/Individual HS Training and IWQ

OCT 02 – TCGST Prep of Instructors; Combat Lifesaver; CTT/Individual HS Training and IWQ Retraining

NOV 02 – Record TCGST

DEC 02 – APFT; Organizational Day; Family Day

JAN 03 – TCPC

FEB 03 – MUTA-9 Gunnery

MAR 03 – No drill for the unit; Brigade HS Leaders' Training and CPX

APR 03 – Task Force HS STX

MAY 03 – No drill for unit

JUN 03 – AT Maintenance and Leaders' Prep

JUL 03 – AT 03 [Platoon Attack and Hasty Defense plus TTXII (TWGSS and/or live fire)]

AUG 03 – AT03 Recovery; Leaders' Training for CTT and Individual Weapons Qualification (IWQ)

SEP 03 – CTT/Individual HS Training and IWQ

Figure 3 – Possible TY03 Tank Battalion Training Plan

cell harboring plans for today or tomorrow's attack. We cannot under any circumstances accept failure as an option in this area or we face ruin.

Conclusions

As I write this article, I am on duty for my third tour since September 11th, this time as my state's operations officer for the Louisiana National Guard's Super Bowl Task Force. We are preparing to join in and synchronize ourselves with the largest coalition of site security, government, and law enforcement personnel I have ever been a party to. It gives even more meaning to the lessons learned in this article and summarized below.

Homeland security is an evolving operation requiring the drafting and understanding of new doctrine and doctrinal terms *on the fly*. It is, as has been said around our headquarters often, not a mission for the faint of heart. One day, HS doctrine will be as well known as tasks, conditions, and standards for a tank platoon attack. But for the moment, it is new, challenging, and exciting, and it brings out the very best in the individual soldier and leader.

I believe planning to secure key and critical infrastructure within a state should be a state-level staff mission. It is the National Guard's responsibilities to the Governor, as State Commander-in-Chief, the state itself, and its citizens and institutions that make this so. We have the direct, and often personal, ties to citizens, industry, and local and state governmental and law enforcement agencies necessary for proper coordination of synchronized efforts. What we do not have is a state headquarters TO&E that includes a future ops planning cell. To conduct planning missions, the state currently requires augmentation by traditional, drilling Guardsmen in order to meet mission-planning requirements. This is a shortcoming that can be addressed internally, but would be better served under current, national threat conditions by modifying that state headquarters TO&E.

In order to plan for security support at critical infrastructure sites, designated locations, or special events, we have found producing CONPLANs that detail how a deployed force would augment the site's existing security plans is the best course of action. In doing so, we found a modified IPB checklist based on the principles of the acronym OCOKA — modified as AOKOC — to be of great use. Answers to these questions, plus defining how a particular site holds national military implications and what its Single Points of Failure are, provide you with the basis for drafting CONPLANs. As with potential terrorists, a good portion of this checklist can be produced using such assets such as an atlas and the Internet. However, it cannot be emphasized enough that a team must physically go to the site and conduct on-the-ground reconnaissance or they will fail to truly appreciate the magnitude of the potential mission.

We have also found, once analysis was completed, that three, basic tasks and purposes for infrastructure security remain common across the board: *…provide a visible security presence… to deter a possible attack…*; *…secure the site to assure no Threat intrusion….*; and *…(conduct) evacuation, search and rescue, and security missions to assist with mitigation of the effects of an attack or disaster….* Each task and corresponding purpose demands different levels of troop deployment and logistical support. And finally from the planning perspective, it is of vital importance in prioritizing support to understand the linkage of critical infrastructure.

We also determined four, further lessons learned about the effects of HS missions on a unit's normal, warfighting requirements. First, soldiers have to maintain NCOES training levels even while they are deployed for this duty. Not doing so potentially harms a soldier career-wise and as a bottom line can adversely affect unit USR Personnel Ratings. Second, critical collective, warfighting-mission-related training already scheduled must still be conducted so Guard units are prepared to backfill deployed, active duty forces as needed. It is ***not*** impossible to train for both missions. However, an actual deployment for HS missions can create training challenges to overcome. Third, in drilling National Guard unit terms, we determined that training necessary individual and collective HS tasks could be accomplished in one, MUTA-4 (weekend) period, leaders' HS training in one additional MUTA-4 period, and a task force HS STX conducted over a further, 36-48 hour period. This is the approximate time necessary to meet tasks, conditions, and standards for required events. And last, but most assuredly not least, if we are to defeat terrorism before any more attacks occur, we have got to have a good means of sharing intelligence across the spectrum of military, governmental, law enforcement, and public sectors at all levels. Some of the intelligence shortcomings can be overcome at unit level. Others require what I believe to be a national intelligence-sharing standard.

It is our hope that this article provides soldiers throughout the force a starting point down the Homeland Security trail that is blazing before us. Share this information, improve upon it, and tell us all what you have done so that we may continue to improve our positions for as long as the mission requires. Failure in this endeavor is not an option for any of us.

LTC Ronnie D. Johnson is the deputy director for Training and Mobilization with the Louisiana National Guard. In addition, he serves as the M-Day Battalion Commander of the 1/156 Armor Battalion, located in Shreveport, La. He has served at platoon, company, battalion and brigade levels both on Active Duty and the National Guard. He is a graduate of Louisiana State University and currently enrolled in the USAWC DDE program.

MAJ Mike Pryor is currently mobilized as the operations officer, Super Bowl Task Force, for the Louisiana National Guard. In addition, he serves as the M-Day S3 of the 1/156 Armor Battalion located in Shreveport, La. He has served at the platoon, company, battalion and brigade levels, both as a drilling Guardsman and as an Active Guard and Reserve officer. He is a graduate of the University of North Texas and CAS3.

Art by
SFC Michael Munoz

Employing the Brigade Reconnaissance Troop

by Lieutenant Colonel Bart Howard and Captain Jeff Ramsey

For over five months, Task Force Centurion (1-34 AR) of Fort Riley, Kansas, had the unique opportunity to deploy to Kuwait for Operation Intrinsic Action. It was organized with eight companies, one of which included D Troop, 4th Cavalry (BRT) which is normally organic to 1st Brigade, 1st Infantry Division (M). Having a cavalry troop assigned gave the task force great flexibility and also allowed for the development and refinement of effective tactics, techniques, and procedures (TTPs) for BRT operations in an operational environment.

The BRT was formed in February 2000 and prior to Intrinsic Action had undergone extensive training exercises and a National Training Center rotation. Throughout all these missions, D Troop learned many valuable lessons.

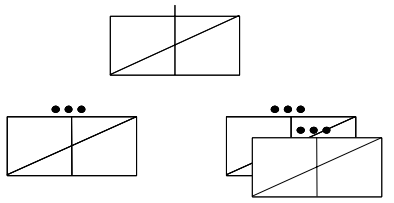
The first lesson validated was the task organization of D Troop. A BRT is organized by MTOE with a HQ and two scout platoons. 1st BCT has opted to permanently task-organize the Striker Platoon (formally COLT Platoon) of the DS artillery battalion into the troop.

The Striker Platoon allows the BCT commander to execute deep operations through the employment of precision indirect fires and close air support. During tactical operations, the platoons are further task-organized by having three Striker teams embedded in each scout platoon. The Striker platoon leader and platoon sergeant act as the fire support element for the BRT and move with the BRT headquarters. This organization produces a highly effective team of scout "eyes" and Striker "shooters." The combination proved to be highly effective, both at the National Training Center (NTC) and during force-on-force operations in Kuwait. Adding Strikers to the scout platoons significantly increases the effectiveness of the BRT. Strikers add depth to reconnaissance zones, provide further reconnaissance handover to the task force scouts, add more eyes and, most importantly, ensure the execution of crucial deep fires.

Additionally, 1st Brigade decided, when the BRT was activated, that the DS artillery battalion would have administrative control of the BRT. This includes all UCMJ and all logistical support in garrison. This command relationship has proven to be very successful as the BRT is included in all programs that would normally be controlled by a battalion HQ. Furthermore, the troop includes the permanent attachment of three mechanics, a PLL clerk, and a medic, which field operations have proven to be necessary for sustainment.

D Troop also validated a number of techniques of employment. Working in the high, rocky desert of the NTC and the relatively flat desert of Kuwait gave D Troop considerable experience in varying terrain. In most operations, the troop estimated as a planning factor that it could cover four Named Areas of Interest (NAIs) and four Targeted Areas of Interest (TAIs). Each platoon was responsible for two NAIs and two TAIs. The troop would normally man

Task Organization (MTOE)



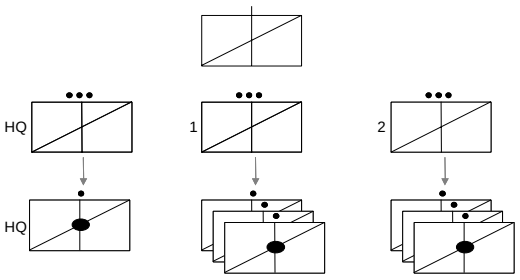
HQ (2 / 10)

1 x M1025	1 x CO
2 x M998	1 x XO
1 x M1037	1 x 1SG
1 x M936A2	1 x Op NCO
	2 x 92Y (Supply)
	2 x 31U (Commo)
	1 x 54B (NBC)
	1 x 19D Gunner
	2 x 19D Driver

SCOUT x 2
6 x M1025/M1026
1 / 17

* MTOE strength: Personnel: 4 / 44, Vehicles: 17

Task Organization (Tactical)



* Tactical Strength: Personnel: 5 / 70, Vehicles: 25

12 OPs. Scout OPs consisted of two scout squads and Striker OPs consisted of one.

This allows each NAI to be observed by one scout section and each TAI to be observed by one Striker team. This leaves one scout section (usually the C Section with the PL and PSG) for command and control, CASEVAC, resupply, and redundancy of one or both NAIs. It also leaves one Striker team for redundancy and possible relay. It is possible for the BRT to observe more than four NAIs and four TAIs, but this will reduce the duration of the OPs.

Scout and Striker integration is absolutely critical. Scouts must be able to infiltrate the Strikers into position by clearing the route and they must acquire and pass targets to them. The Strikers must identify tactical and technical triggers to destroy moving targets, and must also be prepared to pass targets to the task force scouts, usually screening behind the BRT. For survivability, most OPs operate dismounted. Mounted OPs are far too easy to detect and kill. This is always as determined by METT-TC (mission, enemy, terrain, troops, time and civilians).

In all operations, the critical importance of sharing situational awareness with task force scouts proved to be the key to reconnaissance success. The BRT and task force scouts must be accustomed to working together. They must train and rehearse together. They must understand each other's mission and the current friendly and enemy situation. In the defense, task force scouts must know what routes the enemy is using so that they may maintain constant contact. In the offense, task force scouts must have a detailed picture of what enemy forces are in front of them, so that they may avoid contact and get to their final OPs. In operations at the NTC and in Kuwait, Task Force 1-34 AR and D Troop developed TTPs that ensured that both the BRT and task force scouts had common situational awareness, allowing all recon assets to meet commander's intent.

What techniques did we use? Task force scouts ensured that they continuously monitored the BRT command net. This allowed for instantaneous knowledge of BRT locations and contacts. Task force scouts and the BRT worked with consolidated R and S graphics, which aided in coordination. Both units practiced the drill of handing off contacts both forward and backward to ensure no enemy was bypassed or lost. All units used standardized brigade passage of lines checklists and conducted most coordination by FM radio.

What didn't work as well? Many times, attempts to link up face-to-face did not work and only led to compromised scouts and direct fire contact. Coming out of a good hide position to make coordination is often not worth the cost. Rely on FM. Units should not share NAIs and battlespace. When possible, both BRT and task force scouts need to have physical separation of battlespace to avoid confusion and possible fratricide. Finally, attempts to transfer command and control of Striker elements between task force units and the BRT during the battle were not as successful as wargamed. It is best to keep the Strikers under BRT control and have them continue to execute their critical fire support tasks. Priority of fires may change, but control of Strikers does not.

In all operations, the strong working relationship between the BRT and task force scouts proved to be the key to success. The 1-34 AR scouts had extensive pre-deployment training and had been working with D Troop for over eight months, to include an NTC rotation. All leaders knew each other's capabilities and limitations. All units recognized voices on the radio and understood the TTPs to keep each other informed. We would recommend including all task force platoons in brigade reconnaissance OPDs and, where feasible, participate in brigade recon STXs. As stated, we were able to exer-

cise our scouts with the BRT on a number of occasions and this helps build a solid recon team across the spectrum of brigade and task force.

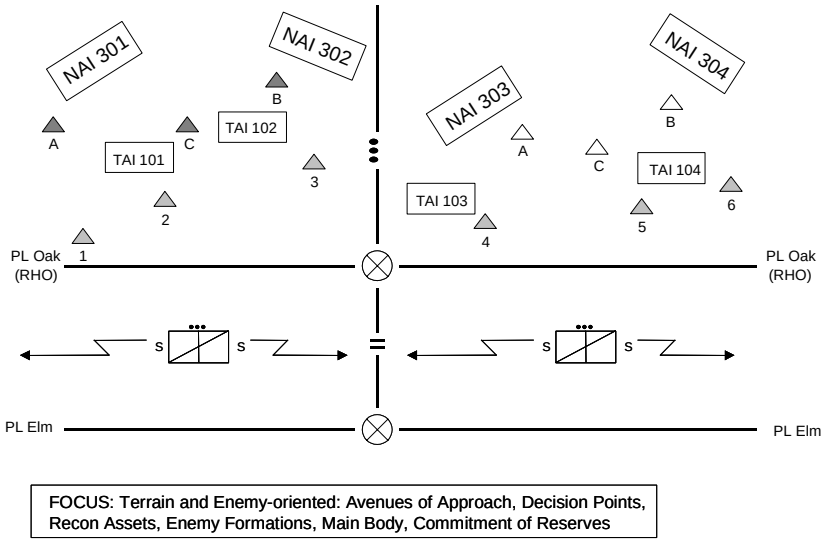
A few notes on D Troop's performance while deployed to Kuwait. The BRT concept has proven to be highly successful. The inclusion of D Troop in our task organization gave us enormous flexibility. D Troop was able to draw equipment quickly and immediately gave us the ability to conduct reconnaissance patrols and force protection missions. During our tour of duty, D Troop performed numerous security patrols, GDP rehearsals, QRF duties, convoy escort, and NBC reconnaissance. During live fire operations, D Troop validated its capability to control indirect fires and even designate targets for AH-64 attack helicopters. On numerous occasions, D Troop performed HUMINT by conducting patrols in our area of operations with augmentation from task force linguists. This offered us the ability to talk to the local populace about their observations and concerns. D Troop conducted coordination with LNOs and also executed a rehearsal of passage of lines operations, which always proves to be a complex and high-risk operation. The BRT is the brigade's most flexible unit to assign the mission of forward and flank coordination.

Undoubtedly, there are still refinements to be made in the employment of the BRT. CASEVAC is a reoccurring issue. The best method seems to task area support to the closest maneuver unit that can provide medical assets when necessary.

The difficulty lies in evacuating casualties that are far forward from their OPs back to a point where the maneuver unit can link up with them. It can work. Task Force 1-34 AR was able to satisfactorily execute this support, both at NTC and in Kuwait, during force-on force operations. Additionally, MOUT situations present an entirely different environment, which must be considered in METT-TC.

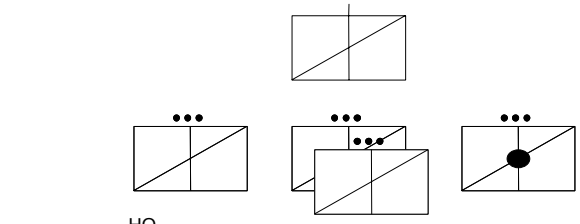
In conclusion, D Troop, 4th Cavalry validated the BRT concept while forward-deployed to Kuwait. Like cavalry units before and since, it consistently provided the commander a unit that could alert quickly, conduct complex missions, and get eyes deep in order to provide critical information to the command.

Employment of the BRT



FOCUS: Terrain and Enemy-oriented: Avenues of Approach, Decision Points, Recon Assets, Enemy Formations, Main Body, Commitment of Reserves

Task Organization (Operational)



HQ
2 / 16
Attachments:
63B x 3 (Mechanic)
92A x 1 (PLL Clerk)
91B x 1 (Medic)

1 x M936A2

*** Note: HQ also includes 19D Operations Clerk**

SCOUT x 2
1 / 17

STRIKER
1 / 20
6 x M1025
1 x M998

*** Attachments in Bold (Personnel: 1 / 26, Vehicles: 8)**
* Operational Strength: Personnel: 5 / 70, Vehicles: 25

LTC Bart Howard is a 1984 DMG graduate of Santa Clara University. His Armor assignments include 5-73 AR, 194th Armor Brigade, Fort Knox, Ky.; 1-72 AR, 2nd ID, Camp Casey, Korea; commander, B-3-67 AR, 2AD during Operation Desert Storm; commander, HHC, 3rd Bde, 1st CD; instructor, 16th Cavalry Regiment, Fort Knox, Ky.; and squadron and regimental XO, 11th ACR, Fort Irwin, Calif. Currently, he commands 1st Battalion, 34th Armor, 1st ID, Fort Riley, Kan. He is a graduate of the U.S. Army and Australian Army Command and Staff College and holds an MMS from American Military University.

CPT Jeff Ramsey, a 1994 DMG graduate of Virginia Tech, is an infantry officer who has served in the 3-325 and 1-508 ABCT, Vicenza, Italy. He served as the assistant S3 and A Company commander, 1-16 Infantry, Fort Riley, Kan., and currently commands D Troop, 4th Cavalry, 1st Brigade, 1st ID (M). Deployments include Operation Joint Endeavor, Assured Response, and Joint Forge. He is a graduate of the Infantry Captains Career Course and Ranger, Airborne, and Jumpmaster Schools.

The Evolution of Reconnaissance In the 21st Century

by Sergeant First Class Frank R. Belonus

Authors Note: *I wrote this article five months before the tragic events of September 11th and the war we now find ourselves in. The operations our armed forces are now conducting emphasize the need to understand the complexities of an asymmetrical environment like Afghanistan. This article addresses the expanded, "multidimensional" aspect of reconnaissance needed to combat guerrilla units and terrorists in complex terrain. It also highlights some of the distinctive characteristics of the RSTA Squadron found within the IBCT, identifying some of its unique assets and capabilities when working in this environment. The recently released Quadrennial Defense Review re-emphasizes the need for such an organization by making the IBCT a priority and accelerating its fielding. I would also like to extend my thoughts and prayers to those who have lost loved ones, and to all that place themselves in harm's way in order to protect and serve this great country and its people.*

SFC Frank Belonus
30 October 2001

Introduction

With the continued technological developments in intelligence, surveillance, and reconnaissance (ISR) assets, the reconnaissance scout still remains the commander's primary information gatherer. Information collected from a human source is the most reliable form of information gathering.

The fundamentals of reconnaissance have not changed much over the last 50 years,[1] but the focus, tempo, and engagement criteria for reconnaissance continue to evolve.

Today, many factors influence the focus of reconnaissance. The type of reconnaissance unit conducting the operation, its capabilities, its limitations, the types of operations it normally conducts, and the environment it operates in, all help drive the reconnaissance focus.

> *"Normally, Recon Platoon's primary function in life was to patrol an area for reconnaissance purposes only, avoiding — if possible — detection and contact. We were chartered to collect information for use by higher headquarters, all (hopefully) without the enemy's awareness of our surveillance."*
>
> Sergeant Major F. Miller[2]
> Medal of Honor Recipient

There are two types of reconnaissance organizations. One type relies solely on passive surveillance, human intelligence (HUMINT) derived from human interaction, and technical means to perform reconnaissance. The other type uses these techniques and assets, but has the additional capability of fighting for information.[3]

Reconnaissance organizations found in the first category, such as task force scout platoons found in armor or mechanized infantry battalions, Brigade Reconnaissance Troops (BRTs), light cavalry units, and recce units in the Reconnaissance, Surveillance, and Target Acquisition (RSTA) squadron of the Interim Brigade Combat Team (IBCT), focus purely on information gathering. They are not capable of surviving protracted engagement with threat forces and, therefore, rely on stealth and the integration of other ISR assets for survivability and success. These types of organizations avoid direct fire contact and engage threat forces with direct fire weapons only in self-defense. They lack the capability to fight for information.

Reconnaissance organizations such as armored cavalry regiments (ACR) and division cavalry squadrons not only use the common techniques and assets (HUMINT, passive surveillance, and technical means) but also are capable of employing combat power to fight for information. Because these units are usually the forward-most elements in major theater of war (MTW) environments, they must have the capability to survive meeting engagements and to destroy or impede threat forces as necessary to sustain operations in high-threat areas. These unique, combined arms organizations employ tanks, attack helicopters and, usually, Bradley Cavalry Fighting Vehicles (CFVs) to enhance survivability and to sustain the aggressive tempo required for operations in this environment. The capabilities of the integrated weapons platforms, working together, allow these organizations to fight for information using a higher level of engagement criteria and tempo than those reconnaissance organizations not organized in this manner. These units are capable of fighting through threat reconnaissance (destroying the threat's "eyes and ears") to gain combat information needed by higher unit commanders. In shaping operations, the ability to fight for information is important in determining the intent of a threat (for example, whether the threat is willing to defend, withdraw, or fight when confronted) without committing main body infantry or armor units.

These two types of reconnaissance organizations are mutually supporting. Organizations working forward in an area of operations provide the initial information that may allow the refinement of focus for follow-on reconnaissance elements. This information can also enhance survivability and mission success by enabling the follow-on organization to maneuver out of contact (using stealthy movement) and then make initial contact on the most favorable terms, at the time and place(s) of their own choosing.

The RSTA squadron is much better suited to conduct the multidimensional aspect of reconnaissance (further explained later in this article) in complex terrain, as well as integrating and maximizing multiple, layered ISR assets in permissive/semi-permissive, or small-scale contingency (SSC) environments, whereas division cavalry, with its superior firepower and survival

capabilities, is much better suited for a conventional, force-on-force, gun-to-gun form of conflict in a MTW environment. The focus of these two units is vastly different, but both are equally needed to deal with today's threats. Although the difference in these two forces is obvious, they both must be prepared to transition to operations outside their normal realm, based on continuously changing operational environments. Three major issues are driving the current change in reconnaissance focus; they are the environments where scouts will operate, the impact of evolving technology, and the nature of threat forces in the future.

