

ARMOR



The Medium Gun System Platoon: A First Look *See Page 7*



Saddle Up... Tonight We Ride

"Though this be madness, yet there is a method in't." — Hamlet

Well, what do ya' know, June 14th came and went without the volcanic eruptions, tidal waves, or mass mutinies promised by some over the donning of black berets. What are the repercussions of last October's infamous beret announcement and this past June's donning? It takes those of us who have never worn the beret a bit more time to put it on, and certainly there has been pain involved in watching and correcting the many interesting ways some of us have worn it, but life has gone on. My personal fashion experts (read older daughters) have given the beret a thumbs-up over the BDU cap, describing the beret with their favorite modifier, "cool." An additional fallout from the switch is that soldiers driving POVs now keep their covers on. Previously many of us whipped the BDU cap off once inside a POV; now, given the amount of time it takes for new beret wearers to put it on correctly, it's easier to simply leave the beret on.

The amount of press, angst, anger, and controversy over the decision and execution of beret-donning fascinated me. Granted, there were a few less-than-brilliant public affairs decisions that thickened the plot: the announcement that a rites of passage test would be required to earn the beret, followed by a quick recantation. And the revelation that China supplied many of the berets, this on the heels of the P-3 downing. (Apparently, there are now literally thousands of these berets languishing in a warehouse somewhere, looking for a home.) Swept up in the beret controversy, it seemed to me, many of us misread the demonstration as the main effort while the OPFOR's main body swept around our flanks. In the midst of a revolution in the Army, one that impacts dramatically on the mounted force, many were more concerned about a change in the Army's headgear.

There is much going in the Army as it advances along three axes toward transformation. The nuts and bolts of the objective force, interim force, and legacy force should dominate professional discussions. As we speak, Interim Brigade Combat Teams (IBCT) boasting the Interim Armored Vehicles are standing up. The IBCTs contain Medium Gun System platoons (see LT Hurley's article, p. 7) and a new cavalry organization. The ripples from the IBCT wave are being felt throughout our branch, impacting the mounted force in manning, doctrine, etc. The Interim Force also includes planning and development for an interim cavalry regiment, an organization that will serve today's corps and later shape cavalry forces in the objective force.

With regard to the objective force, the tip of the transformation spear, dialogue ought to be focused on the Future Combat System (FCS), which will serve as common platform for all the battlefield functional areas. We know the defining characteristics of this system — simply said, it should do everything and not weigh anything — and this should make for some interesting discussions.

Which brings us to the final piece of the triad, the legacy force. LTC Dave Pride does an outstanding job in this issue (p. 39) illustrating the relevancy of this force. Pride points out that the Abrams tank will continue to evolve via upgrades, and that tankers will cross LDs on this tank until 2031. There is a tremendous amount of activity with the legacy force, again a lot of grist for the mill.

So with the beret controversy in our dust, it's time to glance toward the horizon and sort out the future of mounted warfighting.

— D2

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September-October 2001, Vol. CX, No. 5

Features

- 7 **Medium Gun System Platoons: A First Look at a New Kind of Unit**
by Second Lieutenant Brian P. Hurley
- 11 **Plow Platoon Operations**
by Captain Patrick A. Callahan
- 14 **Kasserine Pass and the Necessity of Training**
by Captain James Dunivan
- 17 **Obtaining Maximum Effectiveness from Your Chemical Assets**
by Captain Tom Duncan
- 21 **The Secret Museum at Kubinka**
by James M. Warford
- 23 **An Easy Way to Cut the Cost of Live-Fire Gunnery Evaluation**
by Dr. Joseph D. Hagman
- 25 **Busting the Barricades:
How Armor Was Employed in the Urban Battle of Seoul**
by Captain Matthew H. Fath
- 30 **Modernizing India's Tank Fleet**
by Lieutenant Colonel Mark A. Olinger
- 36 **Tank Myths**
by Charles M. Baily
- 39 **The Abrams Tank, Fulcrum of Army Transformation**
by Lieutenant Colonel Dave Pride
- 42 **1-12 Cavalry Fields New Abrams M1A2 SEP Tanks**
by Specialist Jonathan Del Marcus
- 43 **How to Build a Successful Scout Platoon**
by Sergeant First Class Shawn E. Wallace
- 45 **A Search Operation in the Zegra Valley**
by Trooper M. T. Llewellyn, British Army
- 46 **The Adventures of a Liaison Officer at the NTC**
by Captain Clinton D. Alexander

Back Cover **Type 98 Chinese Main Battle Tank Poster**

Threat Branch, Directorate of Force Development

Departments

- | | | | |
|---|--------------------------|----|----------------------|
| 2 | Contacts | 6 | Driver's Seat |
| 3 | Letters | 50 | Reviews |
| 5 | Commander's Hatch | | |

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Russia in Chechnya: A Second Look

Dear Sir:

CPT Geibel's recent article, "Some Russian Tankers' Experiences in the Second Chechen War" (*ARMOR*, July-August 2001), ultimately presents a fuzzy picture of the modern Russian Army, its capabilities, and its shortcomings. Since CPT Geibel does not speak or read Russian, he is at the mercy of what English-language materials are available, and most of those are sorely lacking a good assessment of what has taken place within the Russian Army over the last nine years.

To provide a better understanding for the readers of *ARMOR*, and so that they can place the events described by CPT Geibel in proper perspective, a short background on the history of the Russian Army is required, as well as the framework of how it fits into the events which have taken place in Chechnya.

In 1992, Russian military writers such as Colonel Anatoly Dokuchayev gave an outline of how the new Russian Army planned to fight in the future. Most forward thinkers saw the days of the Soviet "hordes" as over, and the main problem would then be "Local Wars and Regional Conflicts." To engage in these military engagements, the view was to cut the Army drastically from its Soviet days of over 200 divisions down to only around 50 or so. Most of the divisions were to be reorganized into brigades, with more artillery and support assets, and would fight under the direction of a corps or army headquarters (which had the command and control assets to run major operations). They were also to include, if necessary, forces from other branches of the armed forces (e.g., VDV, Naval Infantry, Frontal Aviation, etc.) and troops from the other 12 ministries that had military or paramilitary formations (MVD Internal Troops, Border Guards, Railway Troops, Ministry of Emergency Situations, etc.)

These formations were to fight as "*Gruppirovka*" — a Russian word which means "Force Grouping," but in the U.S. sense approximates a task force. Each *gruppirovka* would form "*Gruppa*" or battle groups that were tailored for specific missions, and would prosecute them as required. The *gruppirovki* would be commanded under an "*Ob'yedinyonnaya Gruppirovka*" headquarters, or what U.S. planners would call a joint task force. On paper, this seemed to be a modern and functional method of conducting combat, better suited for operations like Desert Storm than the ponderous WWII fronts which the Soviets planned to use.

Unfortunately, all this requires training — from the soldier skills at the bottom to the command employment at the top. This was not done, partially because the Russian Army suddenly found itself without a budget, and partially because the bureaucrats from the "Arbat Military District" — the General

Staff — wanted no part of such changes. For two years, the Russians argued about these changes in their professional journals and writings. But in December 1994, when President Yeltsin ordered the crackdown on the Chechens, it was put to the test and found seriously wanting.

Part of the problem here was a lack of training at all levels. Troops who were sent to Chechnya had in many cases only just arrived for their mandatory conscription service. As a result, they had only been through about half of what U.S. soldiers would consider basic training. Since Russian planners wanted to conserve their "good stuff" — the 6,000 tanks that they considered to be combat worthy against the West — older models were pulled out of depot storage and issued to troops. As a result, few tankers were trained on any of the systems they would have to fight in, and even trained ones were assigned to the wrong tanks. Trained T-72 drivers wound up in T-80BV tanks, and T-80 tankers in T-72As. Crews were thrown together and had to train and become familiar with each other during the road march to Groznyy.

All of this was compounded by two major errors at the top. First off, all units assigned were kept on peacetime relationships, not wartime. Under wartime regulations, all troops in a given area belonged to the designated commander. Under peacetime, they still were responsible to their own chains of command. This was true with the VDV units sent into the country, as well as the MVD Internal Troops units, which comprised some 40 percent of the original troops deploying (15,000 out of 38,000).

Secondly, the North Caucasus Military District commander organized the operation as a classic Soviet front, with too many levels of command for the forces deployed. The result was an unmitigated disaster, highlighted by the nearly complete destruction of the 131st Independent "Maykop" Motorized Rifle Brigade and the 81st Guards Motorized Rifle Regiment on New Year's Eve 1994-95.

Most of CPT Geibel's anecdotes on failings apply to this war, not the current one. The Soviets had a very good system of long-term conservation and storage, but it relied on skilled depot-level preparation and storage of equipment to work properly. This is why in 1991 Lieutenant General Dmitry Volkogonov noted that the Soviet Union, at the moment of its breakup, had 77,000 tanks on its books, albeit in various states of operational service or repair. In the breakup, most of the restoration factories — charged with the depot-level rebuilding and some of the storage work — were lost to Belarus and Ukraine. As skilled personnel left in the drawdown, many vehicles had to be stored by use of troop labor. These personnel were untrained in proper preparation of vehicles, and as a result, when the tanks were drawn out of storage, many of them failed nearly at once. Colonel General Sergey Mayev, head of the Tank and Automotive Directorate of

the Russian Army, (GABTU), stated on several occasions that this was the primary reason for their failures and problems. Tanks which should have taken six hours to prepare for combat now took seven to nine days, and frequently suffered failures of key systems shortly afterward (cooling being the number one problem with the T-72s and BMPs). Improperly stored batteries — another major weakness of Soviet-era tanks, as there were never enough of them around for proper rotation and stowage — also died quickly, forcing the troops to replace them under very trying conditions.

The T-80BV tanks used by the "Maykop" Brigade had no explosive plates in their reactive armor boxes (actually just a protective shield over the 4S20 explosive plates), and as a result had no chance against skilled Chechen antitank teams firing down on them from buildings. The image of a T-80BV, with a few boxes still visible on its glacis, blown completely apart near the train station in Groznyy sums up the total waste of the attacks by these forces and units. Whether they were stolen — or simply not installed as nobody thought to do that — is anyone's guess. The vehicles were also using "Winter" fuels, with a shot of naphtha added for thinner to ease flow and starting, which caused the diesel fuels to ignite much more readily when hit by HEAT projectiles.

To comment on CPT Geibel's quote that prior to Chechnya-2, ERA plates were removed from T-72BM or T-90S tanks and sold on the "Black Market," he does not appear to understand how the ERA they use differs from the circa 1983 ERA version used in Chechnya-1. The T-72BM, T-80U, and T-90S tanks use what the Russians call "Built-In Reactive Dynamic Protection." This is a newer design of reactive armor, fully integrated into the design of the tank, which can defeat both HEAT and sabot projectiles. The T-72AV, T-72BV, T-64BV, and T-80BV all use "Attached Reactive Dynamic Protection," which is attached to studs welded to the outer surface of the tank. In most cases, commanders had the studs and boxes mounted on the tanks, but the 4S20 plates were stored separately, not to be issued and mounted except in case of war. It is very difficult, if not impossible, for troops to remove the ERA plates from either a T-72BM or T-90S to sell those items.

Over the course of the war, the Russians solved most of their command and control problems and tried to provide additional training for the soldiers who would fight in Chechnya. The only solution they found for using tanks was to avoid using them in city conditions unless they had sufficient infantry to provide protection. One tactic they did use with success was the "Fire Carousel." The T-72, and the T-80 as well, are very good when their autoloader is working, but very tedious and awkward to use without it or when the ammunition carousel goes empty. It can take up to 45 minutes to reload a T-72's 22-round carousel, and until that point in

time, the tank is relatively helpless. This tactic saw them bring up one tank at a time — keeping it head-on to the Chechens to prevent shooting down on the tank — and firing up all of the 22 rounds in the auto-loader. When the tank went “dry,” it would reverse out of position and a new tank with a full load would move up to take its place. Using this tactic, the Russians were able to clean out nests of Chechens with success, but were still limited by the 45 minutes each tank would be out of action when empty.

T-62s began to be issued to troop units at the end of Chechnya-1. The reason for this was simple. These tanks had proven themselves in Afghanistan and were far better for the types of conditions found in Chechnya. They had been the last tanks to undergo a full depot rebuilding. (This is due to the fact that they were around 20 years old. A Soviet regulation called for this with all serviceable tanks to extend their life as reserve tanks for another 20 years. Each tank received a completely new engine, suspension components, tracks, electronics, and upgrade items such as laser rangefinders, BDD armor applique packages, and in a very few cases, the 1K13 sight and 9M117 “Sheksna” missile system.)

The T-62, with its five-speed manual transmission and lower stressed engine, was found to be superior in the mountains over the T-72 with its seven-speed and turbo-charged diesel. However, these tanks did have their limits and were not a total panacea. They did have the advantage of a fourth crewmember, making self-repairs easier and also providing another set of eyes to keep watch on the Chechens. The BDD armor, consisting of varying types of plates encased in a resin matrix and a ceramic filler inside the turret “eyebrows,” was capable of dealing with all of the HEAT weapons used by the Chechens except captured RPO “flamethrowers.”