Future trends suggest that operations in stability and support operations, and small-scale contingencies, are much more likely for U.S. forces versus the conventional MTW that U.S. forces currently train for, focus on, and are structured to fight. Threats of the future include mid- to low-end industrial-age forces, guerrilla forces, or terrorists (commonly the type of forces found in small-scale contingencies), capable of communicating rapidly with cell phones and the internet, working in small, decentralized teams, and focusing on U.S forces' weak points.There are very few forces in the world that could compete with U.S. forces in a heavy, conventional force-on-force meeting engagement in an environment that permits large armor forces the flexibility to maneuver freely.

Because of this, the weaker foe must find ways to even the odds, and against a conventional, heavy force like the U.S. Army, this will be done by drawing us into difficult operating environments, such as urban environments, while attempting to sway U.S. public opinion by creating casualties and manipulating the media.

By the year 2010, it is anticipated that 75 percent of the world's population will reside in, or around urban areas.[4] Because of their seaports and airports, these hubs are key to the deployment of U.S. forces into theaters of operation. Moreover, urban areas are where stability, support, and SSC operations tend to occur. Another of our weaknesses is the large logistical footprint required for a heavy force. History shows many instances where it is the large logistical tail that wags the dog.

These types of threats and environments, coupled with today's technology, drive the reconnaissance focus into the 21st century. Today's scout must be proficient at information gathering in any terrain and be capable of maintaining the flexibility to do these operations in a permissive environment, a MTW, or anywhere in-between. He must understand the capabilities of evolving ISR assets and how they support the reconnaissance and surveillance effort. Scouts must understand digitization, how this will streamline reporting and enhance situational awareness (SA). Digitization facilitates achieving a common operational picture (COP), which is multiple leaders seeing the same operational picture. An operational picture (OP), in analog terms, would be like an overlay with friendly and known enemy locations posted. Digitization is also the key to achieving situational dominance on the battlefields of tomorrow. Digitization is discussed in further detail later in this article.

> *"Modern command, control, and communications technology forms the neutrons and synapses that make agility possible by tying together the brains and muscles of a field army… Agility should be limited only by the mental and physical capability of the force, not by the communications that link them together."*
>
> *Certain Victory – The U.S. Army in the Gulf War* [5]

Cold War Transition

The narrow, Cold War reconnaissance focus of identifying military movement and communications or reconnoitering terrain is derived from the Cold War-era form of maneuver. Maneuver commanders would maneuver to make contact. Once contact is made, they would develop the situation and maneuver, while still in contact. They then conducted decisive close combat operations in order to destroy the enemy.

This type of maneuver does not allow the commander the ability to strike at the enemy's weakest point/points, with surprise, at a time of his choosing. Today's technology allows us to now make initial contact using ISR assets while still out of direct contact; this includes scouts with the long-range acquisition capability of the Long Range Advanced Scout Surveillance System (LRAS3)(Figure 3). With this capability, the commander can maneuver his forces freely and conduct decisive operations at his own chosen time and place. This type of maneuver requires the scout to expand his focus to include other ISR assets in the reconnaissance plan, as well as capitalizing on information sources and tactics, techniques and procedures (TTP) not previously maximized.

Some of the key collection disciplines in the ISR architecture are HUMINT, signal intelligence (SIGINT), imagery intelligence (IMINT), and measurements and signature intelligence (MASINT – a combination of electronic imagery and signal intelligence). The assets within these disciplines must be understood and properly integrated into reconnaissance and/or surveillance operations when available. The RSTA squadron of the IBCT is structured to maximize these assets in order to provide the information needed by the brigade commander. Legacy forces (current heavy forces) in places like Kuwait and the Balkans are currently using many of these ISR assets.

HUMINT refers to information gathered by human sources. Some HUMINT assets are scouts, military intelligence personnel, engineer recon, chemical recon, military police, and civil affairs. Military police and civil affairs could play key roles in the multidimensional aspect of reconnaissance and security (the multidimensional aspect of reconnaissance is explained further later in the article).

SIGINT gathers information from electronic and communications sources. Some of these assets are the ground-operating Prophet (Figure 1), aircraft-based Guardrail, and UH60-based Quickfix.

IMINT refers to assets that gather information using visual photographs, infrared sensors, lasers, electro-optics, and radar sensors. The primary IMINT asset is the Tactical Unmanned Aerial Vehicle (TAUV) (Figure 2).

MASINT gathers information from directed-energy weapons. Some examples are Ground Surveillance Radars (GSR), Remotely Monitored Battlefield Assessment (REMBASS) that detects seismic, acoustic, magnetic, and IR signatures, and the Q36 and Q37 radars, which detect and track incoming mortar and artillery rounds to enable rapid counter-fires.

These ISR assets play a key role in the transition from the Cold War focus. They not only support reconnaissance

Fig. 1 The Prophet ground SIGINT system

and security operations in any environment, but also enhance the likelihood of making initial contact with the threat while still out of direct contact. The reconnaissance scouts can also maneuver while still out of contact in order to gain and maintain contact and continue information collection. Assets such as the LRAS3 (Figure 3) allow the scouts to acquire targets at a greater range, thus increasing their survivability.

ISR assets can also be used to help develop and refine reconnaissance and surveillance operations during the planning phase. For example, using UAVs to check danger areas (such as dominant, influencing terrain) and proposed infiltration routes prior to the scouts moving into sector[6] increases scout survivability and overall operational success as well. All scouts must know how to use, and maximize, these ISR assets in support of their missions.

It should also be stressed that these ISR assets primarily **support** the reconnaissance/surveillance effort, they do not conduct it by themselves. In order to maximize its time on station, a UAV, for example, needs to be focused on the information needed. UAVs are also good for confirming initial reports, but scouts need to factor in their vulnerability and lack of stealth.

Assets, such as GSRs, can be used as tactical triggers, allowing scouts to focus on primary avenues of approach. A GSR team reporting initial contact can trigger the scouts to shift focus and acquire the potential target. Once acquired, both may maintain contact to allow layered redundancy until handover of the confirmed target, or the GSR team may be directed to reestablish "observation" of its initial NAI while the scouts maintain contact.

These are just some examples of ISR integration in support of the reconnaissance/surveillance mission.

The Multidimensional Aspect of Reconnaissance

The multidimensional aspect of reconnaissance expands on the traditional **focus** of reconnaissance and surveillance by obtaining more detailed information about an area than scouts have traditionally gathered:

-**Enemy**, threat forces (military, paramilitary, criminal, and other types)

-**Society**, civilian demographics

-Infrastructure (including utilities, transportation, and the political, economic, and agricultural situations) route obstacles, etc.

-Terrain

This kind of reconnaissance focus, deliberate and detailed, requires scouts and HUMINT collectors (97B organic to the recce platoons) to develop relationships with the local military/civilian leaders to gain information that may prove pertinent to current, or future operations in that area. This is time-consuming and may continue indefinitely. While the threat level determines the level of interaction with local personnel, even in a MTW environment, local non-combatants may provide valuable information. And when working in a permissive, or semi-permissive environment, maximum use of this kind of reconnaissance can provide the commander with information that may prevent future escalation of hostilities.

If area stability deteriorates and hostilities escalate to the point where maneuver forces are needed, the maneuver commander must have the information necessary to defeat the threat using the contact paradigm discussed earlier. This further identifies a potential requirement of prioritizing types/focus of the information initially collected, in anticipation of the maneuver commander's information needs. This may be standardized in unit SOPs. In the event of layered reconnaissance efforts, the brigade's reconnaissance assets may be initially working in the area focused on the collection of the brigade commander's critical information requirements (CCIR) or intelligence requirements (IR) to fill voids in the brigade's intelligence preparation of the battlefield (IPB). As hostilities escalate, reconnaissance handover (further explained later in this article) may be conducted with the battalion maneuver commander's reconnaissance assets, who will then, in turn, focus their reconnaissance efforts for their commander, fulfilling the maneuver commander's CCIR or IR (which may be different than the brigade commander's), facilitating successful operations by the maneuver force.

In the 1970s, Rhodesia's Selous Scouts became world-renowned for their ability to gain information in their environment.[7] Their ability to provide crucial information to their leaders in a timely manner allowed the country's small security forces to be at the right place at the right time to interdict raiding enemy forces. They accomplished this task by working in small, dismounted teams for extended periods in enemy territory, establishing observation posts (OPs) to observe main avenues of approach. Another frequent method used to gain information was to make contact with village communities within the area to glean pieces of information on enemy movement, intended targets and rendezvous locations. This often led to penetration of enemy camps and neutralization of complete enemy groups. This example

Fig. 2. The Tactical Unmanned Aerial Vehicle (TUAV)

Fig. 3. The Long Range Advanced Scout Surveillance System (LRAS3) as mounted on a HMMWV's roof.

of the multidimensional aspect of reconnaissance shows that this is not something new. This aspect of reconnaissance is being conducted today in the Balkans, showing the need for today's scouts to understand this dimension of reconnaissance.

Emerging doctrine for scouts expounds even further on this subject. It explains intelligence collection operations and activities, defining the HUMINT collector as the subject matter expert, but the reconnaissance leader must understand how to properly focus scout/HUMINT information collection. Higher headquarters may provide assessment forms to further focus scout/HUMINT information collection efforts. These products help the unit to gather information on enemy, terrain, society, and/or infrastructure in an urban environment. They also address the requirement to identify the basic human needs of the society (such as food, water, and shelter).

This information gives the higher command the ability to influence the society based on these identified needs. Scouts and HUMINT collectors also identify potential information sources that can be further queried by follow-on military intelligence (MI) units.[8] These MI units collect the scout's information, and the information from HUMINT operators, and analyze it to develop intelligence for the commander. This form of information collecting is critical in urban environments because of the difficulty of gathering information in such complex terrain. Developing doctrine also goes on to describe other factors related to civil-military operations, such as local customs, bribery, gifts and liaison operations.[9] The multidimensional aspect must be considered in the planning phase of all operations. "Multidimensional" is not an operation of its own, it is part of every reconnaissance and surveillance operation that scouts conduct, regardless of the terrain and the environment in which they will operate.

Urban Operations

Developing doctrine further defines the scout's role in urban operations. The extent of the urban reconnaissance is based on the threat level of the environment. When working in a permissive, or semi-permissive environment, plan for all aspects of urban reconnaissance, to include the multidimensional aspect.

Initially, during the planning phase, all existing intelligence is retrieved and analyzed prior to the upcoming reconnaissance. Assets like Trojan Spirit — a system enabling reach-back to imagery and video from worldwide sources — greatly enhance this intelligence retrieval. ISR assets are deployed also to confirm or deny reported information and to conduct preliminary reconnaissance.[10]

Scouts conduct reconnaissance outside the urban area and establish OPs to observe the urban area prior to movement into the built-up area. They develop urban operations sketches prior to entering the urban environment.

Once in the built-up area, they confirm and refine urban mapping. They may develop urban overlays (Figure 4) reflecting known hostile areas, main routes, and subterranean routes. Scouts may be used to confirm existing overlays, or gain the information required for higher to develop these overlays, which also facilitate rapid information handover to other units. They may establish OPs in urban areas to continue surveillance.

Buildings can make good OP locations, but scouts should not enter buildings in a high threat environment. Scouts primarily **do not** clear buildings; rather, they reconnoiter buildings for potential OP locations or to meet the requirements of a compliance inspection. Building clearance is normally an infantry task associated with urban assaults and usually requires a large number of soldiers. Scouts must know, however, how to move securely in a building and how to check rooms as they move past them. Reconnaissance elements moving mounted and/or dismounted in urban areas, building entry techniques, movement techniques within buildings, and engagement techniques within buildings are now addressed in emerging reconnaissance doctrine.[11] Emerging doctrine also addresses the role of reconnaissance in support of infantry assaults of an urban area.

ISR assets can collect some of the information needed from within an urban area, but you need human involvement to determine such things as crowd mood, a factor that could assist the commander in anticipating their next action, and tactical questioning of potential information sources. Moving crowds may now be NAIs for scouts.

Scouts may also conduct presence patrols within an urban area in order to support stability operations. As stated earlier, scouts can support combat operations in urban areas, but they normally operate as part of the fire support element or the security element in assault operations in urban areas.

Digitization and Situational Awareness

Situational awareness is the ability to maintain a constant, clear mental picture of relevant information (information important to the commander for C2) and the tactical situation. Digitization can now support the commander's

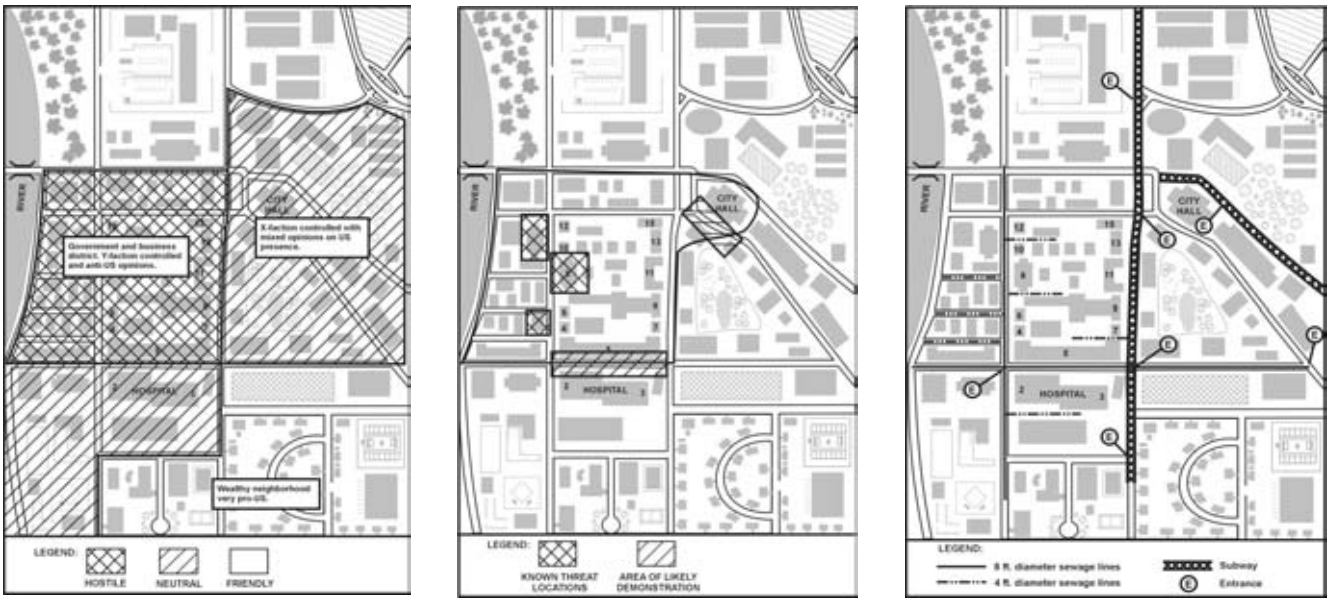


Fig. 4. Some examples of urban overlays tracking, from left, allegiances, likely disturbance sites, and sewer mains.

situational awareness. Technological advancements such as the Force XXI Battle Command Brigade and Below (FBCB2) (Figure 5) provide the user a degree of the operational picture (OP), which is unit icons on the screens of the units within their command, or the common operational picture (COP), which presents the identical operational picture shared by more than one command.

This has also opened the door for digital reporting and coordination, which saves time. But it also contributes to information overload. It will be up to every user to act as a filter to prevent overloading the system with redundant information. Filters will also have to be standardized, possibly in SOPs, to sift out everything that is not relevant. This technology will have a tremendous impact on how scouts will send and receive information. To maintain a significant information advantage (situational dominance [SD]), threat information collecting assets may become priority targets to be immediately destroyed during reconnaissance operations.

Scouts at the lowest level must understand the COP and how the actions in someone else's area of operation may affect what may occur in his. This is especially true in urban operations. Digitization is also assisting with coordination with forward, rearward, and flank units. The digital information and enemy icon(s) on the FBCB2 help reconnaissance elements remain situationally aware, and supports better reconnaissance handover.

Reconnaissance Handover

The subject of reconnaissance handover is currently part of emerging doctrine. It is defined as a task between two units/elements that coordinates transfer of information and/or responsibility for observation (reconnaissance and surveillance) of an assigned area, or contact from one unit/element to another, if they were initially separated by time and space. Unlike battle handover, it does not imply assumption of a battle. This task provides information connection, overlapping communications, and focus on their commander's CCIR and reconnaissance objectives (which may be a different focus for each echelon). Reconnaissance handover is normally associated with a designated area or reconnaissance handover line [phase line]; it may be of a sector/zone, NAI, TAI, and/or threat contact. Reconnaissance handover can be visual, electronic, digital, or analog. It applies not only from OP to OP within a platoon, but links ACR, division cavalry, BRT, and task force scouts, ensuring reconnaissance layering, or interlock. Reconnaissance handover is also used to integrate ISR assets, ensuring they are properly integrated into the reconnaissance operation, as explained earlier in this article. Reconnaissance handover begins in the planning phase of an operation, and must be rehearsed at all levels.

Fig. 5

The FBCB2 system presents a common view of the area of operations

Scout Issues

Dismounted operations continue to be the key to success for scouts. Scout survivability tremendously increases when they are dismounted. The recce platoons of the RSTA squadron conduct the majority of their operations dismounted and have designated dismount teams in each squad.

Continued on Page 46

Targeting and Fire Support With the Brave Rifles Regiment

by Chief Warrant Officer 3 Christopher A. Saindon

As the First Field Artillery Warrant Officer to be assigned to the 3d Armored Cavalry Regiment, what you are about to read is unique to the regiment and their way of life. This is the ONLY active heavy ACR left in the ARMY. They rely heavily on their fire supporters. The regiment has a good understanding of fires and does not expect FA to KILL anything. They do, however, expect fires to disrupt, delay, neutralize, limit, suppress, and harass the enemy. The operations, personnel, fire support planning, organization, and targeting objectives are just some of the issues that are addressed.

To know the 3d ACR ("The Eyes and Ears of III Corps"), you must understand how the regiment is organized. *FM 17-95, Cavalry Operations* outlines the basic guidelines for the regiment. The regiment is made up of three maneuver squadrons, (headquarters troop, three cavalry troops, tank company and a howitzer battery), one aviation squadron, and a support squadron. Some of the elements within the squadron chain of command are a MI company with divisional assets, ADA battery, engineer company, and a chemical company. The regiment has 15 missions with unique training requirements.

Hot Troop Operations

A ground cavalry troop conducts combat operations to prepare the battlefield for follow-on operations by the squadron or regiment. The troop's actions increase the commander's flexibility, depth, and reaction time before becoming decisively engaged or committing his main body. The Hot Troop is deployed behind, but coordinated with, the regimental reconnaissance assets. It can consist of a ground cavalry troop, reinforced by ground surveillance radars, Fox Nuclear Biological Chemical reconnaissance vehicles, Stinger team vehicles, and Bradley Stinger Fighting Vehicles (BSFVs). The troop would deploy along a screen line, with cav troop sections deployed forward utilizing one tank platoon and one scout platoon in hunter-killer configurations at the squadron commander's discretion. The other scout platoon is deployed behind the screen line to provide depth and the remaining tank platoon in a hide position in reserve as a quick reaction force. Attached elements would be utilized as far forward as possible to increase the security and detection capabilities of the Hot Troop and the main body. The troop's organic mortars and the squadron's organic howitzer battery would provide indirect fire support. One platoon of the howitzer battery would be deployed as forward as possible to provide fires for the Hot Troop (the platoon would remain under battery control). The Hot Troop's main mission would be to provide security for the main body while it prepares for future combat operations. The primary focus is the screen mission, but can include zone reconnaissance or movement to contact missions. The Hot Troop enhances the parent unit's control of the battlefield through early presence in order to seize and control key terrain. The Hot Troop also should protect the main force by destroying enemy reconnaissance elements with indirect and direct fires.

Aviation

The regimental aviation squadron (RAS) consists of eight troops which include an HHT, three air cavalry troops (ACT), two attack troops (ATK), one assault helicopter troop (AHT), and an aviation unit maintenance troop (AVUM). The squadron can be expected to conduct reconnaissance and screening operations, and execute attack and lift missions in support of the regiment.

The squadron's ability to collect and report and move unhindered across all types of terrain makes it an integral player in all regimental operations.

Fire Support Personnel

The regimental commander (RCO) has overall responsibility for command, control, and coordination of the fire support systems. The direct support (DS) field artillery commander acts as the regimental fire support coordinator (FSCOORD). He provides his assessment of the current and future capabilities of all fire support assets supporting the regiment. He supervises the commander's fire support coordination agencies to ensure the RCO's intent for fire support is met.

The regimental fire support officer (RFSO), in the DS commander's absence, acts as the regimental FSCOORD. He is in charge of all fire support operations in the regiment.

The squadron fire support officer (SFSO) acts as the squadron FSCOORD if there is no FA battalion in direct support of the squadron. He advises the squadron commander on fire support-related issues, supervises the troop/company fire support teams, and writes and disseminates the fire support plan and fire support execution matrix. He coordinates with the air liaison officer (ALO) for close air support (CAS)/ joint air attack team (JAAT) missions.

The troop FSO plans, coordinates, and executes fire support at troop level. He advises the troop commander on fire support matters, positions troop mortars, and requests, adjusts, and directs all types of fire support. He provides emergency control of CAS in the absence of Air Force personnel. All FSOs/ FSCOORDs are responsible to their maneuver commanders for the status of FA fire support assets.

The regimental targeting officer is the regimental fire support officer in his absence. The targeting officer not only functions within the regimental fire

support element (RFSE), he must also *supervise the targeting section in the analysis control element (ACE).* He is wearing two hats at all times, targeting officer (TO) and field artillery intel officer (FAIO). He is responsible for the staff control of target acquisition (TA) assets organic or attached to the regiment. He assists the RS2 in all targeting matters. He also must be the radar expert for the regiment.

An Air Force tactical air control party **(**TACP) operates with the squadron to advise, assist the commander, request, and coordinate tactical air support, and to meet other requirements. The squadron often provides the TACP with an armored vehicle for protection when operating forward. The TACP is an integral part of fire support operations.

Scouts, ground and air, are the primary acquisition element in the regiment. The FIST or combat observation lasing team (COLT) can acquire targets when positioned in accordance with the commander's guidance. Additionally, field artillery target acquisition systems and intelligence-gathering systems provide targeting information that the fire support element can use. Information provided by artillery target acquisition systems is often useful to the RS2 in preparing and analyzing situation templates. The FSE and the S2 coordinate closely to take advantage of information provided by both systems.

Fire Support Organization

Field artillery organization for combat is dependent on the assigned mission and the availability of corps assets. The following are options for the squadron howitzer batteries (HWB):

HWB autonomous: This organization is normally used in the absence of supporting field artillery. Calls for fire (CFF) are submitted from the squadron observers through the squadron fire support element (SFSE) to the HWB platoon operation center. Positioning authority lies with the squadron commander.