A word on the RPO, which has come to the fore in Chechnya as a particularly nasty and brutally effective weapon. The Russians call it a “flamethrower” but it is more accurately described as a “volumetric” weapon, a class of weapons which use expanding gases or aerosols to cause their effects. The RPO is a “thermobaric” weapon; thermobarics are essentially slow-burning explosive slurries that compound the damage they cause in three ways. First, they burn very slowly for an explosive, causing much greater dwell times of their explosive impulses on a target. (To give a comparison from nuclear training, the human body can take an instantaneous overpressure of about 200 psi and survive; but as little as 15 psi over a longer time crushes the vital organs and kills the victim. This longer “dwell” is the first killer factor in thermobarics.) Second, the burning plasma cloud can penetrate even the smallest cracks and enter inside a vehicle or other stationary object, such as a house or pillbox. Finally, when the slurry is totally consumed, the resulting vacuum causes a massive

backblast which crushes nearly everything in the area. They have also been called “Vacuum Bombs” by the Chechens, who fear them for the damage they can cause. They are quite dangerous to armored vehicles, as they can penetrate the engine bays or via NBC filtration systems and cause havoc inside the fighting compartment.

The Second Chechen War (“Chechnya-2” in some areas) saw a great deal of changes in Russian planning, thinking, and training. First off, the decision was made that no unit would deploy to Chechnya until it had completed six months’ training (one training cycle). What many people forget is that on the still-in-force Soviet two-year conscription cycle, only 50 percent of a unit is truly trained and deployable at any one time. Twenty-five percent are in each cycle; the 1st cycle is too new and the troops in the 4th cycle (e.g., the one prior to release) are usually either too close to release to be effective or, in the case of Chechnya, already gone. (To ensure a desire to serve, troops in Chechnya receive two days’ service credit for each day in Chechnya; ergo, some troops can complete their two-year stint in 15 months.)

Few of the units cited by CPT Geibel deployed in full measure to Dagestan or Chechnya-2. Due to their lessons learned from Chechnya-1, only part of a unit’s tanks was actually taken into the republic in comparison with unit TO&E strengths. The main difference in Chechnya-2 was the fact that tank crews had trained together, and were using the tank they trained on. This provided a much better chance for survival as well as better combat performance.

Still, the main problems with Russian training — another Soviet-era holdover — remained. Troop training, even for Chechnya, was done in a *pro forma* style which did not train crews to function in new situations or when left to their own devices. Maintenance skills were still poor, and readiness rates were not as high as they should have been. Also, sergeants were identified based on either schooling or estimated levels of ability, and were not fully trained NCOs in the American mold. Whereas a U.S. soldier may take four years to make sergeant E-5, the Russians were appointing them after only a period of time as little as 12 weeks. Also, junior officers were in critically short supply; no one wanted to serve in Chechnya, and those who went in many cases were conscripted out of college for a two-year active duty stint. Their experience and knowledge were no higher than their troops, which given the lack of a true NCO corps, placed all of them at risk.

Innovations were tried to minimize losses. One of these was the concept of “Reconnaissance Fire Operations,” an outgrowth of the Cold War-era “Reconnaissance Fire Complex” and the “Reconnaissance Strike Complex.” In this tactic, all of the fire support assets — missiles, rockets, artillery, helicopters, and fixed wing aircraft — are coordinated by a single authority and used to first

isolate enemy forces and then destroy them. Tanks were used in this manner to assist in the cordoning operations, but did not participate in the destruction by fire of the enemy. The new rule of thumb for Russian commanders is that if you find yourself in small arms range, then you have failed to carry out the tactics correctly.

While losses among the Army units have been far fewer, casualties overall have been about the same. Chechnya-1 saw the Russians take 57,000 casualties — 5,500 KIA or died of wounds, 16,000 WIA, and 35,000 sick or injured. LTC (Ret.) Les Grau of the Foreign Military Studies Office at Fort Leavenworth has a 900-page study on the history of the 40th Army in Afghanistan which he is painstakingly translating into English; the main problem the Soviets suffered from in Afghanistan was, as in Chechnya-1 and -2, sickness and ill health caused by poor field sanitation and support. Casualties in Chechnya-2 are less reliable at the moment, but from all published reports, they appear to have taken in excess of 4,300 KIA, 13,000 WIA, and an average of 40 personnel a day diagnosed with various illnesses or injuries.

CPT Geibel has glossed over the main problem suffered by Russian tankers in Chechnya-2, namely remote-controlled mines. Few pitched battles with armor have taken place in this war. As a result, the Chechens have discovered the only way to defeat them is with remote-controlled explosive devices, such as a 152mm projectile buried in a road, as they have rarely been able to close to RPG range. They have also discovered that if you shoot a Ground Forces or VDV soldier, artillery and aircraft will visit the nearest village and flatten it. If you shoot an MVD soldier, he just dies. More casualties are now being taken by the MVD Internal Troops and Militia (police) than by the Army.

The Russian Army is also unlikely to see some of its wishes fulfilled in the near future (through 2005-2010). CPT Geibel’s statements on missile developments are essentially true, but in the context of their priorities for the Armed Forces, unlikely to be seen by Russian soldiers. Few of the tanks being used in Chechnya have through-the-tube missile capability due to a number of factors. First is the cost; only about 1 in 3 Soviet-era tanks were ever assessed to have it (there were more B1 versions of the T-64, T-72, and T-80 than B versions; the Bs have the missile capability, the B1s do not). Secondly is the training problem, and few gunners are proficient on their weapons now without adding the additional load of missile flight control. Lastly, they do not have the personnel to fix and maintain these systems, and thus cannot handle the extra materiel problems caused by new equipment.

As they see local wars and regional conflicts being their main problem, the new tanks forecasted are also unlikely to come

Continued on Page 48

Changing While Remaining the Same

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

Returning to Fort Knox as the Commander and 39th Chief of Armor is a true honor and privilege for me. I am very excited at rejoining a team of dedicated professionals that serve the most lethal and decisive force in the world. One of the things that I have observed during my career is that units never stay the same, they either get better or they get worse. In an effort to make things better, some people believe that you have to change them. I disagree. Sometimes the hardest thing to do is to figure out what needs fixing and what needs to be left alone. While I have only been away from the "Home of Cavalry and Armor" for two years, I am amazed at what has been changed and at what has been left the same.

What has changed, or evolved, is the way training is done here and the training infrastructure. The creation of multi-echelon, multi-grade training by the 16th Cavalry Regiment is ahead of its time. This training, which links captains, lieutenants, and noncommissioned officers in demanding training events called *Gauntlets*, will revolutionize training at the institutional level. Fort Knox has invested heavily and is an Army leader in all three training domains (live, virtual, and constructive). Not surprisingly, the training intensity for everyone who trains at Fort Knox has increased. Our MOUT Zussman Range Complex site is state of the art and, when finished, the entire Wilcox training area will be the best light-to-medium training area in the Army. Further, technology has been incorporated into our classrooms in exciting and innovative ways. For any one who hasn't walked through Skidgel Hall lately, I will tell you that the classroom facilities are far ahead of any university in America.

What has not changed at Fort Knox is the focus on producing competent, confident, and adaptable Armor leaders. From initial entry soldier (IET) training to the pre-command courses, the quality of instruction remains the key. The 1st Armor Training Brigade's focus on

instilling basic soldier skills has led them to develop an outstanding basic marksmanship and physical training program for our Army. The NCO Academy was recently accredited by the Sergeants Major Academy. Our Futures staff continues to provide solid, cutting-edge doctrine; the best equipment and platforms; and superior training systems.

As I assume the responsibilities of Chief of Armor, I want to thank LTG Bell for the improvements that he has made and for the things that he has preserved. He leaves behind a team that can address issues as complex as the Unit of Action for the Future Combat

System or the Interim Cavalry Regiment while never forgetting the purpose for their existence. LTG Bell has left your Branch home postured to lead the Army into transformation and the challenges of the future. This unit has gotten better!

I look forward to running with the baton that he has passed. We remain focused on supporting our field commanders with the best trained soldiers and leaders, the best training facilities, the best doctrine, the best training systems, and our finest intellectual effort for the challenges of tomorrow.

FORGE THE THUNDERBOLT AND STRIKE FIRST!

Major General R. Steven Whitcomb assumed his present duties as Commanding General of Fort Knox, Ky., on 3 August 2001. His last assignment was as the Assistant Chief of Staff, C3 (Operations), Republic of Korea/United States (ROK/US) Combined Forces Command, Assistant Chief of Staff, J3 (Operations), U. S. Forces Korea and Deputy Commanding General (Operations), Eighth U.S. Army.

General Whitcomb was commissioned a lieutenant of Infantry upon graduation from the University of Virginia in 1970. Following graduation from the Infantry Officer Basic Course, he served as a rifle platoon leader, weapons platoon leader, and executive officer in Company C, 2d Battalion, 508th Infantry (Airborne), 82d Airborne Division. Branch transferring to Armor, he next served in the Federal Republic of Germany as a Tank Company Commander, Company B, 3d Battalion, 64th Armor and Company Commander and Battalion S1, 2d Battalion, 64th Armor, 3d ID.

Following completion of the Armor Officer Advanced Course, he served as Assistant Professor of Military Science at California State College, where he obtained a Masters of Education degree in Counseling. After attending the Counter Intelligence Officers Course at Fort Huachuca, Ariz., he was the Battalion S3, 524th Military Intelligence Battalion, Republic of Korea. Upon completion of Command and General Staff College at Fort Leavenworth, Kan., he served as the 2d AD Deputy G2 and as Battalion S3 and XO, 3d Battalion, 67th Armor, 2d AD.

Following assignment as Aide-de-Camp to the Commanding General, III Corps and Fort Hood, he returned to Fort Leavenworth as a Staff Leader at the Combined Arms and Services Staff School (CAS3). He was posted to Germany where he commanded the 2d Battalion, 70th Armor, 1st AD, deploying the battalion to Operation Desert Shield and Desert Storm. He attended the Army War College and was then assigned to the Office of the Deputy Chief of Staff for Operations and Plans as the Chief, Western Hemisphere Division, Current Operations.

Major General Whitcomb commanded the 2d Brigade, 24th Infantry Division at Fort Stewart, Georgia. He was again assigned to ODCSOPS as the Chief of the Combat Maneuver Division, Force Development. Major General Whitcomb then served as the Executive Officer of the Vice Chief of Staff, Army. He was previously assigned as the Assistant Division Commander, Maneuver for the 1st Cavalry Division, serving with the division in Bosnia. He was then assigned as the Deputy Commanding General, United States Army Armor Center, Fort Knox, Kentucky.

Transforming the Force: How Will It Impact Me?

CSM Carl E. Christian, Command Sergeant Major, U.S. Army Armor Center

The Army recently designated the next four Interim Brigade Combat Teams (IBCT) as part of its continuing transformation. Three of them will be part of the Regular Army and one will be in the Army National Guard. As each IBCT stands up, the changes will have a major impact on the armor force personnel structure, so I want to share with you how this announcement is likely to affect you, your career opportunities, and the armor force in general.

Two years ago, to meet the changing MTOE requirements of the Force XXI structure and the creation of the first two IBCTs at Fort Lewis, Washington, the armor force was forced to reduce the number of 19K armor crewmen and increase the number of 19D cavalry scouts. We choose to meet this requirement by retraining 19K soldiers to 19D scouts to better balance the force, retain quality armor soldiers in the Career Management Field (CMF), and reduce accession requirements. Although we needed 258 19K Skill Level 10 soldiers to volunteer to make the conversion, ultimately over 250 19K10 soldiers had to be involuntarily selected to convert to 19D. The program was not the success we had hoped for, nor did the soldiers and their leaders receive the program well. The basic problem was that soldiers and their leaders did not fully understand the necessity for the program and its future ramifications on their development and the armor force.

As we move forward with transformation, we do not foresee doing another involuntary reclassification program. We have been working this now far enough in advance, in approximate numbers, to create a better understanding of the needs of the force. Soldiers and leaders, however, will be affected, but they should leverage the opportunities presented and not be wary of them. The first of the new IBCTs is the 172d

Infantry Brigade (Separate) in Alaska, which will transform no later than FY 2003. The creation of the Reconnaissance, Surveillance, and Target Acquisition (RSTA) squadron and the insertion of the Mobile Gun System (MGS) platoons into the brigade translates to 143 19Ds, 91 19Ks, and 5 19Zs. The nucleus of this force will come from E Troop/1st Cavalry.

The additional MOS allocations are good news for the armor force. The 2d Armored Cavalry Regiment (ACR), at Fort Polk, Louisiana, will transform no later than FY 2004, and the 2d Brigade, 25th Infantry Division in Hawaii will transform no later than FY 2005. This brigade will see the same MOS allocations as the 172d Brigade; however, they will have no cavalry troop to grow from, so some personnel may come from other 25th Infantry Division units.

The 2d ACR's transformation will be a little more complex. The 2d ACR will gain 201 19K positions and one 19Z position, while losing 112 19D positions as they transition from HMMWVs to LAV3s and MGSs.

It is obvious the armor force will have to grow in personnel to meet these requirements. Recruiting Command will access more CMF 19 soldiers and the training base at Fort Knox will flex to handle the additional soldiers. The additional 19D and 19K requirements will equate to about one additional fill per year for each of the One Station Unit Training (OSUT) battalions. The Skill Level One soldiers for the new IBCT will not come just from the 1st Training Brigade. Many will come from existing units in order to get a good cross-level of experience in the organizations. The 19Ks in the IBCTs will gain the Additional Skill Identifier (ASI) of R4. The Master Gunners will get an R8 ASI. We will use these to track our trained base. We will not "lock" 19D or 19K soldiers into the IBCTs. For career pro-



gression, armor soldiers will migrate back to legacy force units and other assignments.