HWB incorporated into DS battalion: When a FA battalion is given the mission of direct support to the squadron, the HWB becomes the fourth firing battery for the DS battalion. The HWB receives its fire missions from the DS FA fire direction center (FDC) and is positioned by the squadron commander. The regiment has NO organic radar (AN/TPQ-36 or 37) assigned. They must rely on the FA battalion or brigade that is attached to them to provide radar support. Along with the radar, that brigade also becomes the counterfire headquarters. The brigade's counterfire cell is responsible for planning and implementing the radar coverage to support the regiment's deep and close fights. The regimental targeting officer and the brigade counterfire officer must work hand in hand to get this accomplished. The following is a quick reference (checklist) to facilitate the integration of FA units into regimental operations.

One FA Battalion DS to the Regiment without FIST:

- Brief the FSCOORD on the regiment's organization and how the regiment plans to conduct the current operation.

- Use the FA battalion's liaison officer (LNO) team to augment the RFSE.

- Use the FA battalion to weigh the main effort

- Establish both digital and voice FM fire control nets, FM voice fire support coordination net, and FM voice with higher controlling FS agency.

- Use the FA battalion's LNO radio for routine reports to and from the FA battalion.

- Ensure that all fire support elements receive copies of all regimental orders and overlays.

- Establish and maintain a regimental coordinated fire line (CFL) 3 to 5 kms in front of the lead squadron(s).

One FA Brigade Force Field Artillery Headquarters (FFA) to the Regiment:

- FSCOORD and RCO determine how best to employ the available assets.

- Brief the FSCOORD on the regiment's organization and how the regiment plans to conduct the current operation.

- Supplement the RFSE with the following: One FA MAJ or CPT, one SFC or SSG FSNCO, two enlisted soldiers (one Initial Fire Support Automated System (IFSAS) qualified) are needed to make a second shift for the RFSE. (The total number assigned to the RFSE is five — one major, one warrant officer, one FSNCO and two FS specialists).

- Establish digital and voice FM fire control nets, FM voice fire support coordination net, and FM voice with higher controlling FS agency. Use the FA battalion's LNO radio for routine reports to and from the FA battalion.

- Ensure that the attached radars are on the fire support coordination net.

- Establish and maintain a regimental CFL 3 to 5 kms in front of the lead squadron(s).

If the RCO wants to control the FA brigade fires (mass fires), then the mission of the FA battalions following the lead squadrons is general support reinforcing (GSR) and not DS to the lead squadrons. If the regiment is covering a wide area, then strongly consider assigning FA battalions DS to the squadrons. LNO requirements for the FA units are to maintain close coordination between the lead squadrons and the follow-on FA battalions. Either the FA

battalions or the FA brigade should send a LNO to the lead squadron. This will facilitate the movement of the artillery through obstacle breaches, real time enemy situation, etc. Regimental deep fires are 15 to 30 kms in front of lead squadrons, targets are located either by regimental-controlled assets or higher HQ-controlled assets. Regimental close fires consist of targets located 5 to 15 kms in front of lead squadrons.

Fire Planning

The regiment uses top-down fire planning with bottom-up refinements. The regiment uses the D3A methodology to develop its sensor-to-shooter fire plan. The number of targets allocated to subordinate squadrons will be based upon the tactical situation and mission, enemy, terrain, troops and time available (METT-T). Mission, concept of operation, S2 intelligence preparation of the battlefield (IPB), commander's intent, and the results of wargaming form the basis for regimental fire planning; from these, the RFSE develops the top-down fire plan. The RFSE considers, phases/sequence of operations, critical events, critical areas, key terrain, resources available (firing units, ammunition, time, effects, etc.), main attack/main effort, and enemy situation (IPB). Fire support planning is integrated with the development of the scheme of maneuver. At regimental and squadron level, all members of the fire support element are involved in the process. The best use of fire support resources is to support the chosen scheme of maneuver, which is determined by the following considerations:

- Priority of fire for subordinate units
- What targets to attack
- What is the targeting objective?
- What target effect to achieve
- What fire support means to use?
- Priorities for engaging targets
- Allocating fires
- Ammunition restrictions.

The fire support plan outlines the way fire support assets will be used to complement the scheme of maneuver, and it provides instructions for executing those fires. It ranks targets in priority order, matches them with the available fire support systems, and eliminates duplicate targets. It allows fires to be executed quickly, without specific direction from the commander, once the operation is underway. The fire support plan may include the following:

- A general concept of how fires will support the battle.
- Known enemy locations should be carefully targeted. Too many targets complicate the fire plan and delay fires.
- A priority of fires that tells which element will receive fire support in case of conflicting needs.
- A high-payoff target list.
- An allocation of priority targets and final protective fires, if available.
- Fire support execution matrix for indirect fire weapons.
- Informal airspace coordination areas.
- Coordination measures for providing troop safety and synchronizing supporting fires.
- Target overlay.
- Attack guidance matrix.

The fire plan is constantly refined or modified as the operation gets underway to continue providing responsive fires wherever they are needed. Formal planning is the deliberate process when adequate time is available and usually flows from higher to lower echelons. Informal fire support planning is a far more dynamic process that responds to the immediate problems on the battlefield and generally flows from lower to higher echelons. Informal planning is

common within the squadron and the SOP should facilitate this.

The RFSE consolidates the squadron fire support plans, eliminates duplications, and ensures that targets of interest to the regimental commander are included. They coordinate with the ALO to determine targets appropriate for attack by close air support. Hasty fire planning is necessary when the regiment, squadron, or troop commander receives a FRAGO requiring immediate execution. The fire support plan is tied closely to IPB. IPB identifies critical terrain or avenues of approach that should be targeted and target areas of interest. It also provides templates of known or suspected enemy positions or likely offensive actions.

Troop FSOs accompany troop commanders to receive the squadron operations order (OPORD). This permits the troop FSOs to hear the concept of the operation simultaneously with their commanders. Within minutes after the OPORD is given, they can get together to develop their fire support plan. The squadron commander and FSO may develop an event-oriented scheme of fires to support the selected course of action. This fire support plan will require a specific scout, troop FSO, or other element to fire a specific indirect fire system at a designated target when or if a specific event occurs.

Troop Fire Planning

Upon receiving the squadron execution matrix and target list, the troop FSO will review the matrix and target list for targets the squadron has assigned the troop FSO to execute. The troop FSO will identify the targets on the ground. The troop FSO will ensure that the targets can be observed. If targets cannot be observed, the troop FSO will request target refinement. The squadron FSE will delete the old target and input a new target.

NOTE: Criteria established are a function of METT-T. In many instances, such as a movement to contact, targets will not be observed because of the distances involved. Target observation requirements are a planning factor that a troop FSO has to consider when developing his plan. Once the troop FSO has plotted and identified his assigned targets, he will develop the trigger points to support executing the target. Squadron/troops will finalize targets during reconnaissance. The squadron FSE will consolidate troop lists and refinements. The squadron FSO will resolve duplications and then forward the revised target list to RFSE and troop FSOs. Upon receipt, the RFSE will plan, analyze, resolve duplications, approve/input refinements, and produce a consolidated target list and updated fire support execution matrix. The RFSE will provide a copy of the consolidated target list and updated fire support execution matrix to the following: FA commander/FSCOORD, DS FA S3, squadron FSEs, and corps FSE. Squadron FSEs will provide a copy of the consolidated target list and updated squadron execution matrix to the following: RFSE, troop FSOs, howitzer battery — if organic, DS FA battalion FDC if DS to squadron. Troop FSOs will provide a copy of the matrix to the mortar section NCOIC, platoon leaders, and the troop commander.

Fire Support Rehearsals: Outcome of the rehearsals are the verification of the target list; observers primary and alternate position; observation plan (target execution responsibility); triggers for events; fire unit assignments; volume of fire needed for a desired effect; priority targets; communications nets, primary and alternate; fire support coordination measures; and clearance of fires. The regimental fire support rehearsal will take place after the regimental maneuver rehearsal, the squadron and troop fire support rehearsals, and after the field artillery technical rehearsal.

Clearance of Indirect Fires

The purpose is to explain the procedures for clearing fires within the 3d ACR. Elements for clearance of fires are that all fires require "positive" clearance prior to firing if target is located short of the squadron's CFL. The troop commander is responsible for clearing fires in his zone. However, the troop XO or troop tactical operations center (TOC) personnel have the best information on unit locations, and will assist the commander in clearing fires. Positive clearance of indirect fires requires a positive verbal response from the supported unit before firing a mission. This is true even when fires are directed within the supported unit's boundaries. The FSE at the maneuver headquarters initiating the request for fires is responsible for obtaining internal clearance and, as necessary, clearance from adjacent units in whose areas the targets lie. The unit level of the boundary that is being fired across is the level at which clearance of fires is required (if firing across a squadron boundary, clearance must come through that squadron's FSE).

Targeting Objectives

Targeting objectives, combined with the desired commander's intent for fires, articulate target effects. Targeting objectives are the desired outcome resulting from the placement of indirect fires on the enemy. Terms such as disrupt, divert, delay, limit, and isolate are used by the RCO to convey his intent for the use of indirect fires against enemy targets. These enemy targets may be known targets that are identified through IPB and the intelligence collection efforts. Enemy targets may also be unknown until contact is made. This is particularly true during reconnaissance and security operations when information about the enemy is vague. In some cases where the intelligence information about the enemy does not identify known targets, targeting objectives allow the commander to clearly articulate how he plans to use artillery once contact is made.

Conclusion

With all the assets available to the 3d ACR, not only organic but also attached, they are a dominating force on the battlefield. Targeting in the regiment is a group effort. All the sections play a part in the military decision-making process. The targeting team members are constantly rehearsing and synchronizing as they go through the process. This is difficult when you are trying to plan fires for a unit that literally flies through the battlefield.

CW3 Christopher Saindon is currently an instructor/writer for the Radar Branch of the Target Acquisition Division at Fort Sill, Okla. He teaches targeting and radar operations to the Warrant Officer Basic/Advance Courses, FA Officers Basic Course, and the Captains Career Course. He was the regimental targeting officer for the 3d ACR from 1996-2000. His previous assignment was with the 2nd Infantry Division in Korea as the Field Artillery Intelligence Officer (FAIO). He began his warrant officer career as a radar section leader with A Btry, 26th FA (TAB), 4th Infantry Division at Fort Carson, Colo.

- Photo by Robert L. Stevenson

Three Cheers for Attrition Warfare

Most practitioners of maneuver warfare are forced into it through circumstance

by Lieutenant Colonel Steven J. Eden

What's all this nonsense I keep reading about "maneuver warfare" and "revolutions in military affairs"? You can't swing a dead cat these days without hitting some SAMS graduate espousing a vision of future warfare that is one part *Starship Troopers,* one part *Ulzana's Raid,* and three parts pure hokum. In their view, the centerpiece of the modern battlefield will be a wired-warrior, laser designator in one hand and UNICEF box in the other. Below, I have listed all the reasons this will not come to pass.

Maneuver Warfare Is a Poor Man's Game

> *"There is no military virtue in being outnumbered."*
>
> – J.F.C Fuller

Let's try an exercise. Think of all the great 'maneuver' commanders you have known. The typical armor officer (whose idea of studying military history consists of popping in a CD of *Patton*) should be able to list Rommel, Lee, Napoleon, maybe von Manstein and Stonewall Jackson. Those with more interest in their chosen profession might include Forrest, Winfield Scott, MacArthur, Grant, and Marlborough. Those would be my choices from the last three hundred years or so — yours might be different. It might include Giap, Geronimo, and Garibaldi. Doesn't matter. Just draw up your top ten.

Now, you will probably notice that most of those on your list are losers. They may have fought brilliantly, they may have done more with the resources they had than could be reasonably expected, but they still lost.

Of the rest, most were facing situations where they were desperately outnumbered or hamstrung in some other way, and reliance on maneuver warfare was the only way to advance the cause. In other words, they were out of options. They had to accept extreme risks to win, such as MacArthur's landing at Inchon or Scott's march on Mexico City.

This is not to say that maneuver warfare is a bad thing. Grant used it during the Vicksburg campaign to win a resounding victory. It is just that very few wars are decided by maneuvering. Most practitioners of maneuver warfare are forced into it through circumstance — and most end up losing.

Maneuver Warfare Doesn't Work Against Competent Foes

> *"To obtain a perfect Cannae, it is necessary to have a Hannibal on one side, a Terentius Varro on the other."*
>
> – Alfred von Schlieffen

Why? Because maneuver warfare is risky business, competent opponents are able to exploit those risks, if they only have the nerve and resources to do so. Grant beat the hell out of Sterling Price using maneuver warfare. When

he tried it against Robert E. Lee, he ended up with huge casualty lists and settled into the siege of Richmond. Napoleon worked his maneuverist gig for years, but once the Allies got the hang of his style, they used it against him quite successfully. Some say his 1814 campaign defending France from invasion was his most brilliant, but so what? Who ended up in Paris, and who ended up cooling his heels on Elba?

The Blitzkrieg worked great up until about 1942, when the Russians and Montgomery finally broke the code on how to absorb the toughest blows, conserve their combat power, and apply it in a devastating counterattack. Sure, Rommel and von Manstein were able to mount some cruel ripostes in their respective theaters, but in the end they succumbed. Remember, there are no points for style in war — you win or you lose.

Attrition Is Not a Dirty Word

"The day goes to the side that is first able to plaster its opponents with fire."

– Erwin Rommel

When I say attrition warfare, what do you think of? World War I, probably. Attrition means we trade casualties, and because I have more bodies, I win in the end, right? Now, World War I strikes many as a cautionary tale, but think about it for a moment. Who won? The side that successfully applied attrition. Was it ugly? Yes. Was there any other choice? No. In World War I, the Germans developed a maneuverist approach to warfare, known variously as infiltration, storm trooper, or von Hutier tactics. They avoided strong points, struck deep with well-trained small units to disrupt the enemy, and relied on their moral supremacy to defeat larger, better-supplied forces. They 'flowed like water,' in the words of an oft-quoted but seldom-read Chinese bureaucrat who died a long time ago. And they lost. By following the path of least resistance, they ended up…well, nowhere particularly important. The Allies, on the other hand, broke the back of the German Army in 1918 by applying firepower (and a certain newfangled tracked vehicle) with all the art learned at terrible cost during four years of trench warfare.

Now, I would call the Persian Gulf a war of attrition. Yes, we did maneuver a bit, but mostly to get in position to apply firepower. On the ground, it resembled police call, with units on line, chewing up a hapless and ineffectual enemy. True, we didn't trade casualties with the Iraqis; instead, we traded gold (in the form of very expensive bombs and long-rod penetrators) for blood — the epitome of American-style warfare. So, how about this definition of attrition: I don't worry about 'dislocating' you, or attacking your 'centers of gravity.' I just kill your soldiers, destroy your vehicles, bomb your headquarters, etc., until you give up or lose the ability to resist my will. The leisurely and methodical way I go about it contributes to the sense of hopelessness that ultimately leads to your defeat.

New Tools, Same Paradigm

"In the name of charity, let us forget the last war."

– Guilio Douhet

Many would say that the new tools of warfare — precision guided munitions, digital communications, satellite surveillance, and advanced sensors — must inevitably lead to reliance on maneuver warfare. Like ships at sea, units will duck and weave across a borderless battlefield, concentrating to deal heavy blows, then dispersing like morning mist to avoid the inevitable response.

I doubt it. First comes logistics. Until we can teleport fuel, bullets, food, and replacements, there must be a secure rear area and a relatively reliable ground transportation system to feed the fighting units. This means terrain must be denied to the enemy, which requires that a line of some sort be held. Secondly, given all the above wonders of advanced science, I believe maneuver will decrease in importance compared to the application of firepower. Look at naval warfare, after all. The reason why ships at sea can maneuver, well, like ships at sea, is because they are (or were) invisible in the vastness of the ocean. The U-boat was a successful weapon early in World War II because it was virtually undetectable until it actually engaged a convoy. By 1944, radar, sonar, and escort carriers allowed the Allies to find the submarines before they could mount an attack, and they were shot like fish in a barrel.

Why do we maneuver? To gain an advantage in the application of firepower by approaching or engaging the enemy from an unexpected direction, to avoid his strength and exploit his weakness. If we have perfect situational awareness, and a measure of operational competence, why bother? The enemy's maneuvers will accomplish nothing, as we will be able to respond to them. If they have SA (as the cognoscenti refer to it), our own maneuvers will be similarly unavailing. On the other hand, with perfect SA, we can apply our firepower very effectively. We can, in effect, kill our way into a position from which to gain victory. What is the result, then, of the 'revolution in military affairs'? If our advantages in weaponry are great enough, it will create an unparalleled killing field — the Persian Gulf, only better. If they are not, we will have a slugging match — with higher tech weapons and at greater ranges, but still a slugging match. Victory will go to the side that best uses its firepower to create exploitable advantages, or has the most bodies to trade.

Asymmetric Warfare Means "I Have Tanks and You Don't"

"The heavy prevail over the light."

– Wang Xi

Ah, but nobody can match our technological edge. The future of warfare is asymmetric warfare, where we have all the new toys and the bad guys only have grit and some Soviet castoffs. No one can challenge us conventionally, so no one will. Instead, they'll surround themselves with orphans, position snipers in every minaret, and fire off exceptionally harsh e-mails to our loved ones and the *New York Times.* Tanks are useless in such situations; instead, we need to airdrop PAOs, psyops specialists, MREs, counterintelligence agents, and a few grunts (highly lethal but compassionate and well-versed on local conditions) for security.

Truth is, nobody challenges us conventionally because we are damn good at that sort of thing and because we still have the means to fight. That doesn't mean that nobody will. The best way to

"Anybody who claims the tank has a future is regarded with pitying condescension. They are compared with those benighted souls who fought so hard to keep the horse cavalry...."

encourage a symmetric challenge is to allow our edge to deteriorate, either qualitatively or quantitatively.

And it is important that we continue to discourage symmetric challenges, even if that hampers us in our ability to fight asymmetric wars, because only foes that look like us (in terms of conventional warfighting) can threaten our national security. Asymmetric wars may cause us grief, they may cause us casualties, but they will never cut us off from vital natural resources, deprive us of freedom of the seas, or topple our strongest allies. Like Ludendorff's storm troopers, terrorists and their ilk can only follow the path of least resistance — and it will take them nowhere.

Not that Special Forces, RSTA squadrons, and light infantry don't have their uses. We need to be able to enforce our will in distant, dusty lands; there will be more Bosnias and Afghanistans down the road.

It's just that our conventional warfighting ability is inevitably eroded as we spend more of our resources on bargain-basement units. We've gone from a two-and-a-half war strategy to a one-war-and-one-forest-fire force, and who knows where it will end. We might as well put up signs in selected theaters reading "Site of future Alamo." One thing this Army does not need is more glorious defeats to add to our string of wartime opening acts.

I Hold These Truths To Be Self-Evident

"The phrase 'history teaches,' when encountered in argument, usually portends bad history and worse logic."

– Bernard Brodie

Sometime in the near future, our Army will be called upon to fight a competent, numerous, and well-equipped enemy. I don't know who it will be, and you don't either. In 1890, nobody figured we'd be taking on the Germans in thirty years. Ditto for North Korea in 1920 or Iraq in 1960. We may not have air superiority, we may not be able to dominate the electro-magnetic spectrum, and we might not even be able to secure our lines of communications. We will have to hold hilltops and clear cities, breach minefields and employ metal to tear flesh. I hope we have enough tanks, attack helicopters, mechanized infantry, and artillery to do the job, because it will be my children (and yours) on the line.

Call me Colonel Blimp if you want, but that is what I see in my crystal ball. Why do so many disagree with me?

1. LOM drill. Nobody gets ahead nowadays by advocating traditional methods of warfighting, particularly if they involve casualties.

2. Cavalry syndrome. Anybody who claims the tank has a future is regarded with pitying condescension. They are compared with those benighted souls who fought so hard to keep the horse cavalry.

3. Alvin Toffler. Soldiers are so sensitive to charges that they are always preparing for the last war that they now consciously seek to prepare for the next one. This is admirable, in theory, but in practice they are lousy at it. The operative assumption is that technology is going to make the next war radically different from the last, but it's a postulate based on a mixture of pop psychology, bad history, and wishful thinking.

Warfare in the 20th century looked radically different from war in the 19th century because of two inventions: the radio and the internal combustion engine. Internal combustion provided enough power for tanks and aircraft, while the radio and the truck allowed for the type of operational maneuvering that returned mobility to the battlefield. I am aware of computers, miniaturization, and digital communications, but these are not paradigm-busters in the same way.

Tanker, Fear Not

"How can one say that maneuver and attrition are anything other than indistinguishable?"

– Chris Bellamy

Those who say the Persian Gulf was the last war of its kind are wrong. It is probably the last one where we will hold all the cards, but someone, somewhere, is going to tire of the *Pax Americana* — and he might be more competent than Saddam. Those who predict the tank will die due to increases in lethality are wrong. Top attack and chemical energy weapons can and will be countered by defensive measures — tactical and technological. Those who say it is too expensive are wrong. The M1A2 is only four times as expensive, in constant dollars, as the Sherman was in 1942 — now, who would trade an Abrams for four M4s? Those who say the Abrams is too heavy — well, they may have a point. The damn thing is nearly seventy tons.

But you can lighten a tank without making it something else. A tank, after all, is defined by its function — a direct fire weapon with sufficient protection to move over open ground in relative safety. The tank is still too versatile and powerful to disappear. It can kill anything, while it is protected from a wider variety of weapons than any other system on the battlefield. That protection gives it more tactical mobility than anything else stuck on the ground. And we will need it, because the next big war will be won by attrition — not maneuver.

LTC Steve Eden was commissioned in Armor from the U.S. Military Academy in 1982. He served as a cavalry platoon leader, troop XO, and S3 Air with 2-9 Cavalry at Fort Stewart Ga. After AOAC, he served as C Company and HHC commander with 1-68 Armor in Wildflecken, FRG. Following command, he earned his M.A. in history from the University of Wisconsin-Madison, then served as an instructor in the History Department at USMA. After CGSC, he was the chief of Operations, G3, 4th ID (M). In 1996, he became S3, 1-66 Armor at Fort Hood, Texas, followed by an assignment as XO of the same unit. In 1997, he was selected as the Armor Exchange Officer to the British Army, serving two years in the UK as the deputy commander of the Royal Armoured Corps AFV Gunnery School. In July, 1999, he was reassigned to Fort Knox. After a year as the DCO, 16th Cavalry Regiment, he assumed command of 3d Battalion, 81st Armor, his current assignment.

2001 REVIEW

Abrams Tank Fires

How can you prevent them?

by Gregory Skaff and MAJ Dennis P. Finn, Retired

The Armor Corps has suffered 45 reported Abrams tank fires from January through December 2001. Over the past 22 years, we've experienced more than 600 fires since the Abrams joined the Army tank fleet. Some were minor incidents that required only the replacement of a few parts to restore the tank to a fully mission-capable status, while others destroyed the tank.

Abrams tank fires typically do not result in soldier injuries or fatalities, but the potential is always there. Materiel costs are a different story: a very small fire on these vehicles can quickly cost thousands of dollars in just a couple of minutes. During the past year, efforts to eliminate contributing factors resulted in NBC/firing training and a new hydraulic pump case drain quick disconnect.

Figure 1 is a snapshot of the total number of Abrams fires by year, covering the past 22 years. Trends can, and often do, provide us with lessons learned that aid in the development of new procedures, improved parts, and/or focused training aimed at preventing future fires.

Figure 2 depicts an unsettling number of incidents of fire damage, which would be equivalent to losing a tank battalion's worth of tanks. Imagine losing your entire battalion without ever making enemy contact!

A tremendous number of variables led to the causes of these fires. Some are caused by mechanical flaws and some by human error. Team Abrams investigates all reported fires and pursues possible corrective actions or design changes to eliminate future problems. In the course of investigating reported fires, Team Abrams takes the following actions at a minimum:

- A failure analysis on specific hardware
- Unit visits and random inspection of numerous tanks across the fleet
- A review of historical records of tank fires in the fire database.

Current projections indicate that the Abrams tank will remain in active service until at least 2030. In order for our fighting force to remain in the best state of readiness possible, several measures have already been taken over the past year to reduce or eliminate Abrams tank fires. All armor units throughout the world received NBC and Fire Prevention training during the past 18 months, sponsored by the Program Manager's office for Abrams tanks. This was followed by the redesign and free issue of the hydraulic pump case drain quick disconnect (QD). The QD, NSN 4730-01-473-3069, featured in the January 2002 issue of *PS Magazine*, outlines the problem and corrective action for units to take.

While investigations revealed no systematic materiel cause(s) associated with the recent increase in Abrams fires, there are several possible contributing factors, which are being further investigated and addressed. Fleet aging, high mileage, component wear-out, the extent of PMCS and detail services continue to top this list. These factors are not new and the best approach to mitigating these factors is user awareness and swift corrective action.

Random failures and isolated quality issues have caused a very small number of fires. This category tends to be the exception rather than the norm. There are tanks operating in the fleet today that have serious maintenance shortcomings and are potential fire casual-

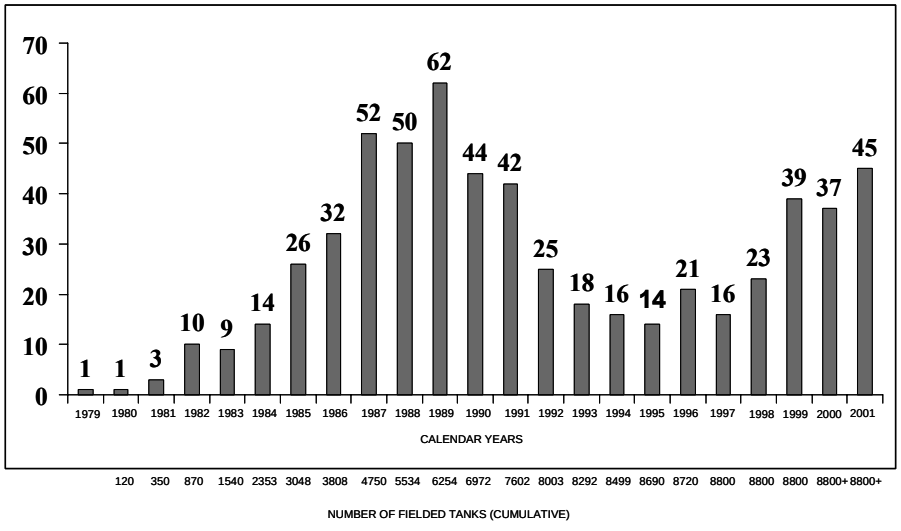


Figure 1: Abrams Fires Reported by Calendar Year

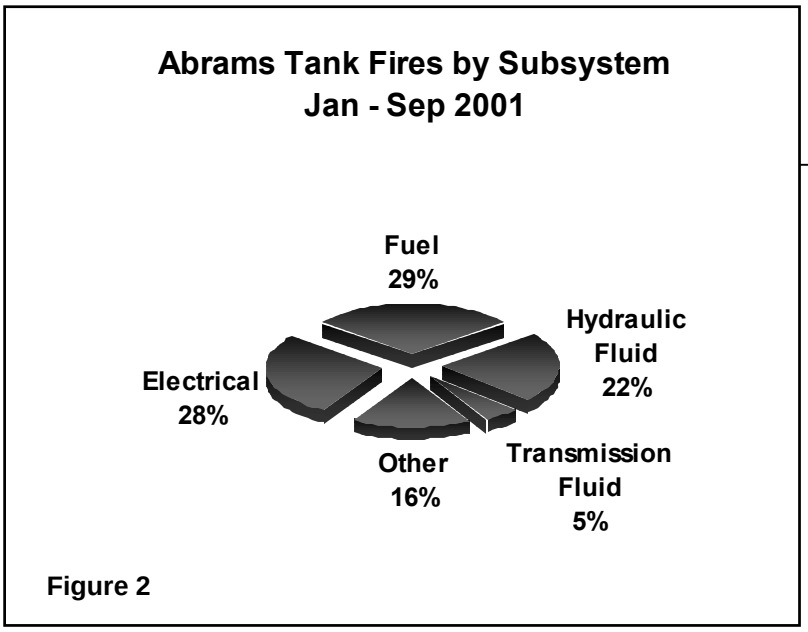


Figure 2

ties. Units *must* adhere to their PMCS inspections and their non-mission capable criteria. This addresses fire sensors, grounding wires, NBC system components, RTV, and unauthorized modifications, just to list a few.

The fire causes are strictly random and have been throughout the life of the Abrams tank, as depicted in the first chart.

There is no single fire category that stands out as *the* prominent area of concern. However, an NBC System fire still exposes users to high risk and requires our serious attention. Besides applying very thorough PMCS and service checks, there are no indicators that can alert crews to the fact that they will have a fire. The Modification Block applications previously applied are not linked to any fire occurring to date.

With these facts in mind, it is essential that every user:

- Assist us in reporting abnormal operations or conditions through the chain of command and unit maintenance office. Units can also report unusual and repeated malfunctions through the Field Problem Review Board by calling 1-800-989-TANK (1-800-989-8265).
- Adhere to Safety-Of-Use, Ground Precautionary, Maintenance Advisory messages, and Operator and Maintenance manuals.
- Rehearse emergency procedures and evacuation procedures regularly.
- Take action regarding other prominent safety hazards besides fires (i.e., use of travel locks, hatch condition, bolt accountability, warning light bulb color and condition, and hose sizes and condition, again just to highlight a few).
- Report all accidents/fires, regardless of how small, IAW local command policy and *AR 385-40, Accident Reporting and Records.*

The Abrams Team is committed to the fact that this tank is the best in the world and it must be totally accepted by you, the users, in every aspect of its operation and maintenance. We will continue to address the trends and inform you of efforts to maximize the tank's capabilities and superiority. To see what we are tracking in the Field Problem Review Booklet, go to the web page of the TRADOC System Manager for Abrams tanks at *http://147.238.100.101/center/tsmabrams* and click on the FPRB link. The FPRB meets quarterly and covers all Abrams tank-related problems with fielded systems. Your issues are vital to the success of the tank program and we need to hear from you.

Mr. Gregory Skaff is currently the Deputy, TRADOC System Manager (TSM) for Abrams Tank Systems at the U.S. Army Armor Center, Fort Knox, Ky. He served as Armor Branch System Safety Engineer for 14 years prior to this assignment. Mr. Skaff has a Bachelor of Science in Civil Engineering from West Virginia University, a Master of Science in Environmental Health and Safety Management from Indiana University, and a MS in Industrial Engineering from the University of Arkansas.

MAJ (Ret.) Dennis P. Finn is currently employed with Camber Corportation, serving as the Sr. Logistics Analyst for the TRADOC System Manager's Office for Abrams Tanks at the U.S. Army Armor Center, Fort Knox, Ky. Prior to his current position, he served in several armor units in the United States and the Republics of Korea and Germany. He has a Bachelor of Science in Training and Development from the University of Louisville.

Polish Army T-55s...Going Once....Going Twice..

The Polish military agency in charge of selling surplus equipment has announced the auction of some of the army's T-55s at a time when heavy snowfalls have paralyzed the country, according to a story that appeared in the *Washington Times*. Offered at $6,865 apiece, the agency suggested they could be useful in plowing snow, building dikes, or firefighting.

Situational Awareness

How To Stay Alive….Anywhere!

by Lieutenant Colonel James F. Walker, Retired

"Banshee Six, this is Banshee One Six. We've crossed Phase Line Yellow and have reached Alpha, over."

"This is Banshee Six, Roger One Six, understand Alpha. Set up defensive position and cover main corridor between Alpha and Charlie. Report any movement and engage if necessary, over."

"Wilco, Six. Banshee One Six, out."

Lieutenant Dood was in the vanguard of the battalion advance through a mountain corridor notorious for its use by enemy mechanized elements in taking a heavy toll of unwary TF units. His platoon of four M1A1 Abrams tanks was charged with covering the advance of his tank company to the phase line he'd just crossed. He'd been briefed on the general disposition and capabilities of the enemy in this sector and knew that he would be facing a variety of armored threats including T-80 tanks, BRDM and BTR reconnaissance vehicles armed with ATGMs, and BMP 3s with supporting infantry. All elements had been warned of the possible use of chemical agents by the enemy to cover their advance to contact. Brigade scouts had identified several mixed armored scout elements screening for the MRB moving toward the TF routes of advance. That information was fairly recent, only one hour old. He should have time to set up and keep the bad guys off of his company as they approached the corridor.

LT Dood set up on the north slope of a hill just below the military crest with his four tanks in hull defilade about 50 meters apart in a trail right formation facing west. He had a clear, unobstructed view and open fire lanes over 75 percent of the main route of advance to his north. His left flank, including the crest and the south slope, would be linked to and be covered by the second platoon currently approaching from the east. At least that was the plan.

The NBC alarm went off as he was assigning fields of fire. Playing back his NBC defense drills in his head, LT Dood ordered his platoon into their MOPP gear and to button up immediately. The fear of a chemical attack haunted all ranks of the combat arms since the Gulf War and he did not want his platoon to be the first to fall to 'gas' since World War I. Busily he and his other tank commanders went about donning their protective gear.

He needn't have worried. His world and consciousness ended when a 125-mm long rod penetrator tore through his tank, fired from a point blank range of less than 50 meters by a T80. The enemy vehicle had simply climbed the short vertical distance up the south slope of the hill, traversed the open crest unobserved and popped Dood's tank from the left flank. It similarly made its way down among the platoon, destroying each tank in order from similar close ranges without so much as a shot fired in its direction.

Can this really happen with today's high tech observation capabilities and equipment? You bet it can. And it does, regularly, at the Army's premier training facility, the National Training Center at Fort Irwin, Calif. Is it symptomatic? Where's the weakness? Who's at fault? And aren't these only training exercises? And most important, what are the far-reaching implications of this seemingly isolated action to our combat forces and their current and future deployment environments?

We can't blame it all on LT Dood and his tank commanders. He, like countless predecessors in every branch and situation, failed in the most elementary of assessments, SITUATIONAL AWARENESS. Every combat environment, regardless of its geography, season, or situation, demands that the

combatants, especially those responsible for direct action, MUST have as complete a picture as possible of what is going on around them. This refers not only to the information overload offered today by weaponry's techno wonders and several layers of command and staff screaming into one's earphones, but critically, it means knowing the situation within 50 meters or less of your foxhole, your tank or the rock you are presently hiding behind… that's eyesight and earshot, boys and girls! And it is these simplest of factors which will not only get you dead but can and will destroy all of your command in detail.

My personal response to LT Dood's situation (which occurred at the NTC, the incident embellished of course for impact) was "What are they teaching these kids?" Certainly it's important to follow the dictates of your primary mission, in this case a platoon overwatch of the main route of advance for his company and battalion. However, his concerns with the mission, and all of its map symbols and radio chatter, plus the sudden emergence of the NBC factor, overwhelmed his most basic of responsibilities, being fully aware of his platoon's immediate situation, tactical and terrain, and setting up accordingly. I speak from hard-earned personal experience where combat engagement distances were measured more in feet than meters, where the terrain did not offer vast expanses of visual advantage and clear fire lanes, where most combat was fought on the enemy's terms in meeting engagements or ambush. Vietnam.

The Vietnam tank unit commander (used here to parallel the experience of LT Dood… could be infantry or even a convoy commander) was faced with most of the challenges of his modern counterpart, save for the wonders of the IVIS system, FLIR or thermal imaging/sighting systems, GPS, etc. Place LT Dood in a tank on some dense jungle trail and the situation would not be much different. He must have a general picture of what's out there. He must have control of his tanks. He must be in direct contact with his next higher command. He must pursue his mission. Regardless of that mission, he would have maintained visual contact with all of his tanks. He would have had at least one individual atop each tank at all times, providing direct input to him and to the tank commander on that tank's situation. No one buttons up unless absolutely necessary. Had he been part of a company-size advance, he would have maintained visual contact with his flank elements at all times. Count the ways LT Dood violated these basic principles.

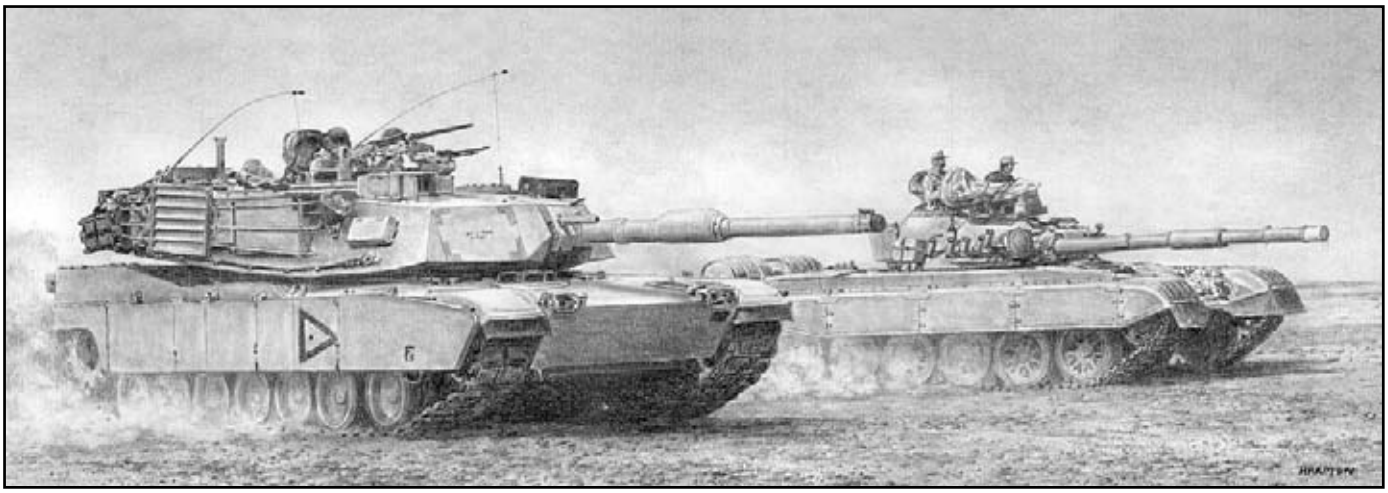
This type of situation is waiting out there today, especially in deployment zones such as Bosnia or Kosovo where the terrain favors any potential enemy, where heavy forest covers much of the landscape, where weather is fickle and mountains and water courses further restrict and reduce tactical options. Situational awareness in its most elemental form is the soldier's personal reconnaissance and quick estimate of his own battlespace which, when tied together with the same information from his other squad members, other tank or Bradley crews, or team members, form the composite assessment from which the local commander can act. It must become an automatic, ongoing function of every soldier throughout a mission. It must be taught from basic individual training through squad, platoon, and company levels. Commanders must inculcate individual and crew/squad appreciation of the absolutes of situational awareness through constant, realistic training in every venue. Knowing what's around you is not limited to jungles, forests, or deserts. The new MOUT training facilities inject another, very real need for maximum awareness by the team/crew.

Combat in built-up areas…. street fighting, is a horror to the combat soldier. All who have experienced it know its deadliness and the suddenness with which a situation can change. The burden of awareness multiplies with the added dimension of height and increased concealment capabilities for an enemy. Tet, 1968, in Vietnam, Khafji in the Gulf War, and even Panama, glaringly exemplified the Army's need for better preparing its troops for combat in urban areas, and a need for a combined arms approach for new doctrine. The riots of the late 1960s in our own cities added to the imperatives of this need and to the requirements of enhancing our soldier's abilities and appreciation of situational awareness at all levels of command.

The need begins with the individual soldier. It becomes more acute with its application to his squad or vehicle crew. It compounds in importance with that crew's role as part of a combat team or platoon and exponentially grows with the size succeeding levels of command. The need for developing and sustaining the soldier's appreciation of situational awareness grows with each deployment and potential combat venue. It must become an ingrained, habitual activity individually and collectively in every unit, regardless of its role in the scheme of maneuver and regardless of the availability of mechanical aids or data.

LT Dood followed his mission and training (as far as it went) to the letter, *reacting* to situations *as they developed.* Better situational awareness and fewer assumptions on his part and that of his platoon would have allowed him to cover his exposed left flank and preempt the enemy incursion. Crew and squad drills must include the maintenance of awareness of *the immediate* combat situation…that which affects that particular crew at any given time. Being proactive can significantly tip the tide of battle in one's favor. However, that can only happen with optimum situational awareness across the command.

LTC James F. Walker was commissioned in 1965 as a Distinguished Military Graduate of Western Michigan University ROTC. A graduate of AOBC, AOAC, CGSC, SF Officers Qualification Course, and Ranger and Airborne Schools, his active duty service includes training officer and psychological fitness evaluator with USATCA; tank platoon leader, company XO and battalion S3 air with 1/69 Armor, Vietnam; and an additional tour with SOG. His USAR service includes assignment to the 327th MP Battalion, 300th EPW Command as S3 and company commander and a variety of special operations command, senior staff, and liaison assignments in CONUS and Europe. He is president and cofounder of the 69th Armor Association and state president for West Virginia for the Association of the U.S. Army. He is co-author of several Vietnam novels, published by Simon and Schuster, with Ralph Zumbro (*Tank Sergeant* also a veteran of 1/69 Armor, Vietnam), and is principal of his own marketing/sales consulting firm.



Ready for the Storm: The Training Value of Intrinsic Action

by Captain James K. Dunivan

The liberation of Kuwait has now entered a final phase. I have complete confidence in the ability of the coalition forces, swiftly and decisively, to accomplish their mission.

– President George H. W. Bush[1]

Ten years have come and gone since the United States began the ground war with Iraq — an unprecedented victory that demonstrated our nation's military power and unsurpassed ability to fight and win on the harshest of battlefields. In the aftermath of what many refer to as 'The Hundred-Hour War,' just as with any other military operation, we conducted extensive after-action reviews to analyze performance and capture the many lessons learned to provide a basis for which to sustain and improve the way we do business.

Many leaders and soldiers alike cited desert maneuver training at the National Training Center (NTC) as a key enabler of successful performance in the combat of Desert Storm. Since 1982, American soldiers had been learning valuable lessons at the NTC's isolated 1,600 square kilometer section of Mojave Desert that presents first-class training just short of actual combat. There, you can fight tanks and battle through chemical attacks in temperatures ranging from 0 to 120 degrees Fahrenheit and see first-hand how mistakes can "kill."[2] If, in fact, the National Training Center helped us hit a home run in Desert Storm, then the training experience we absorb through Intrinsic Action rotations to Kuwait is setting us up for a grand slam if the need arises to execute a similar mission in the future.

The Army has been sending an Intrinsic Action Task Force to Kuwait since the end of Desert Storm. Intrinsic Action provides a continuous ground presence in Kuwait that deters aggressive outsiders such as Iraq. "It assures our allies we have the resolve, the commitment, and the demonstrated capability to reinforce here in Kuwait, if necessary. If deterrence should fail, then our purpose here is to defend."[3] In addition to the important and imperative 'real-world' mission experienced by units fortunate enough to deploy for Intrinsic Action, they also receive some of the most demanding and realistic training opportunities available in the Army today.

Deployment to Kuwait for Intrinsic Action is great training in and of itself. The validation of those dust-covered unit movement books and the process of deciding what equipment to take, what stays behind, and how do we secure it, who signs for what stays behind, and how do we get everything and everyone there, is nothing less than an exercise in readiness. Fortunately, there are many players to assist in this process, including the 'permanent party' personnel in Kuwait, the current Intrinsic Action Task Force (there are several planning conference visits available to the task force leadership prior to deployment), and anyone you can find in the unit or at home station who has been there and done that. In my company, several soldiers had already executed this mission twice before, and their insights were invaluable in planning for this deployment.

Deployment requires an enormous amount of energy to prepare soldiers, ranging from drawing DCUs and breaking in those desert boots to ensuring that every soldier goes through the complete Soldier Readiness Process for updated shots (including anthrax), wills, powers of attorney, dental records, and the like. There are training certification gates to be met – crew qualification, training for unexploded ordnance and depleted uranium awareness, and desert field craft. Full-up rehearsal of key events, such as manifest and equipment draw, pay big dividends in preparing the soldier for success and enabling the unit to achieve that one chance to make a good first impression once in Kuwait.

The first dose of reality that strikes when you hit the ground in Kuwait is the temperature, and leaders must ensure that everyone properly hydrates on the plane ride over. After that first blast wave of heat, the next realization is that you have literally hit the ground running. A quick bus ride from the airport to Camp Doha finds the unit in the middle of a draw yard. Here, activities include signing for tanks and all the associated vehicles and equipment needed to accomplish the mission, finding A-Bags, continuing to hydrate, and getting everything loaded and lined-up to move within the established time

limit. Several hours later, the entire unit is in the Kabal, Redcon-One and ready to continue the training experience of a lifetime.

Although subject to various unit intentions and plans, the training opportunities available throughout the four-month Intrinsic Action rotation build upon each other and can be broken down into a ladder of individual training, platoon- and company-level collective training, coalition training, and gunnery qualification culminating with one of the most extensive Combined Arms Live Fire Exercises one could ever hope to execute short of actual combat.