Not only must we increase the number of Skill Level One soldiers in the force, but also the numbers in all skill levels. It will be incumbent on the units to coach, teach, and mentor their quality soldiers to develop the noncommissioned officers needed for the force. Additionally, the crew configurations of the LAV3 and MGS mean a higher NCO-to-soldier ratio in these new units. The increase in noncommissioned officers will translate into a need for more to attend NCOES schools. The NCO academy at Fort Knox will ensure that every NCO has the opportunity to attend the appropriate school in a timely manner for soldiers to meet their promotion requirements. We will stabilize the soldiers in these IBCTs during the transition phase to meet the needs of the unit and to ensure that the NCOs are able to meet the branch qualification standards necessary for promotion.

Alaska and Hawaii are two locations that have, in the past, offered few positions for 19Ds and 19Ks. Many armor soldiers will soon have their first opportunity to be assigned there. There will be many new challenges as the IBCTs and the 2nd ACR transform, so soldiers and leaders need to take a close look at volunteering for assignments to an IBCT or 2nd ACR. Never has the opportunity for professional development of our soldiers been so great. With transformation comes that opportunity. Transformation will allow our best soldiers to emerge to become the leaders of a better armor force. That is why "TODAY IS THE BEST DAY TO BE A SOLDIER."

Medium Gun System Platoons:

A First Look at a New Kind of Unit

by Second Lieutenant Brian P. Hurley

The Medium Gun System (MGS) platoon is a new unit dedicated to accomplishing the same mission as tanks were first called upon to carry out — supporting the infantry. In this case, the infantry units are part of the new Interim Brigade Combat Teams (IBCTs) now training at Fort Lewis, Washington.

Consider this article a progress report on the training, problems, and achievements of C Co, 1-23 IN's Medium Gun System platoon, which supports the Third Brigade Combat Team (BCT).

The company has conducted several raids, traffic checkpoints, presence patrols, and perimeter defenses since June 2000 and has taken initial strides toward maintaining 19K proficiency through the first Interim Brigade Combat Team (IBCT) Tank Crew Proficiency Course (TCPC). Company commanders have had the opportunity to execute numerous missions utilizing varied employment methods and task organizations for the MGS. This article will cover the training conducted, the various ways the MGS has been employed, the close infantry fight, MGS training, and some 19K-specific issues that have arisen in the MGS/IBCT concept.

Because the final version of the Medium Gun System is not yet available for training, we use eight-wheeled Italian Centauro armored cars, equipped with 105mm tank guns similar to those on the M60 and early M1-series tanks. These vehicles are on loan to the U.S. Army. The Infantry Assault Vehicles (IAVs) that our unit uses are also "loaners," from the Canadian Army, similar to Marine Corps Light Armored Vehicles (LAVs).

Task Organization

To date, MGS platoons have focused on three configurations: pure plus (three MGS vehicles plus one Infantry Assault Vehicle (IAV) and one dismounted infantry squad); another with two MGS vehicles, one IAV, and one

dismounted infantry squad (The other MGS vehicle was attached to the Main Effort Platoon.); and a third with one MGS vehicle per rifle platoon, under the rifle platoon leader's control. The first configuration, pure plus, is usually best for non-restrictive terrain, and in support/attack-by-fire positions. The dismounted infantry squad from the accompanying IAV conducts an occupation by force of the SBF/ABF position.



The IAV squad dismounts, clears the position, and secures the flanks and rear of the position. The MGS platoon then conducts deliberate occupation of the SBF/ABF. Dismounted infantry are aware of the "danger cone" of 105mm rounds and are well clear of the rear of the vehicle. The remaining IAV supports the dismounted infantry in security operations and can mount up and conduct quick reaction force (QRF) operations.

This task organization proved extremely effective. When the enemy tried to destroy the MGS SBF by flanking with dismounted AT weaponry,

close infantry support fire teams were able to identify the dismounted AT threat and destroy them before they could initiate firing. Conversely, when a company chose to leave the MGS without infantry security, they were completely destroyed. After the mission, the only units with surviving MGS vehicles were the units that utilized the deliberate occupation method with infantry.

The second task organization is usually the normal task organization for the company. Fort Lewis' restrictive terrain is not conducive to a pure MGS organization and the missions executed by IBCT infantry companies usually require MGS intervention in the close fight. MGS vehicles operate on the section/wingman concept, utilizing the infantry as local security, but this is not limited to static local security. Often, the MGS platoon leader will use active dismounted patrolling with one MGS overwatching the dismounted maneuver element. The remaining MGS and IAV operate on the wingman/section concept. One full rifle squad with one MGS in overwatch provides the lethality needed to deal with almost any contingency. If the threat is too great for the squad and MGS, the other MGS and IAV provide a quick reaction force to defeat the enemy. The third MGS vehicle is utilized by the main effort as the weapon system to sway the battle and enter the close infantry fight.

This task organization is also extremely effective. Organizing the company in this manner provides the commander one or two more maneuver elements (to make five) instead of three (just the rifle platoons). The armor platoon leader has his E-6 wingman and another infantry E-6 squad leader, while the MGS PSG is attached to the

While the U.S. version of the Medium Gun System is being re-engineered to reduce its height for C-130 deployment, troops of the Interim Brigade Combat Teams are training on Centauro armored cars borrowed from the Italian Army.



main effort. The PL and PSG must be proficient at all infantry tasks for this organization to work. Using this organization, the company commander can parcel out his elements to cover more area without sacrificing firepower. Also, he is able to spread senior leadership over a larger area, which translates to greater command and control. 11B platoon sergeants and new platoon leaders benefit from the attached 19K E-7 who aids in the troop leading procedures and from integrating armor into the close infantry fight.

The MGS platoon can now operate traffic control points, conduct screen line operations, be prepared for reserve/quick reaction force (QRF) missions, conduct active reconnaissance and presence patrol operations, and secure a section of a mobile defense in depth. The other MGS vehicle in the main effort can be used in a SBF/ABF, or switch to precision coax and provide close machine gun support. Another option for the lone MGS is to operate as the breach element when the main effort is attempting to gain a foothold in an urban environment. After extensive rehearsals, the grappling hook method was used to clear concertina wire in an urban raid.

The dismounted infantry set the conditions for the MGS to maneuver, under smoke, to execute the breach. Setting the conditions translates to neutralizing the immediate AT threat while continuously applying suppressive fire and smoke on the enemy. The MGS vehicle exposure time was limited to about 15 seconds and, in that time, the vehicle was concealed under a wall of smoke. After the breach, the infantry penetrated the enemy perimeter and seized the foothold. Upon occupation of a second building, the MGS vehicle maneuvered, under cover of suppressive fire and building obscuration, to enter the close infantry fight. The MGS began to turn the tide of the battle and allow the infantry freedom of maneuver.