Our task force began the rotation with a focus on individual soldier training to establish the basics. During this phase, the noncommissioned officers took great pride and effort to use this valuable time to train their troops on the many and varied common skills tasks that they could be called upon to use at a moment's notice. Instruction and practice in land navigation in the desert, NBC, and first aid were just a few of the classes and hands-on training experiences instructed during this valuable sergeants' time training. In addition, my company spent a lot of time relearning the skills peculiar to the M1A1 tank since we were accustomed to going to the field on our home station M1A2s (interestingly enough, we had trained on M1A1s at the National Training Center just six months earlier). Finally, we had adequate time and resources to focus on small arms qualification, which not only brought our QTB statistics to nearly 100 percent across the board in this area but more importantly, gave the soldiers confidence in their personal weapons and ability to use them. All in all, this training was an intense but tremendous opportunity to learn and grow as a unit while getting acclimated to the heat, wind, and sands of the desert.

Once we reestablished and trained on soldier skills, the unit then had the chance to put it all together in platoon and company lane training. Platoon lanes was a golden opportunity to revisit our TACSOP and get reacquainted with mounted formations, maneuver, and battle drills. Complete focus was on the platoon leader — OPORDs, rehearsals, timeline, and execution of the plan were all evaluated and then executed again if necessary until the platoon leader and the members of the unit were comfortable with their performance. Just as we established the baseline with individual training, the company/team was now ready to move on to more intense and continuous company-level operations.

Company lanes was actually broken down into two parts in which the unit executed two movements to contact, a defense, and a deliberate attack for training and then went force-on-force with the same mission cycle (different terrain and timeline) as part of an EXEVAL. The highlight of the rotation was the company EXEVAL, some of the most demanding and realistic training I could ever hope to experience and comparable to the company's earlier rotation to the NTC. The company was the complete focus of the training, allowing the task force and brigade commanders, along with the MPRI observer-controller team, ample involvement and opportunity to develop lethal, tactically proficient company/team units fully confident and capable of their wartime mission. Upon completion of company EXEVALS, the next stage of fulfilling our mission in Kuwait was to train alongside our coalition allies.

Coalition training is a unique opportunity available during Intrinsic Action — the experience of training alongside a Kuwaiti tank company in their own backyard environment for an entire month. Our experience was even more unique because they were equipped with the M-84 MBT, which greatly resembles a T-72 with a crosswind sensor and some other modifications. Using the assistance of a linguist to interpret, the officers and NCOs gave first rate instruction to our Kuwaiti allies on topics such as first aid, land navigation, movement formations, and engagement area development, and kept them actively involved and hands-on through the entire process. The fun part came next when we conducted mounted maneuver training together. It is definitely high adventure conducting an in-stride breach with two Kuwaiti tank platoons attached to the company as you attack a dug-in tank platoon. Once again, using the linguist to echo all FM instructions on the company net in Arabic, every mission was successfully accomplished and truly served as a testament to the cooperation and friendship of two countries dedicated to a common goal. In addition to the excellent training, the Kuwaiti hospitality of sharing tea, meals, and an occasional soccer game were educational and rewarding to all.

Upon completion of coalition training, morale began to surge higher every day for two reasons: there was light at the end of the tunnel as the rotation neared mission completion, and we finally got to put live tank rounds down range. With no conduct of fire trainer facilities at our disposal, our gunnery refresher training (tank crews qualify prior to deployment) consisted of TCGST and a field expedient tank crew proficiency course set up by a motivated platoon sergeant. Soon, the company moved out to Udairi Range to fire combat qualification tables. This was after the two tank company master gunners in the task force took their detail out to the range and dug target pits and emplaced targets with lifters on the range for us to proof and fire the tables.[4] Although many of the senior NCOs referred to the range as "ghetto gunnery," it was a valuable training event for everyone involved and greatly reinforced confidence in both our ability to engage and destroy targets as well as the tanks we had drawn from the pre-positioned fleet.

The last training event in the desert before returning to Camp Doha was the task force Combined Arms Live Fire Exercise. This exercise was a spectacular display of firepower unlike any live fire event in which most members of the unit had ever participated. Whether it was the dismounted infantry assaulting and clearing the trench lines, the engineers detonating live mines with explosives, the tank company teams charging through the breach lane to secure the objective with main gun rounds servicing every target, the awesome lethality of the field artillery putting steel on target, or our brothers in the Air Force bringing in the close air support — all was wonderfully orchestrated to provide the most realistic live fire training possible short of combat. It was a great exercise in battle command that demanded extensive risk assessment and mitigation to avoid executing watered-down and unrealistic training.

Finally, the day arrived when everyone had to pack-up and say goodbye in order to spend the last couple of weeks of the Intrinsic Action rotation in Camp Doha. Most of the time spent during this period of the deployment involves turning in the tanks and equipment that have been extensively used over the past four months in the desert. Once again, the unit experienced some wonderful training in tank maintenance. This was indeed the best tank service program I had ever witnessed, and offered some explanation as to the supe-

Continued on Page 46

- Photo by Robert L. Stevenson

Training Lethal Tank Crews and Sections

by Lieutenant Colonel Mark Pires

As a battalion commander, I was very concerned with the training of tank crews. I felt the gunnery program that armor units follow provided extensive live-fire crew training. However, I felt our force-on-force training model, followed by the great majority of armor units, lacked an important step; training lethal crews. I believe that training lethal crews is important because battles and engagements are won at platoon level. Platoons will only be lethal if they are composed of lethal tank crews.

Force-on-force training normally starts at platoon level. By skipping training at the crew and section level, important fundamental crew-level skills are not taught and drilled. Gunnery training teaches many crew-level skills, however, there are many other crew-level skills and drills that can't be integrated into live-fire gunnery. Adding simple crew- and section-level training to our force-on-force training models can pay big rewards and prepare crews for higher echelon training.

The objective of crew and section force-on-force training is to develop lethal crews and sections so that all contribute to the fight. This is accomplished by focusing on fundamental skills at the lowest level.

Why This Is Important

Battles and engagements are won at the platoon level. At company, and especially at battalion level and higher, commanders can lose battles, but not win them. The best a battalion commander can do is to set companies and platoons so that they can be successful. This is true because the vast majority of killing is done at platoon level. Obstacles and indirect fires will account for some enemy kills, but most will come from direct fire systems.

Vignette: Perfect Engagement Area. Imagine a perfectly developed engagement area (EA). The battalion commander selects the best possible ground covering the enemy avenues of approach. Obstacles are sited and constructed to turn the enemy into the EA, then disrupt and fix him at critical points. Indirect mortar and field artillery fires are planned to suppress the enemy as he attempts to breach obstacles and establish firing positions.

The enemy moves into the EA, is slowed by the obstacles and suppressed by the indirect fires. However, due to a lack of fighting skills, the tank crews and platoons cannot kill the enemy vehicles. Eventually the enemy will breach the obstacles, move through the indirect fires, and kill the friendly force, or force them to withdraw.

The same logic applies to a unit attacking a defending enemy, or involved in a meeting engagement. No matter how well the conditions are set, a unit cannot win a battle or engagement unless tank crews and platoons are able to physically destroy the enemy.

I've often heard or read that commanders should identify their killer crews and put them at the most critical point on the battlefield. I could not disagree more with this idea. At best, it represents a gamble. We can never be assured of knowing where the critical point of a battle will be. There could be several critical points. Relying on a portion of the force to be at the critical point in all battles is not efficient and will usually not be effective. The solution is to train all crews to be killer crews.

Comparison of Gunnery and Force-on-force Training Models

In order to make a point concerning how we think about live-fire versus force-on-force training, let's look at two typical training models.

Gunnery:

The following are all the training events a crew goes through prior to participating in a platoon-level live-fire event:

- Unit Conduct of Fire Trainer (UCOFT): Required reticle aim for tank commander and gunner prior to live fire.
- Tank Crew Gunnery Skills Test (TCGST): Required for all crew members prior to live fire.
- Tank Crew Proficiency Course (TCPC): Required for all crews prior to live fire.
- Tank Table V: Required for all crews prior to Tank Table VII.
- Tank Table VII: Required for all crews prior to Tank Table VIII.
- Tank Table VII: Required for all crews prior to Tank Table XII, Platoon Battle Run.

Once all of the above requirements are successfully completed, crews are allowed to participate in platoon-level live fire. Now let's look at a normal force-on-force training model.

Force-on-force:

No requirements at tank crew or section level. No training normally done at crew or section level. Training normally starts at the platoon level.

The point is that when we, the Armor force, conduct live-fire training, we spend the vast majority of our time and resources on ensuring our individual crews are well trained. In fact, we will not allow our crews to participate in higher-level events until they pass rigorous, set standards. When conducting force-on-force training, we skip crew training and start at the platoon level. However, there are critical skills which are not adequately taught in live-fire (gunnery) training. Most of these critical skills which are not adequately taught as part of gunnery training are omitted due to live-fire or range restrictions.

What gunnery training doesn't teach crews: (The following list is not intended to degrade or discredit gunnery training. It is, however, important to understand the limitation of gunnery training so that required skills can be trained during force-on-force training).

360-degree security. Obviously it is very difficult, if not impossible, to create scenarios that stress 360-degree security during live-fire training. In fact, we normally teach bad habits concerning all-around security. As an example, consider what we teach loaders during gunnery training. Loaders are taught to scan to the front and left front of the tank to help find targets. The loader's actual primary areas of responsibility are the rear and left flank of the tank. Teaching loaders to help find targets to the front during gunnery reinforces bad habits which are hard to break. Training loaders to remain focused to the rear and flank is difficult at best. Human nature is such that we want to look toward where the action is happening, or where we expect it to take place. In reality, even if the tank is locked on a target to the front, the loader should still be focused on the flank and rear in order to prevent the tank from being ambushed from a different direction. Interlocking, 360-degree security for platoons starts with all-around security at the crew level. At our CTCs, breakdowns in all-around security often result in platoons or companies being ambushed and destroyed from the flank or rear.

Terrain driving. The configuration of most gunnery ranges does not require or teach terrain driving. Crews move on course roads and are not required or allowed to make decisions concerning use of terrain. Crews are told where to move and which firing positions to occupy. During offensive engagements, crews cannot fully react to contact by veering off the road to a hull or turret down position. Moving to a hull or turret down position while under contact requires quick terrain analysis and decision making by the TC and driver.

Complex target acquisition. Gunnery training does require, and train, target acquisition. However, acquiring a live enemy that thinks, reacts to contact, uses terrain, etc., is much more difficult than scanning for plywood targets on a range. Due to the time standards and targets used during gunnery training, crews almost always use rapid scanning. When attempting to spot exhaust plumes, antennas, a TC's head, dust trails, glare off binoculars or optics, or other signatures given off by a live enemy, crews must be proficient at detailed scanning.

Crew drill in an unconstrained environment. Tank crews often struggle with basic crew drills when they are moving and fighting outside of a controlled gunnery environment. For example, consider a crew that is moving and makes enemy contact to the right flank in a force-on-force battle. Often, the tank commander will react to the contact by yelling "Right, Right!". Is the TC telling the gunner to swing the turret right, the driver to turn to the right, or both? On a gunnery range, the driver knows the TC is talking to the gunner because the tank cannot turn off of the course road. However, in an open training area, such commands cause confusion among the crew and it is not uncommon for a tank to turn a flank to the enemy or wind up in a ditch. When a tank crew doesn't have a course road to follow, the TC must be more precise in the instruction he gives the crew. Confusion that causes the loss of even a few critical seconds can result in a dead tank crew and destroyed vehicle.

MILES gunnery. It is important for crews to be proficient in the use of MILES equipment. This increases the quality of force-on-force training exercises and helps crews focus on lessons learned, rather than whether or not the MILES gear works.

Other skills not practiced during live fires. There are other various skills that crews do not normally get to practice during gunnery training. Crews do not get the chance to dismount loaders or TCs to scan over IV lines prior to the tank moving forward. The configuration of gunnery ranges with set course roads does not allow crews to move to alternate firing positions.

The skills listed above are some of the most basic, fundamental skills required of a lethal tank crew. They are skills that seem simple, but require practice and repetition to master. Unfortunately, they are also skills that we often overlook in training.

Training Lethal Tank Crews and Sections:

As previously stated, force-on-force training normally starts at platoon level. The problem with starting at platoon level is the focus of observation and feedback is on the platoon, not training crews or sections.

Although crews will learn and improve during platoon, company, and battalion/task force operations, the focus of evaluation and feedback will be at those particular levels. Crews will not focus and receive feedback on the fundamentals of crew drill. Think of this in terms of gunnery.

Would we ever reach the same level of crew proficiency if we started gunnery training at platoon level?

If gunnery started at platoon level, the focus would be on fire distribution, command and control, reporting, cross talk, platoon movement, etc. This would detract from feedback to individual crews. Crew training would suffer. Crews would be more likely to miss targets, making the platoon less effective.

Similarly, by starting force-on-force training at platoon level, we normally fail to identify crews that are not contributing to the fight. Even if non-lethal crews are identified, their specific shortcomings are not analyzed and identified and they are not given training to correct deficiencies. Non-lethal crews are simply sent out for the next platoon, company, or battalion mission.

Additionally, starting at platoon level does not provide new lieutenants and newly promoted tank commanders time to learn how to fight their tank. A lieutenant who is thrown into a platoon-level exercise will focus on the platoon, not the finer points of commanding and fighting his tank. The same point applies to sergeants who are commanding a tank for the first time.

Starting force-on-force training at the crew and section level solves these problems. This particular training is known as "king of the hill," "jousting," or "cage matches" (four go in, one comes out). Find a 3 km by 3 km piece of ground. Put a tank in each corner of the box. Designate an objective in the center of the box to provide orientation. Whoever is controlling the exercise tells the tanks to begin fighting. Every tank is on its own, trying to kill the other tanks. The last tank alive wins. Tanks can move anywhere within the 3 km square box.

The company commander, 1SG, XO, master gunner, or other designated representatives can act as observer controllers (OC) and coaches. The OC tells the tank crews when to start and stop the fight, controlling the training via a radio control station. As with tank gunnery, it is critical to keep all crews up on the radio net. Crews that do stay on the net waste valuable training time. In order to keep the training moving, it is a good idea to designate a time limit for each match. This prevents the crews from going to ground, waiting in ambush positions. Normally each cage match should be complete in 20 to 30 minutes.

The match ends when only one tank is left alive. Once the fight is complete, the crews meet for a brief after action review (AAR). The crews provide most of the feedback to each other. The OC facilitates the AAR and can provide additional feedback to the crews. The company commander, XO, 1SG, or master gunner should track results. The goal is to identify crews that are normally killed without demonstrating the ability to kill other crews. When a non-lethal crew is identified, specific shortcomings must be identified and corrected. Common problem areas are discussed below under "Training Objectives." The key to successfully developing lethal crews is identifying weaknesses and retraining until those weaknesses are corrected.

Cage matches should be conducted both day and night. Because this training is conducted at the beginning of a force-on-force training cycle, the first night of training may be used for drivers familiarization training. This gives drivers a chance to practice driving cross country in limited visibility at a slower pace prior to engaging faster-paced training. All crews should participate in multiple iterations of both day and night matches. Multiple iterations enable learning to occur at a much greater rate. Normally during platoon lanes, a crew will be part of one or two iterations per day. Additionally, depending on how the fight goes, a crew may not be involved in the action. With multiple cage match iterations per day and night, a crew can be involved in many fights and learn numerous lessons. This increases learning.

Training Objectives

As discussed earlier, this training is designed to teach and refine the most fundamental skills required of lethal tank crews. This is one time that leaders want to get into the weeds.

360-degree security. With tanks coming from the four corners of the square, there is a constant threat to the flanks and rear. The crew must maintain all-around security at all times. The requirement for 360-degree security continues even when the crew has identified the location of an enemy tank. While the gunner remains locked on the enemy tank, the TC and loader should continuously search to the flanks and rear to identify additional threats. As previously stated, this requires great discipline and is difficult to teach. Crew and section training is a tremendous opportunity to focus on and reinforce this requirement. Units should develop SOPs that clearly describe crew responsibilities for security. For example, our SOP was that the loader's M240 machine gun would be swung around to face the rear of the turret. When the loader was up in the hatch, he was required to keep both hands on the M240 handles. This ensured that the loader would face the rear of the vehicle. Even with this SOP, I occasionally observed loaders cheating. They would put their hands on the M240 handles, their bodies facing the rear, but turn their heads around so they could look to the front of the tank to see what was happening forward. As I said, this requires a great deal of discipline and constant emphasis.

Terrain driving. All crewman, especially the TC and driver, must be able to instantly recognize and select the most advantageous terrain. Crewmen must be able to do this while moving cross-country. This skill includes the ability to identify inter-visibility (IV) lines and hull or turret defilade fighting positions. The desired end state is for the crew to be able to move with a minimum of verbal instruction from the TC. The ultimate training state is for the driver to move a general direction of movement given by the TC. During platoon operations, wing tanks normally follow the lead of the platoon leader or platoon sergeant. One result is that commanders and drivers of wing tanks do not have the opportunity to exercise decision-making concerning terrain.

Target acquisition. The ability to acquire targets quickly is crucial in tank engagements. Target acquisition is often challenging and requires attention to detail from the entire crew. Each crewman must understand their responsibilities and actively seek to acquire targets. The crew should have an SOP that assigns areas of responsibility. Each crewman must understand cues to look for in acquiring targets. Spotting enemy vehicle antennas, heat or exhaust signatures, dust trails, a TC's head looking over an IV line, a vehicle hidden in a wood line, etc., often requires detailed scanning by all crewmen.

Crew drill. This term encompasses many things. A tank crew is a team.

Everyone in the crew must understand how the other crewmen think and what to do in a wide variety of situations. A force-on-force environment presents a greater array of variables and requires a larger set of possible responses. For example, if the tank is moving and receives enemy fire, does the TC want the driver to automatically turn the front of the tank toward the enemy? As with this example, many of the drills that need to be established fall under actions on contact.

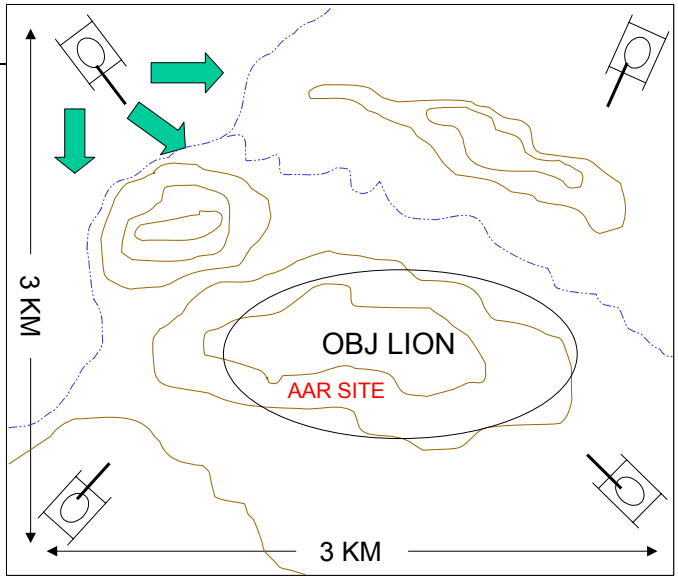
MILES gunnery. All crews should be able to kill at ranges between 2500-3000 meters. This requires becoming experts at boresighting. Battalions and companies should have boresighting SOPs for both, with and without boresight kill indicators. Crews must be able to kill both moving and stationary targets at extended ranges. We normally found that by the end of first day of cage matches, most crews had significantly increased the distance at which they were able to kill. Crews must also learn how to maintain MILES equipment, including how often to clean the transmitter window and how often to change batteries.

Leader tanks. Besides the training objectives listed above, leader tanks (company commander, executive officer, platoon leader, platoon sergeant) have additional training goals. Leaders need to focus on command and control (C2). The crews on leader tanks need to develop SOPs that free the leader to focus on C2 responsibilities. Communication between the crew must be kept to a minimum so that the leader can monitor and transmit on two radio nets. Cage matches are an excellent time for leader tanks to work out SOPs that minimize talking and enable the leader to focus on the platoon or company.

Once training objectives are met and crews have become proficient in required skills, move to section-level matches. Normally one to two days at crew level is sufficient to attain training objectives. Section-level matches are conducted in the same manner as crew-level matches. Matches are conducted on 3 km by 3 km piece of terrain. We normally had three sections in a match. Two sections do not provide a 360-degree battlefield because once the enemy section is spotted, there is no longer a threat to the flanks and rear.

Training Strategy

Armor units already have busy training schedules, so adding even a few more days for crew and section training can be difficult. Here are three methods for fitting this training into a busy schedule.



Cage matches can be programmed at the start of a force-on-force training density. Prior to starting platoon-level training, program several days for individual tank and section matches. This will require about three to four days, one of the days being a maintenance day prior to starting platoon-level training. If the training density includes platoon-, company-, battalion-, and perhaps even brigade-level training, the addition of three to four days can be a significant, if not impossible, hurdle to overcome. I believe it is worth trimming a few days of higher-level events in order to conduct crew and section training.

A second strategy is to add cage matches to the end of gunnery densities. We used this strategy several times when major force-on-force training exercises were scheduled several weeks or months after gunnery. After a company completes the last live-fire table, it has a day to download brass and ammo, conduct maintenance, install MILES gear, upload blank ammo, and complete any other necessary tasks. The company then roadmarches to a training area for crew and section training. When the training is complete, the company roadmarches to the wash rack and begins after-operations maintenance.

A third strategy is to conduct the training during a company green week. The company rolls to the field early Monday morning. The company conducts crew and section training through Thursday night. The company road marches back to the wash rack early Friday morning. This training is easy for a company to execute because it is fairly easy to resource. This strategy also gives company commanders the chance to take their unit out for training without the umbrella of a higher headquarters.

We used all three of these strategies very successfully. The one we used depended on our training schedule, the sequence of events, and time available. If our schedule was such that we were critically limited on time, we would reduce or eliminate the section-level matches. The bottom line is that we conducted the training sometime prior to starting platoon-level training. Other strategies would also work. For example, a platoon could deploy for three to four days to conduct this training.

Conclusion

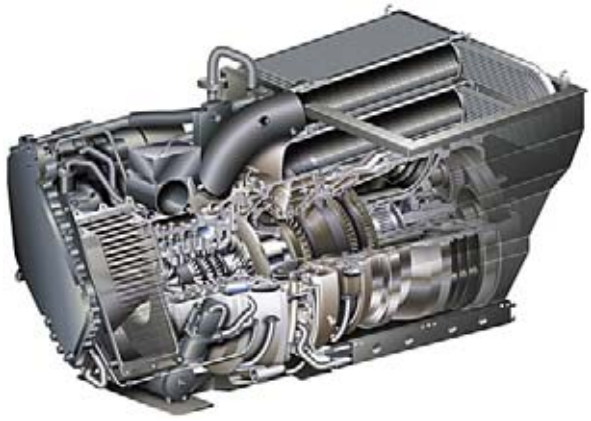
Conducting crew and section force-on-force training produces lethal crews, sections, and therefore, platoons. The training is not resource intensive. The major requirements are time and training areas. A great deal of learning occurs in a short period of time. Crew confidence soars. An added bonus is that crews love this training. They don't want to be killed by fellow platoon or company mates; bragging rights are at stake. This training is about the most fundamental skills required of lethal tank crews, seemingly small things that make a huge difference.

LTC Mark Pires was commissioned as an Armor officer from the U.S. Military Academy in 1982. His past assignments include tank platoon leader, tank company XO, scout platoon leader, and S3 in 4-68 Armor at Fort Carson, Colo.; commander, C Company and HHC, 5-68 Armor in Mannheim, Germany; and battalion S3 for 2-70 Armor at Fort Riley, Kan. A graduate of CGSC and SAMS, his most recent assignment was as commander, 1-68 Armor, Fort Carson, Colo.

Update:

The Abrams-Crusader Common Engine

Help Is on the Way



During the last few years, many have heard about our new tank engine, and some were even fortunate enough to see and touch one at the 2001 Armor Conference.

More than likely, you are asking, "When will I get one in my tank?" This update will provide you some insight concerning the Abrams-Crusader Common Engine (ACCE) program.

The AGT-1500 turbine engine was instrumental in making our Abrams tank the world's best; but it's getting tired and, unfortunately, more expensive to use and maintain. Designed in the late 1960s, the Army employed over 12,000 of these engines, but production ended in 1992, and since then, we have relied on overhauled engines. Many engines have been overhauled more than once. In fact, our "new" M1A2 SEP and M1A1 AIM (Abrams Integrated Management) tanks come from the factory with overhauled engines.

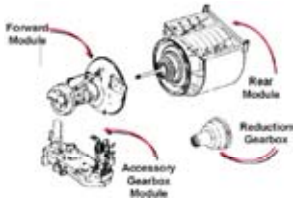
When the Army overhauls an AGT-1500, we cannot afford to replace all the components. Therefore, we intensify the focus on the replacement of the high-failure items, but the wear on the remaining components can result in overhauled engines that fail to achieve the durability of a new engine. With each subsequent overhaul, we lose more life and reliability. Where a new AGT-1500 engine delivered approximately 1,000 hours between depot maintenance events, it currently completes, on average, less than 500 hours. Unlike aircraft turbine engines, which are routinely upgraded over the aircraft's life to improve performance, our ground-based AGT-1500 has not had significant improvements.

Maintaining the AGT-1500 engines eats up over 60 percent of the Abrams' Operational and Support (O&S) costs; it is the Army's most expensive ground system to operate. In 1999, the Project Manager Abrams office surveyed industry to see what could be done to reduce engine O&S costs. They found that there were significant advances in engine technology since the AGT-1500 was developed in the 1960s. The team concluded that by replacing the AGT-1500 with another engine, the Army could expect a four-fold increase in reliability and at least a 35 percent reduction in fuel consumption without sacrificing current performance. Based on these realities, the Army could save billions of dollars over the projected life of our tanks by simply replacing the AGT-1500.

In the same period, the Crusader artillery system also required an engine with similar performance. In order to reduce maintenance and support burdens on the combined arms team, and enjoy economies of scale, senior leaders directed that a common engine be acquired for both the Abrams tank and the Crusader artillery system.

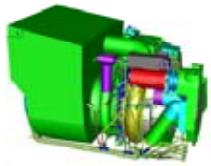
On 8 March 2000, industry was officially asked for proposals. The type of engine was not specified, only that it operate on JP8, that it fit in both engine compartments, that it does not degrade current tank performance, and that it significantly reduces O&S costs. Upon contract award during the summer of 2000, a short 3½-year engine development and integration effort began. To realize these savings more quickly, development time was held to a minimum. A side-by-side comparison of the AGT-1500 and LV100 is shown below.

AGT-1500



- Designed for 4-Level Maintenance (transitioning to 2-Level FY03 - FY05)
- 1960's technology
- Last new U.S. engine produced in 1992
- Higher fuel consumption
- Higher # of parts
  - No built-in data collection
- Manual PTS/IGV adjustments (difficult)
- Common failures: Seals, recuperator, FOD ingestion (turbine nozzle & blade), bearing failures due to coking
- Decay: Overhaul Cost ↑; Reliability ↓; Washout Rate ↑

ACCE/LV100



- Designed for 2-Level Maintenance
- 1990's technology
- Production begins 2003 (04 deliveries)
- 30% reduction in fuel consumption
- 43% fewer parts
- Up to 6 X better reliability
- Electronic data collection (DMM)
- Self-adjusting PTS/IGV
- Seal improvements
- Recuperator improvements
- Reduced air requirements (V Packs)
- Applicable to Abrams M1A2 SEP, M1A1 AIM (pending), Crusader and possibly other heavy combat vehicles

The ACCE/LV100 engine is designed to support a two-level maintenance concept: "Replace Forward and Fix in the Rear." The overall reduction of parts within the engine makes it more reliable, and the new engine is equipped with a Digital Memory Module (DMM), which is an electronic logbook and data repository capable of capturing critical usage data that is designed to increase service life of the engine. The DMM is updated at production and overhaul with the critical component serial numbers and previous hours/cycles. This is designed to assist in identifying overhaul task and fleet trends.

The table below shows some of the parts that were eliminated in the new LV100 engine as well as several improvements to reduce the maintainer's overall task load. The operator, the maintainer, and the logistician supporting the unit will all realize benefits from the new LV100 tank engine. One projected benefit is the increase in the Mean Time Between Failure (MTBF) from the current <500 hrs to 1600 hrs. Another benefit comes from the engine layout: many of the Line Replaceable Units (LRUs) are grouped on the top right side of the engine for ease in removal and repairs.

The GE/Honeywell Team is working toward a May 2002 deadline, when they anticipate that the first engine will be ready for tests. All indications from the Program Management Reviews are that the program is on schedule. After personally experiencing several "out-of-the-can" engine failures while at the Combat Maneuver Training Center in Hohenfels, Germany, this program is particularly impressive to me. It is also exciting because it is crucial to sustaining our Abrams force and most of you will be around to reap its benefits.

Starting in 2004, approximately 200 M1A2 SEPs will come off the production line with the new GE/Honeywell LV100 tank engine. The PM/TSM Abrams offices are working to include the new tank engine in the Abrams Integrated Management (AIM) overhaul process at Anniston Army Depot for the M1A1 tank and also to implement a field retrofit program for a significant portion of the Abrams fleet. The following is a rudimentary schedule, as we know it today:

- **May 02:** First Engine To Test
- **Dec 02**: Abrams test engines received
- **Jan 04:** First Abrams engine to production
- **Jan 05:** First Unit Equipped

Many of us frequently experience the woes of the AGT-1500 and wish for an immediate replacement. Since that is not going to happen overnight, we must continue to perform aggressive Preventive Maintenance Checks and Services (PMCS) to help reduce the number of engine repairs/failures and sustain the overall life of the engine. It will be some time before many of you see the new tank engine, which means you will keep receiving the rebuilt engines mentioned earlier. I am not claiming that routine PMCS will fix all engine troubles; nevertheless, it will aid in preventing some of engine failures experienced due to lack of maintenance. Leverage what you already know about the AGT-1500 and use it to your advantage.

LV100-5 Addresses Top 10 AGT-1500 Problems

AGT-1500 Field Issues	LV100-5 Design Features
• No.5 Seal leakage	✓ Seal eliminated
• No.7 Seal leakage	✓ Seal eliminated
• No.10 Seal leakage	✓ Redesigned to eliminate failure modes
• Inlet screen sealing	✓ Visible inlet interface
– RTV impedes maintenance	✓ Screen location eliminates need for RTV seal
– Inlet screen interferes with plenum seal	✓ Screen integral with inlet housing inboard of seal
• Fuel pump seal leakage	✓ Pump redesigned to aerospace standards
• Oil Filter Clogged Switch fails	✓ Pressure sensor replaces low-reliability microswitch
• VIGV/PTS adjustment requires shim	✓ Actuators are self-adjusting
• Must drain 17 qts to remove oil tank	✓ Considering design options
• No. 4 Oil Feed Line damage during starter replacement	✓ Starter relocated to be more accessible, higher reliable starter incorporated, - 40 lbs. lighter
• PT Speed Pick-up change-out requires transmission removal	✓ Speed Pick-ups relocated to allow ease of removal

References

COL Donald Kotchman, Abrams Tank Systems ACCE/AGT-1500 comparison briefing, Warren, MI, 2001

MAJ Randy Munn, Abrams Tank Engine Update (information paper), Warren, MI, 9 September 1999

COL James Moran, Abrams Modernization: "Keeping the Best Ahead of the Rest," *Army AL&T*, January-February 2001

The author, MAJ (Ret.) Dennis P. Finn, is currently employed with Camber Corporation as the Senior Logistics Analyst for the TRADOC System Manager's Office for Abrams Tanks at the U.S. Army Armor Center, Fort Knox, Ky.

The Origins of Torsion Bar Tank Suspensions

Did the U.S. just copy a German design?

by D. P. Dyer

Every effort to try and reduce the myths surrounding World War II American tanks, as in the article by Charles M. Baily ("Tank Myths," September-October 2001), is to be applauded. A follow-up letter in the November-December issue by George F. Hofmann, however, promotes another myth itself, albeit an official U.S. Army Ordnance Department one. (*Editor's Note:* Dr. Hofmann stated, "In fact, it was the Ordnance Department that developed the torsion bar suspension for Army tanks during World War II…")

No torsion bar development program has been uncovered as being proposed, recommended, financed, or approved by the U.S. Ordnance Department.

The development histories on the medium tank T20 and light tank T24 merely refer respectively to their torsion bar suspension as being a modification or similar to that designed originally for the M18 Gun Motor Carriage (GMC). One must therefore look to the purpose-designed tracked tank destroyer that evolved for its development. It doesn't help.

It having been decided to utilize the light tank T9 chassis for a proposed 37-mm GMC T42, the original layout drawings were modified in October 1941 to specify individually sprung wheels (Fig. 1). Later proposal drawings, dated 29 December 1941 and 5 January 1942, show the Ordnance department modified Christie suspension developed for the Combat Car T4 (Fig. 2).

With the decision to fit a more powerful gun, the designation 57mm GMC T49 was allocated for the two pilots that were authorized to be built by the Buick division of General Motors. Included in the list of recommendations dated April 1942 was independent suspension similar to the Christie type, or that used on the Combat Car T4.

What evolved and appeared in July 1942 on the first pilot T49 (USA 6029910) was trailing arm vertical coil spring independent suspension adapted from Christie (Fig. 3).

While this was undergoing testing, it was decided to have the second pilot T49 fitted with the 75mm gun M3. As such, in October 1942 this vehicle was redesignated as 75mm GMC T67. The military characteristics merely specified it to be tracklaying with independent suspension. Typical characteristics in the historical record, however, have it defined more specifically as coil spring-individual wheel.

In December 1942, the Special Armored Vehicle Board (Palmer Board), in order to reduce the vast number of projects competing for contracts, stated that the 75mm Gun Motor Carriage T67 was capable of development as a satisfactory tank destroyer, but that the engines were unsatisfactory. It recommended suitable standard engines be provided and that other minor changes found necessary be made. No mention was made in the list of changes of any alternative suspension being required, this having been considered highly satisfactory.

Following the Palmer board report, it was decided to mount the new 76mm M1 gun in the tank destroyer. Approval was requested on the 4th of January and given on the 27th to build six pilots to be designated 76mm GMC T70. (The photo below, taken 20 February 1943, shows the T67, but mounting the 75mm gun.) Although nothing is mentioned in the recorded discussion, quietly slipped into the military characteristics somehow was torsion bar independent suspension.

Quickly following in February were instructions to fit torsion bar suspension to the second pilot medium tank T20 and, in March, for it to be fitted to two pilots each of both the medium tank M4 and light tank T24.

The first pilot T70, complete with torsion bar suspension, was completed in early April 1943. For all of the necessary research, development, testing and manufacture of a radically different suspension system to have been completed in such a short time stretches credulity.

In July 1945, Captain Joseph E. Canning, the technical information officer from the Office of the Chief of Ordnance at Detroit (OCO), published an article in *Army Ordnance,* titled "Faster Combat Vehicles," about the new torsion bar suspension. It stated that in 1933 a torsion bar suspension was designed and patented by the Ordnance

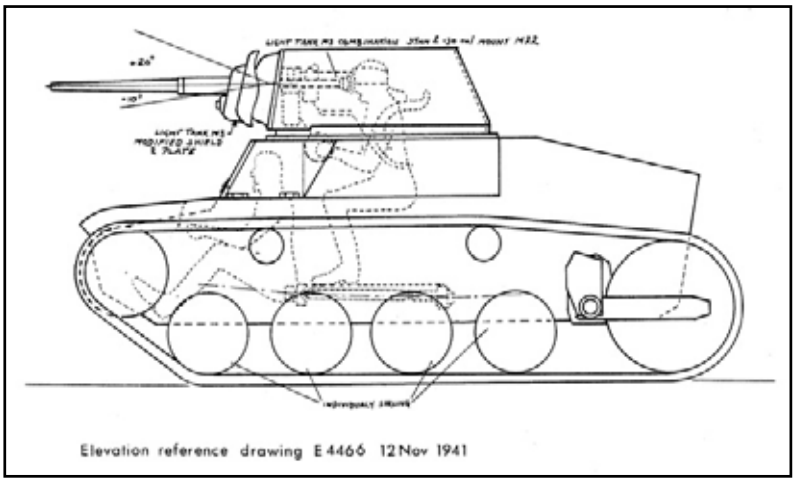


Fig. 1

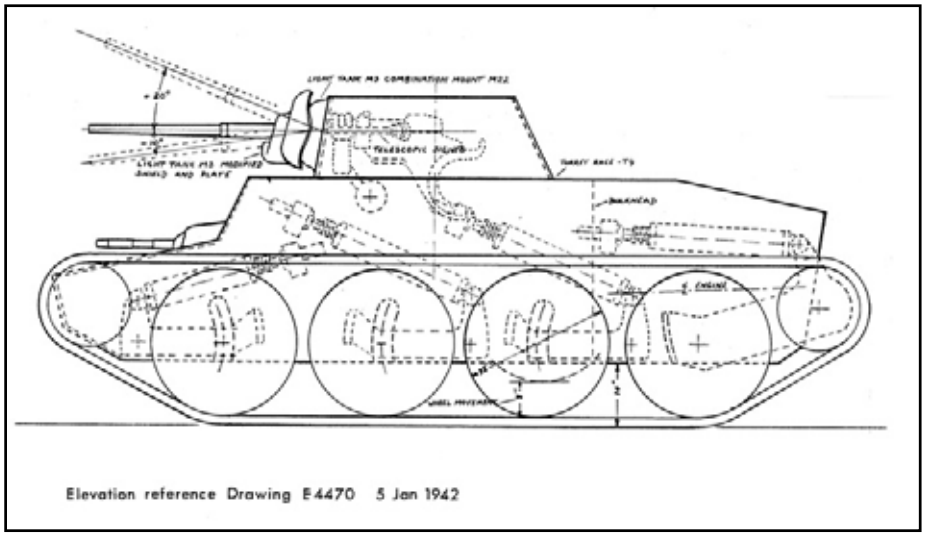
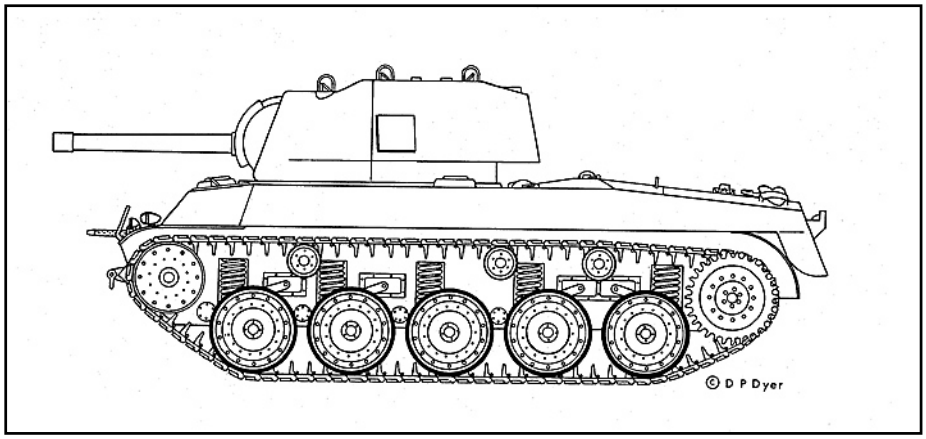


Fig. 2, above, and Fig. 3, below



Department, but limitations in funds made further development impossible. It went on to say that, "as soon as the initial pressure of arming ourselves and our allies was over and funds and engineering personnel were made available, work was renewed on torsion bar suspension development for high-speed vehicles." Early development tests were stated as being conducted on the medium tank M4E4 with the 76mm GMC M18 being the first production vehicle to be so equipped. As mentioned earlier, the M4 with torsion bar suspension wasn't even proposed until March 1943. (Studies of independent suspension for the medium M4 series were based firstly on the Ordnance modified Christie suspension, and later the Buick vertical coil spring suspension, thereby paralleling the tank destroyer development.)

Included in this article was a copy of the drawings from one of the Barnes/ Preston patents, (although only quoting Maj. Gen. G.M. Barnes as the patentee) granted on November 10, 1936, of a design for a torsion bar suspension for cars.

Prior to even the application for this patent being submitted, *The Automobile Engineer* had published a series of articles titled "Modern Suspension." Part V, in September 1934, was titled "Independent Suspension on Private Cars," and included in great detail all of the variations, formula, illustrative drawings, and photographs of the many car torsion bar suspension systems in use up to that date. These included Porsche, Rohr, Mathis and Citroen.

The possible original feature with the Barnes/Preston patents, was that their torsion bars described the tube-over-bar (TOB) suspension contemplated for an improved MBT M60A1 35 years later. On this, an outer torsion tube is fitted to the side of the hull nearest the wheel. An inner solid torsion bar runs through this being connected at the far end, thereby doubling the effective length available.

In the official history "The Ordnance Department Planning Munitions For War," it simply states that, in 1942, torsion bar suspension was developed to a point where it could be used in combat vehicles." The footnote refers to the same patent mentioned previously, also giving the impression that this is what was the basis of development, although stating that French patents were of an earlier date. This could be referring to Dubonnet, who also utilized a combined torsion bar and tube layout.

Brig. Gen. J.M. Colby, who as a colonel had been Chief of Development at TAC during the period in question, was promoting himself in the seventies as having designed the first torsion bar suspension in 1933, but stated he was never in a position to get funds for its development until the winter of 1942-43.

Continued on Page 51

INTRINSIC ACTION from Pg. 37

rior operational readiness rate we had enjoyed throughout the rotation.[5] The entire turn-in process at Camp Doha is a model for what a recovery and maintenance standard operating procedure should entail.

Intrinsic Action is an operational deployment and the units there have a 'real-world' mission with many associated tasks on which to focus. At the same time, the desert sands of Kuwait offer an enormous training opportunity that is unlike any other event in the Army today. Just as the National Training Center has increased our ability to perform our wartime mission, Intrinsic Action builds upon that experience and offers a unique challenge in exercising our ability to deploy; conduct reception, staging, onward movement, and integration (RSOI); train as we fight; and return to home station a confident, trained, and ready outfit. If there was to be a repeat performance of what President Bush called the "final phase," our task force had truly done the best rehearsal possible to ensure another successful ending.

Notes

[1]Bob Levin, "The 'Final Phase'," *Maclean's*, March 4, 1991, p. 24.

[2]J.R. Wilson, "Training to Fight in the Desert," *Jane's Defense Weekly*, February 23, 1991, p. 257.

[3]Linda D. Kozaryn quoting MG Charles Campbell, "Kuwaiti Desert Test Soldiers' Mettle," *American Forces Press Service Defense Link News*, November 1998, pp. 1-2.

[4]The two tank master gunners in TF 1-9 CAV during this rotation were SFC Timothy Clausen and SSG Joseph Weldon. They not only built a tank range from scratch, but also safely and efficiently executed all range operations for the two tank companies. The platoon sergeant who built the TCPC course was SFC Keith Bishop.

[5]The tanks we drew were in remarkable mechanical condition. However, this in no way detracts from the enormous amount of energy put into the company maintenance program by the executive officer (1LT Jim Neusch) and the team chief (SFC Michael Berthiamue) all the way down to tank crew level.

CPT Jim (JD) Dunivan was commissioned as an armor officer in 1993 and has served in various positions in Korea, at Fort Riley, Fort Knox, and Fort Hood, where he commanded Bravo Company, 3-8 Cav, First Cavalry Division. He is currently a small group instructor for ACCC in Nomad Troop, 3-16 Cav at Fort Knox, Ky.

Evolution of Reconnaissance Continued from Page 24

Organic to each squad is a HUMINT soldier, usually MOS 97B, who is also cross-trained to conduct dismounted reconnaissance and surveillance. Although scouts in this organization are cross-trained in tactical questioning, the HUMINT collectors play a vital role in the platoon by advising the platoon's leaders, identifying potential sources to be exploited by the squadron's MI company, and are the primary reporters on the CHATS system, a network system specifically for reporting HUMINT information.[12]

Although the recce platoon is ideally suited to conduct the multidimensional aspect of reconnaissance, support operations, stability operations, and small-scale contingencies, it is the legacy force scouts that are conducting these operations right now, and there is a doctrinal need by all scouts to have information in support of these operations.

Developing doctrine also addresses the distance each echelon of reconnaissance is deployed. The BRT now fills the void that existed between the task force scouts and the division cavalry, but now there is a concern for how far they are being deployed. The distance should be based on METT-TC and the capability to support them, support being CASEVAC, indirect fires, communications, and so on. This may, in turn, drive how far forward the division cavalry may operate. There may need to be a designated reconnaissance handover line between each element to prevent confusion and loss of targets in the folds between elements. This line also defines areas of responsibility for direct and indirect fires, and maneuver.

There is a need for standardization between the different branches of service to allow digital support of future joint operations. Currently, the different branches of the Army are working closely together to standardize evolving doctrine to ensure true combined arms capability. Emerging reconnaissance doctrine will also address operations for both digital and analog units.