The third task organization is used when each rifle platoon is expected to fight in limited terrain under heavy enemy opposition. Each rifle platoon leader employs his MGS according to his own judgment. Usually, the MGS role is limited to a support by fire role or is used to help establish the machine gun teams. Effects are limited in this method since the terrain and enemy threat can drastically affect MGS combat power. This task organization is the least effective of the three. It is best suited to perimeter defenses, presence patrols, or assembly area operations; the scenarios depend on the threat template. MGS vehicles can be split to provide evenly distributed firepower to each section of the perimeter defense. Obviously, this type of organization does not lend itself to massing fires.

During a presence patrol, each platoon can cover a specific area and use the MGS as an intimidating force as well as a QRF if the platoon is overwhelmed. Utilizing this task organization for raids or deliberate attacks limits the commander to three maneuver units, instead of a potential five, and limits the firepower of mass and maneuverability benefits that the MGS offers. Also, two key leaders (the PL and PSG) are simply reduced to tank commanders. This proposed organization has as many limitations as the platoon file does in dismounted operations.

Battlefield Examples of Task Organizations

Task Organization 2: While conducting area presence operations, insurgent forces were entering and leaving the occupied areas. Company commanders needed to maintain surveillance and provide a quick reaction force should the presence patrols meet resistance. The task organization for this mission utilized two MGS vehicles, one IAV, and one dismounted infantry squad. They were to conduct screen line operations and, on order, provide a QRF to the nearby village to reinforce.

During the screening operation, the MGS platoon was ordered to stop a specific vehicle to search and detain suspects. Maintaining covered and concealed positions, the MGS utilized its optics to track and identify vehicles. Upon identification, the MGS radioed to the dismounted element while the MGS maneuvered to block the road. The suspect vehicle was trapped on the road between one MGS and one IAV. Dismounted infantry conducted a search of vehicle and personnel, detained suspects and radioed for EPW pick up. The second MGS vehicle provided overwatch and eyes on the road network.

Organizing the MGS platoon in this manner did not reduce the combat power of the platoons conducting the presence patrols and it enabled the MGS to maximize its optics and maneuverability advantages over the enemy.

Screen operations/hunter-killer teams were employed during the perimeter defense using the same organization. The platoon had two MGS vehicles plus one IAV and squad. The other MGS was attached to a full rifle platoon charged with active security patrolling. The rifle platoon leader organized a hunter-killer team with two IAVs, two squads, and one MGS. IAVs patrolled for the enemy, and once the enemy was found, would dismount and further evaluate/develop the situation. MGS would then be deployed into the fight once the hunter team set the conditions for MGS intervention.

The MGS platoon conducted stationary screen line operations with an on-order mission to reinforce the perimeter. The dismount squad was the QRF for the perimeter defense and also the designated EPW team and vehicle search team.

The hunter-killer team executed flawlessly. The MGS truly swayed the fight with precision coax and APERS rounds. However, this tactic relies heavily upon the infantry's adjustment for the MGS danger cone, which is an



An MGS approaches a wire entanglement as troops rehearse a MOUT raid in cooperation with infantry.

integral part of setting the conditions for MGS intervention.

The screen line worked as well as before, deterring several vehicles from entering the perimeter and preventing reinforcements from the high speed avenues of approach. When OPFOR breached the perimeter from the rear and began clearing the perimeter, MGS moved into the perimeter and again swayed the battle, pushing the OPFOR back into the woodline and allowing BLUFOR to consolidate and reorganize the perimeter.

The Close Infantry Fight

On more than one occasion, getting the MGS into the fight immediately turned the battle in BLUFOR's favor. The MGS can close with the enemy and destroy him, but must have the conditions set for such intervention. Surprise and shock effect absolutely stunned the enemy and enabled the infantry to maneuver while MGS influenced the battle.

Utilizing the MGS solely in a support-by-fire role wastes valuable lethality and firepower. The infantry is the main effort in almost every fight — especially the MOUT fight. MGS firepower and maneuverability must be involved in the fight to ensure limited losses of infantry and secure victory; in fact, lives depend on it. Commanders need to understand the effects of each 105-mm round, as does the infantry soldier.

Commanders also need to make an assessment based on the risk of loss. Most tankers feel they should be in the SBF role and used sparingly, if at all, in the close infantry fight, because they cause the most damage and they are far too valuable an asset. But commanders and tankers need to realize that, given the situation, they may have to accept the possibility of losing a vehicle. What may result in reducing the combat ef-

fectiveness of the MGS platoon — a tactical move that is high risk for one of the vehicles — may improve the overall combat effectiveness of the company.

One example of such a scenario is the breach. Many infantry soldiers may die in the breach. One company during training lost an entire platoon while breaching two sets of wire, and after the breach, that company was rendered combat ineffective because of additional losses incurred while clearing the village. However, if a commander can employ an MGS with one infantry squad supporting a breaching effort, a platoon can be saved, a foothold secured, and the mission becomes a success even though an MGS vehicle might be lost. Understand that MOUT can be costly in terms of losses in soldiers and vehicles, and the MGS is also part of that cost equation. But a tactically proficient commander knows how to set the conditions for successful MGS intervention and rarely will an MGS vehicle be sacrificed for the whole. The key to success in the close infantry fight is frequent integration of infantry and MGS training.

MGS Training

Since MGS operates under the Blue Guidon, they often train like infantry. PT, in the IBCT, is a battle-focus consolidated targeting task list (CTTL) task which is closely monitored. As a result, MGS soldiers are extremely fit. 19Ks in 1-23 IN know the jobs of their infantry brethren and can execute most dismounted tasks. All MGS soldiers are close quarters marksmanship certified; they all train the nine basic moves of Brazilian Jujitsu; they can all enter and clear a room, and know the process of clearing a street. Also, MGS soldiers are masters of several different vehicles. All MGS soldiers are certified to drive the Centauro, LAV III IAV,

HMMWV, and M113. Ultimately, MGS soldiers have become the model for mounted and dismounted maneuvering. MGS soldiers lead the way on company command maintenance and mounted weapons employment since most of the company is comprised of 11Bs.

Considering the unique training focus for MGS troopers, they obviously are not conventional tankers, but a new breed of soldier. Training the platoon for such a high OPTEMPO, training to think while fighting, increasing situational awareness, and executing initiative within the commander's intent are the hallmark of the MGS. MGS soldiers have the same base skill set as tankers, but possess a myriad of additional skills as well.

NCOs and soldiers who come to MGS platoons are not, and must not be, "third-class soldiers." Units with MGS platoons conduct missions that require only the best 19Ks in the Army. Occupying any position within the MGS platoon requires absolute competence, self-motivation, and a desire to be the best. MGS platoons are pushed far beyond the limit of conventional 19K units and must be the best mounted maneuver warfare experts in the Army. Considering the caliber of soldier needed in the MGS platoons, 1-23 IN has procured Ranger School slots for any 19K, E-4 or above. MGS soldiers lead the way for the IBCT and the future of the Army.