Information dominance will become increasingly more difficult. Technology now allows the smallest of threats the ability to communicate and gain intelligence immediately through the use of cell phones, the internet, and CNN. Computer hackers, computer viruses, and worms are now major concerns to U.S. forces. These are threats the Army has not previously faced, threats which must be addressed with minimal, if any, historical precedence.

Notes

[1]*FM 17-22, Reconnaissance Platoon and Reconnaissance Company*, 1 May 1950.

[2]F. Miller& E. Kureth, *Reflections of a Warrior*, Presidio Press, 1991, p. 59.

[3]MAJ G. Athey/SFC F. Belonus, developed for *FM 3-20.98 Reconnaissance Platoon*, Coordinating Draft, May 2001.

[4]Defense Science Board, 1996.

[5]BG R. Scales Jr., *Certain Victory: The U.S. Army in the Gulf War*, 1994.

[6]*FM 3-20.98, Reconnaissance Platoon*, Coordinating Draft, May, 2001, Infiltration.

[7]F.A. Godfrey, *War in Peace, War in the Bush*, Orbis Publishing, 1981, p. 82.

[8]*FM 3-20.971 Reconnaissance Troop*, Coordinating Draft, May 2001.

[9]*FM 3-20.98, Reconnaissance Platoon*, Coordinating Draft, May 2001.

[10]*FM 3-20.96, RSTA Squadron*, Coordinating Draft, date pending.

[11]*FM 3-20.98, Reconnaissance Platoon.*

[12]MAJ Petery, RSTA Squadron Armor Conference Brief, 22 May 2001.

I would like to thank LTC James Berg, Chief, Doctrine Division, at Fort Knox, and MAJ David "Gregg" Athey, Chief, Cavalry Branch, for all their help and support in the development of this article.

SFC Frank R. Belonus enlisted in the Army in 1986 as a 19D scout. He has served in both light and mechanized units, to include 5-73rd Armor and 1-10th Cavalry, 194th Armored Brigade, Fort Knox, Ky.; 3/11th ACR, Germany; 2-9th Cavalry, 7th ID (L), Fort Ord, Calif.; 1-4th Cavalry, 1st ID (M), Fort Riley, Kan.; Seattle Recruiting Battalion; and 1-34th Armor, Fort Riley, Kan. He has attended ANCOC, Master Gunner School, Pathfinder School, and Air Assault School. He is currently senior developer/writer for Cavalry Doctrine, Cavalry Doctrine Branch, Directorate of Training and Doctrine Development (DTDD), Fort Knox, Ky.

ter as much where you paint, but how you paint.

I have an entire platoon of capable scouts, foaming at the mouth to paint anytime, anywhere. You supply a DTG and a grid, and we will bring the art supplies.

GREG W. DAMERON
1LT, Infantry
1-4 IN (OPFOR), CMTC
Germany

OPFOR Defends Itself Against Gamesmanship Charge

Dear Sir:

As a platoon sergeant in D Troop, 1-509th IN (ABN) serving as the OPFOR at the JRTC, I was disturbed by the comments made by CPT T.J. Johnson in "Letters" in the Jan-Feb 2002 issue.

First, we don't play a game. We face every rotational unit that trains here as if it was real and the stakes are high. In essence, we are afraid to "die," so we train everyday to survive in simulated, and by extension, real combat. That training includes battle drills, marksmanship, field craft, and for us in D Troop, armor-related tasks. It doesn't include how to beat the system, or play the "game." I wouldn't tolerate any form of cheating in my platoon or troop. In fact, not only is it punishable under the UCMJ, but anyone doing so will leave the OPFOR and find a job elsewhere.

I do agree that we have advantages. We are in the field two-plus weeks a month, which allows us to hone our SOPs and techniques. We fight in our "box," so we know the terrain and where the most logical places are to find BLUFOR. However, these advantages are enjoyed by most guerrilla armies; generally they've been at war long before the U.S. Army got there, and operate in their own country.

Also, OPFOR does face units on neutral ground in some cases, and even sometimes on the BLUFOR ground. I have been deployed to face active duty BLUFOR units at several National Guard camps, and even at Fort Bragg. Still, the results are the same; the amount of time that we train is our greatest advantage. The reason any unit deploys to the JRTC is to see where they stand on their METL and SOPs. We work hard to provide a thinking OPFOR, that — given the opportunity — will demonstrate where the opposing unit needs to focus their training.

If your unit leaves home station with the attitude that OPFOR cheats, or that OPFOR will win no matter what you do, you are wasting your trip. Which means you have wasted the time of every soldier in your command over the last year.

SFC MICHAEL S. CLEMENS
Fort Polk, La.

Claims of an Army "Malaise" More Conjured Than Real

Dear Sir:

I would like to thank LTC (Ret.) Harold Raugh, Jr. for his very thoughtful and provocative review of *Leadership: The Warrior's Art*. He did mention in the review that he would have liked to see solutions to the "current malaise" in the U.S. Army addressed in the book. While I did address on p. xxiv the fact that high-quality leadership was the only real solution to the supposed morale crisis in the Army, his point has inspired me to consider the general "malaise" argument that has seemed to enjoy popular acclaim over the past several years. Quite simply, the existence of a malaise that has infected the entire Army is more conjured than real.

The Army is too big, too complex, and too diverse to be "of one" about morale. In fact, as many of us have seen, within the same company one well-led platoon will have high morale, while the one right next to it that is poorly led will have low morale. The difference is leadership. To be sure, there are plenty of poor leaders in the ranks that reek of the problems identified by LTC Raugh, and those types certainly do cause morale crises within their organizations. At the same time, the Army has a vast number of outstanding leaders that create excellent organizations that possess high morale. Those soldiers in those units do not have malaise or any other form of morale affliction. I know, because I was a soldier in such a unit from 1999-2001.

The Second Armored Cavalry Regiment at Fort Polk is a superb organization. Located in the backwoods of Louisiana, the leaders of the regiment would have every right to complain that the odds of creating high morale are stacked against them due to the remote nature of the installation. The regiment, however, is an outstanding unit because of the high quality of its leadership…. They do not have malaise, nor do their units. To be sure, there are some poor leaders within the regiment and their units do have morale problems. Nevertheless, one visit to the regiment in garrison or in the field will convince anyone that the 2nd Regiment of Dragoons is, with very few exceptions, a proud organization of high morale from top to bottom. Morale is local, by and large. The difference is in the leadership. The 2nd ACR is certainly not alone in that regard.

The argument by so many pundits and self-appointed experts that the entire Army is afflicted with malaise is way overdrawn, perhaps even nonsensical. What is troubling about the argument is that it obscures the real issue: morale problems are caused by poor leadership. Universal "malaise" gives dysfunctional leaders an escape hatch — they are not held accountable if "everyone" has morale problems. It is time to take poor leaders to task. We must avoid blaming the symptoms rather than the root cause of the problem.

There simply is no excuse for poor leadership. Perhaps part of the problem is that we have not, as an organization, articulated a coherent standard for what we mean by leadership. If "getting results" or "accomplishing the mission" is the only standard, then we open ourselves to all sorts of dysfunctional behavior on the way to getting the job done. The screaming, zero-defect, self-serving, and ethically challenged prima-donna is therefore just as good as the person we admire as a true leader as long as they both get results. The problems that occur from this mentality are obvious, and will continue to manifest themselves as long as some senior leaders tolerate poor leadership on the part of their subordinates.

We need to do a better job of distinguishing between merely getting results and getting results the right way. A person that merely gets good results is nothing special. We have plenty of people who can do that. A leader who gets good results the right way, through character and competence, who inspires the best in others and creates high performing teams of great morale along the way, and who leaves a lasting, positive impact on the lives of others, is someone special. Great leaders leave a legacy of excellence. We need to grow more of those people.

Perhaps the war on terrorism will provide the impetus to fix some nagging problems, such as training budgets, quality of life issues, and stability. Solving those structural problems, however, will not cure the low morale in some units any more than the problems themselves created the low morale. The real solution is in our own hands and in our own gardens.

Cure poor leadership and you will cure poor morale. To begin, we need look no further than the mirror and our subordinate leaders. The great leaders have already figured this out. Their organizations are wonderful ones in which to serve, and there are plenty of them throughout the Army.

The best way to increase and sustain morale is to promote and develop high-quality leadership and to reform or get rid of poor leaders. To do so requires seniors with the wisdom and courage to look beneath the surface of mere results. We wrote *Leadership: The Warrior's Art* to help identify, understand, and develop such high-quality leadership.

MAJ CHRISTOPHER D. KOLENDA

Correction

The photo on Page 10 of the January-February 2002 issue was misidentified as an Israeli M113. The vehicle is actually an Israeli Nagmachon APC (a Centurion modification).

REVIEWS

Siegfried: The Nazis' Last Stand by Charles Whiting, Cooper Square Press, New York, 2001, 312 pages, $12.95

In the wake of a new surge of interest in World War II, brought about by recent popular war movies, military historian Charles Whiting has wisely republished an unabridged paperback edition of this book, originally published in 1982.

The Siegfried Line, or West Wall, as the Germans called it, enabled the Wehrmacht to prolong the war for six months and even to mount the Ardennes offensive from behind its cover. Whiting's account of the Allied advance into Nazi Germany focuses on the months from September 1944, when the Allies first attacked the Siegfried Line, to the Allied crossing of the Rhine in March 1945. During those seven months, the Third Reich's last line of defense halted the Allied advance and dragged the fighting out in the worst winter in European memory.

The author's introduction offers a thumbnail historical sketch of the origin and building of the Siegfried Line. A formidable barrier, it stretched the whole length of Germany's western frontier with France, Luxembourg, and Belgium, four hundred miles of concrete fortifications, to include rows of "dragon's teeth" antitank barriers, gun emplacements, and over a thousand bunkers. The West Wall was completed in 1940 and would lie dormant until 1944, when the Allies would attack and breach the line at a cost in American lives greater than the losses in Korea and Vietnam combined.

Whiting's narrative evokes the last ounce of drama from bitter, bloody battles through the "green hell" of the Huertgen Forest, the German counterattack in December that turned into the devastating Battle of the Bulge, and the battle of the Rhineland that followed as the Allies pressed into Germany. Whiting skillfully details the actions of Generals Eisenhower, Patton, Montgomery, Bradley, and Collins, and Field Marshals Model and Von Runstedt. However, the book is at its best when the author draws from the accounts of the small units and individual soldiers who fought and suffered through untold hardships in the kind of warfare which is no less difficult and essential, regardless of how seldom it reaches the spectacular.

The problems with the books are trifling, but noticeable. The editor missed some minor updates, like the sentence that places the building of the West Wall "40 or more years ago," when it is now more than 60 years. The epilogue notes that Patton crossed the Rhine "a little above Saarbrucken at Oppenheim," when in reality, the cities are 150 kilometers apart. Finally, one wonders why the author mentions or quotes Ernest Hemingway (at the time a correspondent for *Colliers Magazine*) no less than 36 times. None of the comments seemed to be particularly relevant to the narrative.

Apart from these minor errors, the text is as relevant today, perhaps more so, as it was in 1982. The book is well worth reading and will provide the uninitiated reader some insight about what real war is like.

DENVER FUGATE
Radcliff, Ky.

Half-Track – A History of American Semi-Tracked Vehicles by R. P. Hunnicutt, Presidio Press, Novato, Calif., 240 pages, $80 hardback.

Richard Hunnicutt will be well known for his highly respected in-depth studies of American armored vehicles, and in this, his ninth work, he covers the half-track vehicles developed and manufactured in the USA from early experiments during World War I to the end of World War II. These early vehicles were basically trucks with the rear wheels replaced by a track unit. They were evaluated and bought in small numbers for artillery towing, and they paved the way for the best known of the genre, the armored types, developed from a wheeled scout carrier and produced in large numbers for U.S. and Allied forces.

While generally similar in overall appearance, they came in several varieties. The baseline models were the half-track cars used as scout and gun towing vehicles as well as personnel carriers. Within these overall parameters, there were two main series, one basically bolted together and used primarily by American forces, and their welded counterparts, which were mostly supplied under Lend-Lease. Distinctions were blurred, and there was a move to producing a universal design that could be modified as required so as to simplify and speed up production, though the move away from half-tracks to fully tracked vehicles meant that these types never entered service. Even amphibian versions were contemplated.

The ready availability of a reliable and robust chassis led to armed versions mounting antitank guns as tank destroyers, as extemporized self-propelled guns with heavier artillery pieces, and as antiaircraft mountings with machine guns and automatic cannons in various combinations. All these types are described in detail; while the text may be fairly brief, the illustrations show all the many versions in great detail with hundreds of original black and white photos backed up with scale plans of each major version. As is the style of these studies, full specifications of each are also included, along with performance figures for the various weapons fitted and a small section of color photographs.

As this is intended as a technical study of the vehicles themselves, some details of their combat history is included, covering American use in WWII and Korea. This is understandable, but given their widespread use elsewhere and many variations existing abroad — for example, the Israeli army used them for many different roles and may still have some in their inventory — it does limit what is otherwise a very comprehensive study and is not as detailed as that in earlier studies.

This is a minor consideration given all the good material that is included, and this will be the definitive reference book on the subject even though others exist. Mr. Hunnicutt sets the standard for such works, and this one will have its place alongside his previous volumes on any serious bookshelf. Such works appear expensive, but they contain such a mass of information and detail that they are very good value for money.

PETER BROWN
Dorset, England

The Battle of France, 1940 by Philip Warner, Cassell & Co., London, 2001, 249 pages, $9.95.

Philip Warner is the author of 48 books, mainly on military history. He served in the British Army throughout World War II, primarily in the Far East. He has also served as a senior lecturer and head of communication studies at the Royal Military Academy Sandhurst.

This is a republication of a book first available in 1990. It provides an overview of the Battle of France primarily from the tactical perspective, using survivor accounts and official histories to provide a good overview of the German conquest. The book is based primarily from the Allied perspective, but does delve into the German side. Warner's style, and the use of first-hand accounts, does much to describe the sense of confusion by the Allied high command and the despair of the French generals.

The book describes the French defeat in the usual terms: poor leadership by the high command, lack of battlefield understanding, poor morale and bad coordination between allies. However, Warner also describes the confusion on the part of the German high command. His description of the battle demonstrates how the Allies could have defeated the German invasion if they had better, more flexible leadership.

The inclusion of photos and maps does much to enhance his description of the campaign, especially for the battles at Arras and Dunkirk. Perhaps the best assistance provided in the book, however, is the order of battle included at the end. Along with the references, this provides a good source for anyone wishing to learn more about the battle.

Although I disagree with some of the author's conclusions, I would recommend this book to someone searching for a good introduction to the Battle of France. I would not, however, recommend using this book as a

sole source of information. That being said, it is a very good description of the capabilities of a mobile force, led by flexible commanders, against a mostly static defense.

SHAWN A. MCMANAMY
CPT, Armor
HQ, USAREUR

Allies, Pearl Harbor to D-Day by John S.D. Eisenhower, De Capo Press, Cambridge, Mass.,1982, 500 pages, $20.00.

The author of *The Bitter Woods: The Battle of the Bulge*, John S.D. Eisenhower, follows up a great book on one of the most famous battles of World War II with another exceptional piece of work that focuses on the grand alliance that formed to embark on the greatest invasion the world has ever known. This alliance ultimately strangled Nazi Germany's grip on Europe and brought an end to the second world war.

This book cleverly weaves together the personalities and emotions of the many key players in forming and maintaining the alliance that would defeat the Axis. Eisenhower masterfully brings factual and well-researched information and dialogue into a literary story line of events that will sweep away the reader and make it almost impossible to put down. Some of our great historical figures, such as Franklin D. Roosevelt, Winston Churchill, General George Marshall, and the author's father, General Dwight Eisenhower, come to life along with a large cast of other important, famous, or obscure individuals to provide first-hand insight to the drama that unified the powers of the world to stand against Hitler's tyranny.

Many scholars and students of the war focus on particular battles, strategies, or events of World War II and, like myself, have always taken for granted the great orchestration of voices and materiel that had to come together to forge this great Anglo-American military alliance. In this book, the author reminds and educates everyone of the enormous chain of events that had to occur and be put into place before the great plans could be executed in successful battle. Whether it was one of the many and often heated conferences between the heads of state, a convoy crossing the Atlantic, a secret landing party on the African coast for an all night meeting near Algiers, or the agonizing meetings over when to invade Normandy — the reader is constantly reminded of the fragile opportunities and fortunes that characterize the duties of statesmen and professional soldiers alike in alliance and war.

Winston Churchill once said, "There is only one thing worse than fighting with allies, and that is fighting without them." Eisenhower builds upon this statement to show how the final Allied strategy of encircling Europe and then invading the continent was a delicate compromise between the American preference for a direct blow against Hitler's Europe and the more cautious, "soft-underbelly" approach against an isolated and worn down Wehrmacht. Well-written and appropriately detailed with notes, maps, and illustrations to tell the tale of such a compromise, *Allies* is a tremendously satisfying book that is fitting for the library of any professional soldier or citizen who desires to know the story behind the story of allied success in World War II.

JIM DUNIVAN
CPT, Armor
Fort Knox, Ky.

The Encyclopedia of Nineteenth-Century Land Warfare: An Illustrated World View by Byron Farwell, W.W. Norton, New York, 2001. 900 pages, $75.00.

Warning! The dust jacket and title page of this 900-page tome should carry a notice advising the prospective reader that once this book is opened, hours may fly by before the reader is able to extricate himself from the grip of its mesmerizing pages.

The late Byron Farwell wrote numerous informative, interesting, and entertaining books on nineteenth century military history topics, including *Queen Victoria's Little Wars*, *Mr. Kipling's Army*, *Eminent Victorian Soldiers*, and *The Gurkhas*. As a result of his decades of research and writing, Farwell identified five major developments of the nineteenth century that shaped the armies and the wars they fought in. The first is the dramatic increase in world population that permitted larger armies. Technological advances, especially during the last quarter of the century, resulted in more accurate and more destructive weapons. Third, the increased lethality of weapons caused the advantage in tactical operations to shift from the attacker to the defender. Next, military education and professionalism increased as the century progressed, and last, a rise in living, health, economic, and education standards resulted in higher quality enlisted soldiers. These five factors, according to Farwell, distinguished the nineteenth century as a watershed in the evolution of warfare.

These five factors are the themes behind this comprehensive, worthwhile, and fascinating one-volume encyclopedia illuminating all aspects of warfare of the significant nineteenth century. Alphabetically-arranged entries cover battles, campaigns, and wars; military terms, concepts, and tactics; and diseases, equipment, weapons, and generalship — from "Abatis" to "Zundnadelgewehr" — and just about everything, from the prominent to the obscure, and from the major to the minor, in between. This volume is also global in coverage, including conflicts and related issues from around the world. Entries vary in length from a few sentences to more than a page. Close to 1,000 maps and (usually contemporary) illustrations and photographs superbly augment the entries and text as a whole.

The Encyclopedia of Nineteenth-Century Land Warfare is an indispensable reference work for the military scholar and the enthusiastic layman. It also permits the military professional to gain a much greater understanding of the development of the military art and to learn from the experiences of his forebears. There are nuggets of knowledge on every page, and one can literally become lost inside this book. This practical and interesting volume, appropriately the culmination of the highly successful history writing career of Byron Farwell, is highly recommended and is truly worthy of a large audience.

HAROLD E. RAUGH, JR.
LTC, USA (Ret.)

No Picnic by Julian Thompson, Cassell Military Paperbacks, 2001 (first published in 1985), 248 pages (contains maps, a glossary of British military terms and descriptions of the major equipment used in the campaign, authors preface and notes), $9.95.

No Picnic, written by Brigadier Julian Thompson, the Commander of 3 Commando Brigade at the time of the Argentine invasion of the Falkland Islands, gives a very personal account of his brigade, his concerns, and his part in a war fought by British forces some 8,000 miles away from their home base. This is not the book for those looking for strategic insight and for political questions to be answered. It is basically a soldier's tale. The frustrations felt by Brigadier Thompson have been felt, in one form or another, by commanders at all levels — the feeling that one's higher commanders do not have a feel for what is really going on, that the logistical plan for the operation is a conspiracy against the success of the mission, that the upper echelons of the chain of command is unclear and at times inappropriate. One could argue that the bigger picture is left unsatisfactorily examined. However, *No Picnic* does not pretend to give answers to the external concerns of the brigade commander, his staff or soldiers, although it does highlight some of the problems experienced. It is the story of a brigade's actions during a campaign and the parts played in it by the commander, officers, and soldiers of that brigade.

For anyone interested in the military academics, at the tactical level, of the mounting of an operation away from the home base, Julian Thompson highlights, by example, some of the fundamental truths of the profession of soldiering. The first chapter provides a good description of what constituted 3 Commando Brigade at the time, some of its personalities, and how it was alerted to the forthcoming operation. During the not unsurprising rush to recall personnel from leave, the sorting of rumor from fact, and the clarification of orders, Thompson places great emphasis on the well established, sound staff and planning procedures that we know today as the Military Decision-making Process and its constituent parts — the thor-

ough process involved in the evolution of an order, its issuing and ultimately its execution; the need for branch plans and flexibility; and the imperative of soldiers at all levels understanding the commander's intent. This last point is demonstrated by numerous descriptions of superlative actions and bravery performed by soldiers who understood the intent of the current plan: "All Commanding Officers had models made of the terrain, using whatever lay to hand — lumps of peat, pieces of canvas, rifle slings, and twigs — to assist in putting across their plans." Every element of the operation was rehearsed and rehearsed again. Detail, the commander's guidance and his involvement at all stages of the planning process were crucial to success. His descriptions illustrate how the commander was intimately involved in the building of the appropriate task organization of the brigade, placing the correct soldier with the correct skills and expertise in the right place at the right time. He describes how the staff pored over every scrap of intelligence, both about the enemy and the terrain (Intelligence Preparation of the Battlefield). If there is any doubt in the mind of any military professional that sound and detailed planning — whether it is called the Military Decision-making Process or something else — can be cut short in the production of a base order, this book dispels that view. This precise planning does not preclude the need for quick assimilation of the facts, an assessment of the situation, and swift action during moments of contact or when faced with the unexpected. This point is illustrated many times in the book, with that action often being taken by the junior NCO or junior officer.

As with any modern operation, a single service does not act alone or in isolation. The three armed services of the British forces, the Army, Royal Navy, and Royal Air Force, all played vital roles in this 'expeditionary' operation. The close interaction, coordination, and necessary understanding between all three services are superbly illustrated throughout, as is the combined arms battle. At the most basic level, he describes the importance of artillery, engineers, and helicopter support, and the ability of soldiers at every echelon to understand their workings. The fighting, he notes, "was conducted often at close quarters with grenade, rifle and bayonet and the 66mm LAW, with support from guns, naval gunfire, mortars, and machine guns."