A paradigm shift in "tanking" is occurring and needs to occur in MGS platoons. Clinging to past ways of tanking, which involved only limited close fighting, and generally away from urban environments, may be dangerous, as evidenced by several historical battles. Each time — in Aachen, Hue, Suez City, and Panama, for example — the Army learned at great price how to

This Centauro is being used as a command and control vehicle during an M1A1 gunnery.



integrate infantry and tanks into battles, and in each case, tankers and infantrymen had to rediscover how to fight because of old training paradigms. Tankers in the IBCT must continue to reach beyond MOS stereotypes. MGS platoon leaders must train their commanders on the capabilities and limitations of the MGS and “tankers” must abandon their traditional ways of “tanking,” think outside the box, and get into the fight.

19K Personnel Issues

Fort Lewis had two active armor units. One unit, 1-32 AR, was reclassified as 1-14 Cavalry, the new Reconnaissance, Surveillance, and Target Acquisition (RSTA) Squadron, and turned in their tanks. The other armor unit is 1-33 AR, which still has M1A1 Abrams tanks. Since maintenance costs are so great with heavy tanks, it's impossible to cross train 1-23 IN MGS 19Ks on 1-33 Armor's tanks. So, 19K training — specifically on M1A1-series tanks — is extremely limited. Questions regarding sustainment training have been raised, but once again, budget and resources cause a shortfall in M1A1 tank training for young soldiers, and this means they do not get to do what they signed up for. Also, the limited focus on “tanking” reduces reenlistment numbers. Young soldiers want to shoot tanks and be tankers, but IBCT units are ill equipped to handle the costs associated with tanking.

More importantly, senior E-5s or E-6s who are approaching promotable status and need points for promotion require a good NCOER evaluated fairly with the rest of the 19Ks. E-5s and E-6s will not shoot gunnery for at least two years here at Fort Lewis, so there are no gunnery scores in their NCOERs. Also, the tasks asked of platoon NCO leaders in this unit are significantly different than those asked of tank platoon leaders. MGS NCOs are asked to lead infantry fire teams through room clearing, and rifle squads through street clearing. Gunners and tank commanders have to become small arms masters because they are asked to NCOIC small arms static ranges and act as range safety officers (RSO) during live fire infantry

maneuver ranges. Our 19K NCOs are leader-certified in infantry demolition breaches, infantry MOU tactics, and dismounted infantry patrolling. The 19Ks in 1-23 IN have gone to Ranger School and new ones are encouraged to attend. Ultimately, 19Ks in MGS units have a broader skill set and greater responsibility than the average tank platoon NCO, and Armor Branch needs to recognize that and reward them through the NCOER process.

Currently, most 19K NCOs and soldiers are offered the choice of staying or going to another tank unit. Many chose to stay here for the challenges this unit offers tankers, and then discovered they would have to learn and adapt to infantry ways while abandoning tanker ways. Whatever the interpretation, some soldiers were unfairly assigned and are excelling regardless. Armor Branch should recognize the sacrifice these soldiers make and reward them for their dedication to country and mission.

The CSM of the Armor Branch recently visited Fort Lewis and spoke with the senior NCO leadership of MGS platoons, many of whom felt that Armor Branch was leaving the 19Ks to the infantry wolves. But in fairness to the infantry, they are trying incredibly hard to accommodate the MGS platoons and facilitate 19K professional development, although they are not yet equipped to support 19K development.

NCOs and soldiers need Armor Branch support. Armor Branch can get involved in training aspects by obtaining resources for MGS platoons. Branch command emphasis in MTOE development can provide 1-23 IN and other IBCT units with MCOFTs, UCOFTs, or other resources that will enhance 19K sustainment training. Also, Armor Branch should evaluate current MGS doctrine and suggest or begin to develop the training skills needed for follow-on tank units that are slotted for transformation. Utilizing a gunnery scenario, Armor Branch needs to tell IBCT units that they must provide a TCGST once yearly, CCTT training at Fort Knox once yearly, and perhaps shoot a gunnery once yearly. Right

now, the infantry budget — based on a light (11B) unit — is too small to accommodate that kind of training. If the Armor Branch demanded certain 19K sustainment tasks, then the infantry, IBCT units, would have to budget for them, and this would set 19K soldiers up for success in their next unit, while improving the reenlistment situation.

Ultimately, Armor Branch should demonstrate more concern for MGS soldiers. Young IBCT soldiers are learning more about leadership and possess more combat skills than their tank platoon counterparts. The IBCT produces extremely physically fit armor soldiers who understand mission and initiative within an intent. Armor Branch cannot allow these soldiers to be left behind; they deserve more involvement and better support from the branch they are honored to serve.

Summary

1-23 IN is the “Tip of the Spear” for the IBCT and Objective Force 2030 Concept. 1-23 IN is training at an exceptionally high OPTEMPO to establish doctrine and prepare soldiers for urban warfare. Individual companies are thinking outside the box and truly executing the combined arms fight. MGS platoons are leading the transformation from conventional warfighting to true combined arms integration — “Fighting As One.” During the transformation process, 19K soldiers are enthusiastic and professional and set the example for the Army and the Armor community. Maintaining training focus and developing doctrine will only continue if 19K soldiers get the support they need from the Armor Branch.

2LT Brian Hurley graduated in 1999 from Illinois Institute of Technology, in Chicago, with a B.S. in psychology and a minor in electrical engineering. He has been stationed at Fort Lewis, Wash., for 14 months, and has served as 2nd platoon leader, A Co, 1-32 Armor, and currently as the MGS platoon leader, C Co., 1-23 Infantry, 3 BCT, 2 ID.

Plow Platoon Operations

by Captain Patrick A. Callahan

“Panther X-Ray, this is Maddog X-Ray, enemy obstacle report follows:”

Line 1: Wire and mine obstacle

Line 2: Starting at Grid AB 303148 to Grid AB 311149

Line 3: Obstacle is 800m in length, from SW to NE

Line 4: Depth of obstacle: 100m

Line 5: Obstacle sighting has been confirmed by Maddog Red 1 at ___hrs.

“Panther X-Ray, this is Panther 6. I monitored Maddog’s report. Execute TM Bulldog, time now!”

In the summer of 1998, 2-69 Armor Battalion began using a new playbook that included the concept of using a plow platoon within each company/team.

Initially, the company commanders were skeptical and reluctant to change to this new concept of breaching. We had very little knowledge about the tactics, techniques, or procedures for using the plow platoon concept in our warfighting METL. Our train-up for the National Training Center (NTC) was to begin in two weeks (two companies had just returned from Intrinsic Action 98-02 and two companies were still deployed in support of Operation Desert Thunder), and the company commanders, like the rest of the unit, didn’t want the additional requirement to train a time-consuming new concept to go along with the numerous other requirements prior to deploying to the NTC.