Some may think that this is an academic study of the decision-making process, but nothing could be further from the truth. As stated earlier, this is a soldier's tale. From the outset of the book, it is felt that we are hearing from a commander who knows his soldiers well, understands their concerns, is fully aware of their capabilities and limitations, but accepts the realities of war in that ultimately soldiers are called on to fight and, if necessary, die. The battle for Mount Longdon, a night attack, is described as "a battle in which junior officers, NCOs, and private soldiers fought with courage, tenacity, and aggression." The vivid description of this battle demonstrates that decision-making must be thrust down to the lowest level — that is, the junior NCO — and not kept solely as the preserve of more senior officers.

Descriptions of individual acts of courage, quite rightly, play a large part in the book: "Marine Curtiss trod on a mine which blew off most of his foot. Corporal Cuthell picked up Curtiss, a 15-stone rugby player, and carried him on his back out of the minefield." And the description of the actions of Sergeant McKay during the fight for Mount Longdon: "McKay continued to charge the enemy position alone. On reaching it, he dispatched the enemy with grenades… McKay was killed.... For this action he was awarded the Victoria cross, posthumously." Almost every page has tales of courage and valor and makes us hope that we would conduct ourselves in the same way given similar circumstances.

The role of the two armored reconnaissance troops, or platoons, of Blues and Royals (RHG/D), equipped with the (CVRT) Scorpion and Scimitar light tanks, cannot be ignored. They had to adapt their gunnery techniques to cope with a landing from the sea by practicing firing over the ramps of their landing craft, "the heaving vehicle decks presenting a very different proposition from the firing points at the tank gunnery ranges." There are many such references to the resourcefulness and spirit demonstrated throughout the campaign by the armor crews.

As well as being a very factual account of 3 Commando Brigade's part in the Falklands war, this book brings out lessons that we ignore at our peril. Thorough planning and staff work are what soldiers deserve and need in order to succeed. However, any campaign will fail without the professionalism and inventiveness of the soldier, instilled through discipline, thorough training, good leadership, and esprit de corps.

MAJ J.R. CHARLESWORTH
British Exchange Officer
Fort Knox, Ky.

The West Wall Series, Volume 3: Bloody Aachen by Charles Whiting, Combined Publishing, 2000; 155 pages, $27.95.

The city of Aachen has a long history that dates back to the burial of Charlemagne in 814 and has seen the crowning of 28 Holy Roman Emperors. In the autumn of 1944, the 1st Infantry Division, "The Big Red One," fought against a fanatical German task force for two long months to gain the first foothold in Nazi Germany. The defense slowed the American advance and gave the Wehrmacht valuable time to prepare for their counterattack in the Ardennes. The importance of this battle will not be truly appreciated until its conclusion.

The battle was not a doctrinal, two-sided engagement but a 360-degree urban fight. Success was measured in meters and city blocks. Whiting breathes life into this multi-dimensional battle by weaving historical facts from secondary sources and anecdotes from American and German forces and a sampling of the 20,000 anti-Nazi civilians that chose to defy Hitler and remain in the city (all primary sources). Several readable maps are used throughout the book showing the progress of the battle. This element is crucial for illustrating such a fluid and often confusing engagement. The author provides a limited bibliography and cites these references as they appear in the book. The majority of the information was derived from personal testimony.

The author, Charles Whiting, is Britain's most renowned military writer, with over 250 books to his credit. Having served in WWII in an armored reconnaissance regiment that was attached to the British and American forces, he provides unique insights that most historians fail to capture. *Bloody Aachen* is an excellent book and would make a fine addition to any cavalry, armor, or infantry soldier's professional library.

BRYANT LOVE
CPT, Infantry
Fort Hood, Texas

Bernard Cornwell's Sharpe Series

Several years ago, a friend suggested I watch a show on PBS. "PBS, what's he thinking," I wondered! However, that night, I met Richard Sharpe of the British Army, and I have been eternally grateful ever since. PBS aired an installment of Bernard Cornwell's Sharpe Series. Hooked, I would read every Sharpe book Cornwell issued and purchase the video collections. I rank the Cornwell's Sharpe collection with Anton Meyer's "Once An Eagle." Richard Sharpe is a soldier's soldier in the vein of Meyer's legendary protagonist Sam Damon.

Cornwell's protagonist, Richard Shape, begins life in a harsh manner, lacking a father and with a mother reduced to prostitution to survive. It's not long before he is orphaned and enlists in the army. Sharpe's well-chronicled career in the British Army begins in India, moves to Europe, and includes the battle of Waterloo.

What makes Sharpe worthy of a comparison to the legendary Sam Damon and such a compelling read or viewing experience? Sharpe rises from the ranks earning a battlefield commission in dramatic form. A consummate warrior, Sharpe, like Damon, is a natural leader who leads by example; Damon and Sharpe's soldiers are devoted to them.

Cornwell, a fan of C.S. Forester's Hornblower stories since childhood, sought a land alternative to the sea tales of Forester and Patrick O'Brian. After discovering the tales of Wellington's army in the Napoleonic wars, Cornwell gave birth to Richard Sharpe, a warrior without a title who works his way up from the street. Cornwell notes on his web site that he, "read all of Hornblower's books and wanted to read more, there were no more, and so I began reading the history

books and so discovered the tales of Wellington's army in the Peninsula."

Cornwell's historical fiction and depiction of Sharpe function as excellent sources of small unit leadership at its finest. Sharpe molds a lethal, loyal fighting team. Cornwell is superb in his descriptions of bloody battle scenes and his compelling fiction is well researched. Sharpe a consummate warrior and soldiers' soldier is also blessed with a certain appeal to the ladies, a fact he employs to his advantage. Strangely, this appeal to the ladies extends beyond the pages of the text as my wife quickly became addicted to the video versions chronicling Sharpe's adventures.

There are 17 volumes in the best-selling Richard Sharpe Napoleonic War series, the latest titled, *Trafalgar.* I recommend Sharpe and suggest joining him early in his adventures, either in Spain or India, give *Sharpe's Rifles* or *Sharpe's Tiger* a ride.

MAJ DAVE DAIGLE
ARMOR Staff

Briefly Noted

Although the nation is currently involved in a very different kind of war, interest still continues about the victory in the Gulf War over Iraq's occupation force in Kuwait. A useful building block for detailed study of this conflict is Thomas Dinackus's highly focused *Order of Battle: Allied Ground Forces of Operation Desert Storm*, which is now available in paperback, published by Hellgate Press. Dinackus, a retired cavalryman now serving as a trial attorney for the federal government, covers all U.S. Army, Marine Corps, and allied combat arms units down to their smallest entities, and non-combat units to the brigade/group level. But beyond that, this inch-thick research goldmine includes many, many additional charts and appendices, down to full-color reproductions of unit shoulder patches. $17.95.

Another reprint worth having is *The American Arsenal*, a large-format reference book that was originally published during WWII as the official standard Ordnance catalog of U.S. equipment used in the war. The descriptions cover the obvious — like tanks, small arms, armored cars, and artillery pieces — along with artillery fuzes, mines, and shells. Each one- or two-page description accompanies photographs reproduced in that distinctive, highly air-brushed style popular in technical publications of this period. Former British Army master gunner Ian Hogg's introduction leads it off, followed by pages of facts, figures, weights, speeds, you name it. This would seem to be an invaluable aid to anyone studying the war who may not be not familiar with the equipment, and even to modelers who want every detail to be correct. This $30 paperback is published in the U.S. by Stackpole Books, Mechanicsburg, Pa.

Torsion Bar from Page 45

In his enlightening book, *The Business of Tanks*, Colonel, later Brigadier, G. MacLeod Ross refers to Robert Schilling of the Buick Division of GMC as the developer of the American tank torsion bar suspension. However, my view is that with there being so much in common with the PzKpfw III suspension (modified to include the angling of the torsion bars introduced by Porsche in the cars he designed) rather than that of the Barnes/Preston patent, it is apparent that this was the basis.

Relative to this, a highly detailed report had been published by AEC Ltd., in June 1942 for the British Directorate of Technical Development (DTD) on the PzKpw III. This included complete technical drawings, dimensions and material analysis of its torsion bar suspension.

One of the many relevant comments that Brigadier Ross quoted was that Ordnance was fundamentally opposed to accepting any design emanating from outside the U.S.A. Buick obviously wasn't so inhibited, being a commercial firm.

In view of the extremely fast introduction of torsion bar suspension following the request for same, it would appear that Buick had developed it previously on their own initiative and at their own expense, as an alternative to the Christie type, coil spring-based independent suspension.

Although it isn't known whether he may have had any influence, the civilian engineer consultant with the British Army Liaison Staff at the Tank Automotive Centre was Maurice Olley. His name struck a chord. In the mid '30s, while employed by Vauxhall Motors of England, he was behind the development resulting in converting their range of cars to using front wheel torsion bar suspension.

The draft of the Ordnance Department Historical Record for the T67 originally stated, "After work had been started on the new vehicle, the second pilot of the T67 was completed. This was sent to GM proving ground for testing of the track and suspension system. Results of these tests were so satisfactory that *this suspension system with a few modifications,* was adopted for the 76mm Gun Motor Carriage."

The words underlined were later crossed out and substituted by *"an individual sprung type of suspension system with torsion bars substituted for coil springs."* The reference to the pilot model being built by the Buick Motor Division of the General Motor Corporation was also deleted.

What is suspicious to start with is that no second T67 pilot had been authorized. As the track and suspension system of the T67 had already been proved on the T49, there should also have been no need to have it retested. If it was felt necessary to retest it on a vehicle mounting a 75mm gun and was then found to be so satisfactory, why would the suspension system then need to be changed? Even this change is then only made to sound as if the two types of springing were simply interchangeable.

While no dates are mentioned and no photographs of this vehicle have ever been uncovered, the best supposition is that this was Buick's alternative version of the T67 (most probably modified from the first pilot T57) and incorporating torsion bar suspension. This torsion bar suspension was no doubt considered superior to the coil spring suspension leading to it being slipped in the T70 authorization.

The Ordnance Department obviously wanted to take the credit of developing such a considered ideal tank suspension and at the same time divert attention away from any foreign connection; especially an enemy one. For both purposes the old Barnes/Preston patent made a convenient decoy. Its success is proven by how long it has survived and it will no doubt continue to do so, every repetition reinforcing the ploy. It isn't alone in this respect.

(*Editor's Note*: Richard M. Ogorkiewicz's encyclopedic reference, *Technology of Tanks,* credits the Germans with the first torsion bar tank suspension on Model D versions of the PzKpw II, in 1938, and E versions of the PzKpw III.)

D.P. Dyer, who lives near Falmouth, England, has contributed articles, letters, and technical drawings to military publications and modeling magazines. *ARMOR* readers may be most familiar with his detailed line drawings of armored vehicles which helped illustrate Richard Hunnicutt's series of references on American armor.

2002 Armor Conference and Armor Trainer Update

18 – 23 May 2002

"Training the Mounted Force – Sharpening the Spearhead"

DATE	TIME	EVENT	HOST/SPEAKER	LOCATION
Saturday	0900-1600	Vendor Displays Setup	DFD	Skidgel Hall
18 May	1300-1900	Registration for ATU/Armor Conference	DAS	Skidgel Hall
Sunday	0730-1600	Registration for ATU/Armor Conference	DAS	Skidgel Hall
19 May	0900-1500	Vendor/Static Displays Setup/Registration	DFD	Skidgel Hall
	0900-1700	ATU/Welcome Presentations	SACG	Haszard Auditorium
	1900-2200	No-Host Social for ATU (Induction of ARNG BDE/REGT colors)	SACG	Leader's Club
Monday	0730-1600	Registration	DAS	Skidgel Hall
20 May	0800-UTC	External Unit Scheduling Conference	G3/DPTM	Armor Inn
	0800-1200	Master Gunner Forum	Chief, MG	Richardson Hall
	0830-1645	USAARMC Command Sergeant Major's Update	USAARMC CSM/OCOA	Leader's Club
	0900-1600	ATU TASS Battalion Updates	DAS/TID	Haszard Auditorium
	0900-1630	Brigade and Regimental Commanders Meeting	OCOA	HQ Conference Room
	0900-1700	Subject Matter Expert Briefings	Varied	
	0900-1700	Vendor/Static Displays	DFD	Skidgel Hall
	1030-1400	Honorary Colonels and SGMs of the Regiment	OCOA	Rivers Auditorium
	1600-1900	Golf Classic Food and Prizes	DCFA	Gallotta's Restaurant
	1900-UTC	Pre Golf Classic Icebreaker Social	DCFA	Gallotta's Restaurant
Tuesday	0730-1600	Registration	DAS	Skidgel Hall
21 May	0800-1200	Master Gunner Forum	Chief, Master Gnr	Richardson Hall
	0815-1400	7th Annual Golf Classic (0815-Lindsey/0915-Anderson)	DCFA	Golf Courses
	0900-1515	Subject Matter Expert Briefings	Varied	
	0900-1700	Vendor/Static Displays	DFD	Skidgel Hall
	1630-1830	CG's Garden Party -Inclement weather location-	MG Whitcomb	Quarters One Leader's Club
	1900-2100	Regimental Buffet and Assemblies - Presentations/Dedications/Ceremonies	OCOA	Leader's Club
Wednesday	0730-1600	Late Registration	DAS	Skidgel Hall
22 May	0800-1700	Vendor/Static Displays	DFD	Skidgel Hall
	0800-1000	Sr. Leaders/VIPs Walk Through of Displays	CG/DCG/DAS/CSM	Skidgel Hall
	1000-1015	Announcements/Conference Intro Video/ Chief of Armor Introduction	LTC Pratt	Haszard Auditorium
	1015-1115	Chief of Armor Update	MG Whitcomb	Haszard Auditorium
	1115-1145	Armor Association Meeting	Armor Association	Haszard Auditorium
	1145-1245	Lunch	Individual Preference	
	1245-1300	Presentation of 8th Annual Franks Award	TBA/MG Whitcomb	Haszard Auditorium
	1300-1730	Keynote Presentations (with intermittent breaks)	TBA	Haszard Auditorium
	1830-1930	Cocktails	Armor Association	Leader's Club
	1930-UTC	Armor Association Banquet	TBA	Leader's Club
Thursday	0830-0840	Admin Announcements	LTC Pratt	Haszard Auditorium
23 May	0840-0955	Keynote Presentation	TBA	Haszard Auditorium
	0900-1300	Vendor/Static Displays	DFD	Skidgel Hall
	1005-1135	Keynote Presentation	TBA	Haszard Auditorium
	1200-1330	Chief of Armor Luncheon	TBA	Leader's Club
	1330-1345	Closing Remarks	MG Whitcomb	Leader's Club
	1430-1600	Armor Conference Awards Ceremony	MG Whitcomb/G3	Haszard Auditorium
	1615-1700	Command Group Photo	MG Whitcomb/SGS	Brooks Field Flag Pole

An expanded schedule will be available at registration or you can get up-to-date information at the Armor Conference website: *www.knox.army.mil/arconf*

2002 Armor Conference

"Training the Mounted Force – Sharpening the Spearhead"

Armor Conference 2002 is scheduled for 18-23 May and, as always, will present an excellent opportunity for professional development and discussion on a wide variety of topics. Also scheduled are several social events for attendees to enjoy, the Golf Classic, and a variety of vehicle and vendor displays to round out the experience.

The 2002 conference theme, "Training the Mounted Force – Sharpening the Spearhead," alludes to the Chief of Armor's intent to place particular emphasis on training the mounted force. We will present, as well as solicit, ideas and lessons learned in such areas as IET standards/looks to the future, experiential vs. process-based training (Gauntlets), and use of computers in the classroom. This includes lifelong learning/distance learning initiatives that span the gap between the schoolhouse and units in the field, and the use of training aids, devices, simulators, and simulations (TADSS) to enhance training in live, constructive, and virtual environments. The Armor Center recognizes leadership development as the key to future battlefield success and, as such, is always in search of new and better ways to train multi-skilled soldiers and adaptive leaders for a wide array of twenty-first century warfighting contingencies.

The Armor Trainer Update (ATU), scheduled for 19-20 May, will again be the kick-off event to the annual Armor Conference. Armor and Cavalry leaders and trainers from Army National Guard mounted formations and Army Reserve Divisions (Institutional Training) are anticipated to attend the two-day ATU, held in conjunction with the Annual External Unit Scheduling Conference, conducted by the Fort Knox G3/Directorate of Plans, Training, and Mobilization (DPTM). As in years past, the ATU has shared the most current information on programs, priorities, and initiatives affecting the Armor/Cavalry Force, and this year will be no exception. This year's ATU will feature presentations and discussion from a distinguished group representing the National Guard Bureau, the 256th IN Bde (M), and the Fort Knox Team, to include the Fort Knox/Armor Center commanding general and command sergeant major, the Armor School, 16th Cavalry Regiment, 1st Armor Training Brigade, and the Office of the Special Assistant to the CG-ARNG. This year's ATU TASS Battalion Update, 20 May, will focus more on identifying and fixing problems. The Armor proponent will present additional critical information affecting courseware and regional accreditation, and an extra half-day will be scheduled to discuss Title XI concerns. We hope you are able to attend this important training update as the ARNG and USAR continue to take on increasing roles in meeting the Armored Force's mission requirements.

On 20 May, G3/DPTM will conduct the Annual External Unit Scheduling Conference at the Armor Inn. Army National Guard, Reserve Component, External Active Army, and other service branches will have the opportunity to schedule the Armor Center's premier facilities for training.

Also scheduled for 20 May are three by-invitation-only meetings. The Brigade and Regimental Commanders Meeting, the Armor Center Command Sergeant Major's Update meeting, and the Honorary Colonels and Sergeants Major of the Regiment meeting. If you are interested in attending one of these meetings and are not sure if you will be sent an invitation, please contact the Office, Chief of Armor (502) 624-1439/5155/1277 for information.

There will be a variety of Subject Matter Expert (SME) Briefings 20-21 May. The briefings will provide updates, overviews, and discussions on numerous topics, including IET/NCOES/OES training, doctrine updates, mounted training strategy, weapon systems, and a TACOPS demonstration. In addition, there will be Advanced Distributed Learning (ADL) workshops scheduled both days.

Armor Conference Keynote Speaker presentations are scheduled for 22-23 May, and MG Whitcomb has invited some of the Army's senior leaders to present updates and presentations reinforcing their perspectives on modern mounted warrior and leader training, and mounted force mission requirements.

Continuing the recognition of contributions made to the Armored Force, MG Whitcomb will present the eighth annual Frederick M. Franks, Jr. Award on, 22 May, day one of the Keynote Presentations. Last year, the award was presented to LTC Peter W. Rose II for his numerous contributions to the mounted force over a 24-year period. Award nominations are open to any mounted active duty or reserve officer, noncommissioned officer, or Department of the Army civilian who has demonstrated a longtime contribution to the ground fighting and warfighting capabilities of the Army. Any soldier in the Army may nominate another soldier or DA civilian for the award. Nominations are submitted in open format; however, at the very least, they will be in the form of a detailed letter to the president of the panel discussing the achievements of the nominee. For more details, contact the Armor Conference coordinator, *Douglas.Kennedy@knox.army.mil* or visit the conference web site *www.knox.army.mil/arconf.*

During the entire week of the conference, there will be displays of some of the defense industry's newest military equipment offered to, or in use by, the Army, along with static vehicle displays provided by local and/or nearby units.

One administrative note: Due to the current threat condition/force protection measures, all those not stationed at Fort Knox who plan to attend the conference are advised to be prepared to present military/DOD ID card or driver's license, vehicle registration and proof of insurance, and be prepared to have your vehicle searched prior to entering the installation.

The Armor Center's annual Armor Conference continues as a great opportunity for the mounted community and associates to gather professionally to highlight the greatest mounted force and to enjoy the camaraderie of colleagues, friends, and acquaintances. We hope to welcome you to Fort Knox in May.

Event	POC	Phone*
Armor Conference	SFC Douglas Kennedy	(502) 624-7364
Armor Trainer Update	COL Randal Milling	(502) 624-1315
CSM Update	SGM Rollie Russell	(502) 624-1321
Ext. Scheduling Conf.	William Rosacker	(502) 624-3555
Contractor Displays	Kim Thompson	(502) 624-2708
USAARMC Protocol	Jack Eubanks	(502) 624-6615
USAARMC Protocol	Sherry Cart	(502) 624-6103
Armor Association	Connie Stiggers	(502) 942-8624 No DSN
VIP Billeting	Reservations	(502) 624-6180
On-post Housing	Carolyn Burton	(502) 943-1000 DSN 464-3491
Golf Scramble	Golf Manager	(502) 624-4218

* DSN Prefix: 464

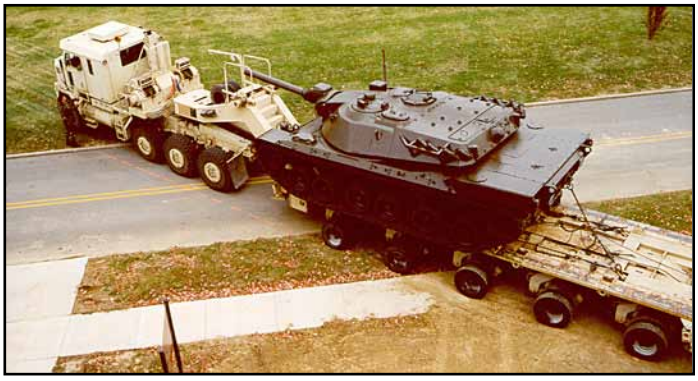
Special Delivery

Among the finishing touches to Sinclair Hall, *ARMOR* Magazine's new home at Fort Knox, was the placement of two static displays at the corners of the building facing Brooks Field. One of them was the prototype for the XM-803, a 1970's design that grew out of a joint U.S.-German effort to build a common main battle tank, the MBT-70 Project. The XM-803 was an attempt to salvage the project when the Germans dropped out, but funding was cut off when it was decided that even the simplified XM-803 design was too complex. Many of the lessons learned on the XM-803 were applied successfully to the later M1 Abrams design.

The problem with placing the tank on its circular concrete pad was that the tank had no engine, so it would have to be rolled into place carefully.

The building contractors prepared the way by spray painting dotted lines across the street and continuing onto Brooks Field to help the HET driver line up his trailer. After several unsuccessful approaches, the trailer was lined up and its 10 hydraulically adjustable wheel stations were set so the trailer was perfectly level. Then the ramps were dropped and the XM-803 front towing points were attached to winch cables on the HET. Another cable from a backhoe was attached to the rear of the XM-803, allowing the backhoe to slowly pull the tank off the trailer and down the ramp while the HET's winch cables kept it from rolling out of control. It took several hours to winch 56 tons of engine-less tank into place.

- Armor Staff



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