I formed a plow platoon within my company. The biggest “sell” was to my soldiers: “Sir, how come it has to be *our* platoon?” or “Sir, do you realize that you are sending us to our death in the breach?” These were just a few questions for me to think about during my second week as an M1A1 tank company commander.



“In the summer of 1998, 2-69 Armor Battalion began using a new playbook that included the concept of using a plow platoon within each company/team....”

Like all units within 3d Brigade, 3d Infantry Division, we trained hard during our train-up period for the NTC, but more importantly, our unit had deployed to Kuwait for real world contingency operations twice within the last three years (Operations Desert Vigilance, Desert Fox/Thunder).

The end result: Task Force Panther did well during NTC Rotation 98-02. We won some battles, and we lost some battles, but overall, we were a better trained and battle ready unit after the rotation.

This article discusses the use of the “plow platoon” in co/tm offensive operations. It is by no means *the* answer to all tactical breaching scenarios, rather a task force and company/team SOP developed through trial and error during our train-up to the NTC in the fall of 1998. For the units using the “plow platoon” concept, the following SOP may aid in breaching operations at the task force and co/tm level.

Platoon Task Organization

- 1-Mine roller
- 2-Mine plow
- 3-Mine plow
- 4-Mine plow

Plow Concept

The plow tank must build up enough spoil (turned dirt) prior to entering the minefield in order to push and redirect the explosion of the mine(s) away from the tank. In order to develop enough spoil, the plow must be dropped 50-80 meters from the edge of the minefield. This is terrain- and soil-dependent; essentially, there should be a minimum of 13 inches of spoil in front of the mine plow. Prior to creating a lane with the plow, the tank must traverse its turret to the side in order to protect the gun tube from any possible frontal mine explosions. The turret should

be traversed to the left side so that the TC may use the .50 caliber machine gun while in the lane. In order to protect the crew from direct and indirect fires, and exploding mines, all hatches must be closed while creating the lane.

Mine Roller Concept

The mine roller is mounted on the tank prior to use during a mission. The mine roller tank detects the edge of the minefield upon visual contact or by exploding the first mine. The roller tank then backs up in order to allow a plow tank to clear a lane. The roller is also used for proofing a lane after a plow tank or engineer unit has already cleared a path through the minefield.

In-Stride Breach (See Figs. 1-3)

Concept:

Prior to conducting a breach with unit assets, the normal SOSR (suppress, obscure, secure, reduce) conditions must be met. This is done with platoon internal assets, company/team assets, or task force assets, depending on the size and composition of the obstacle and enemy strength covering the obstacle. Once the obstacle is identified, a plow tank section acts as the lane creator and lane proofer. The other tank section provides overwatch and suppression during the breach.

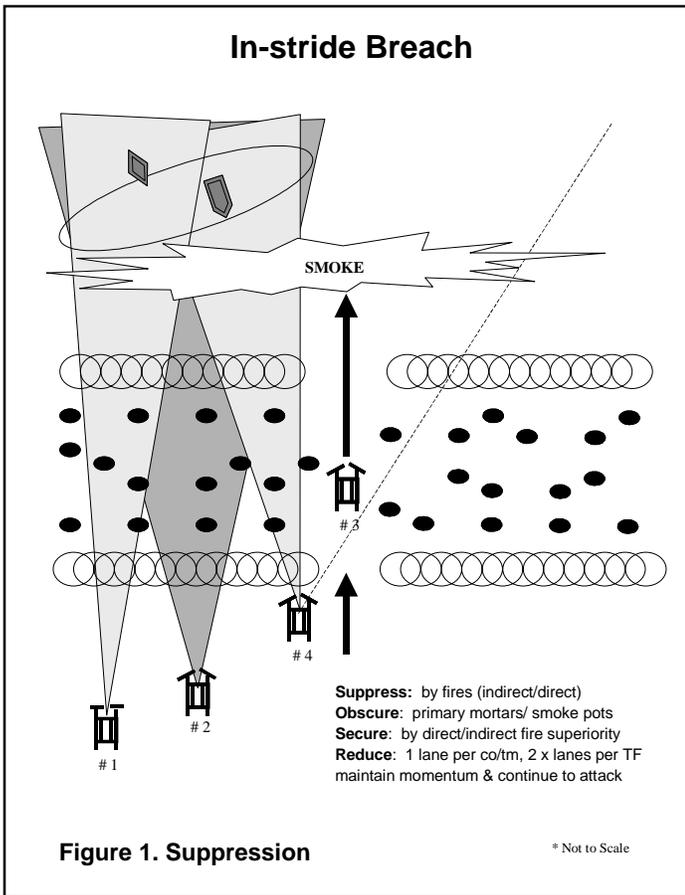


Figure 1. Suppression

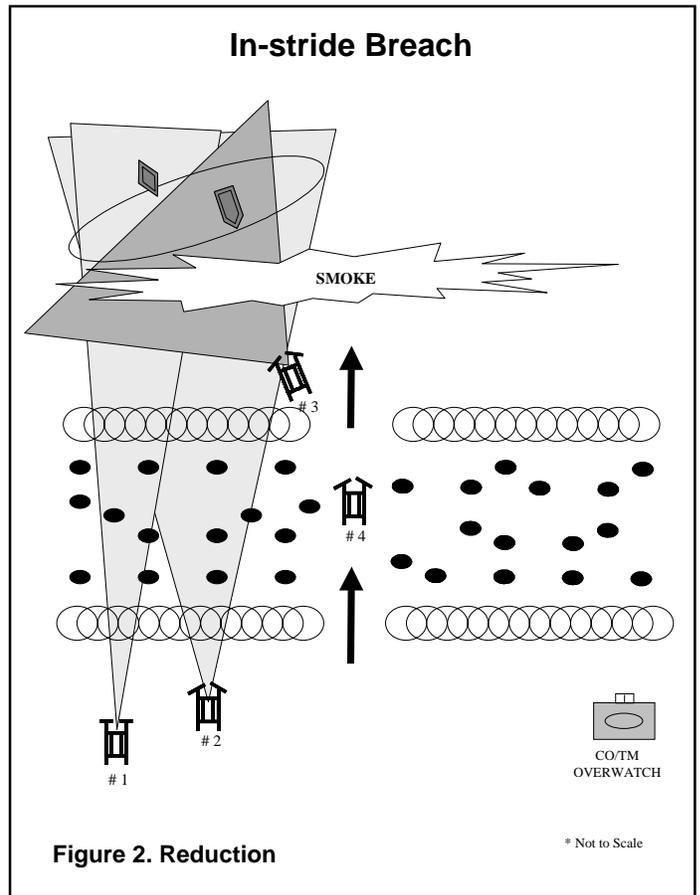


Figure 2. Reduction

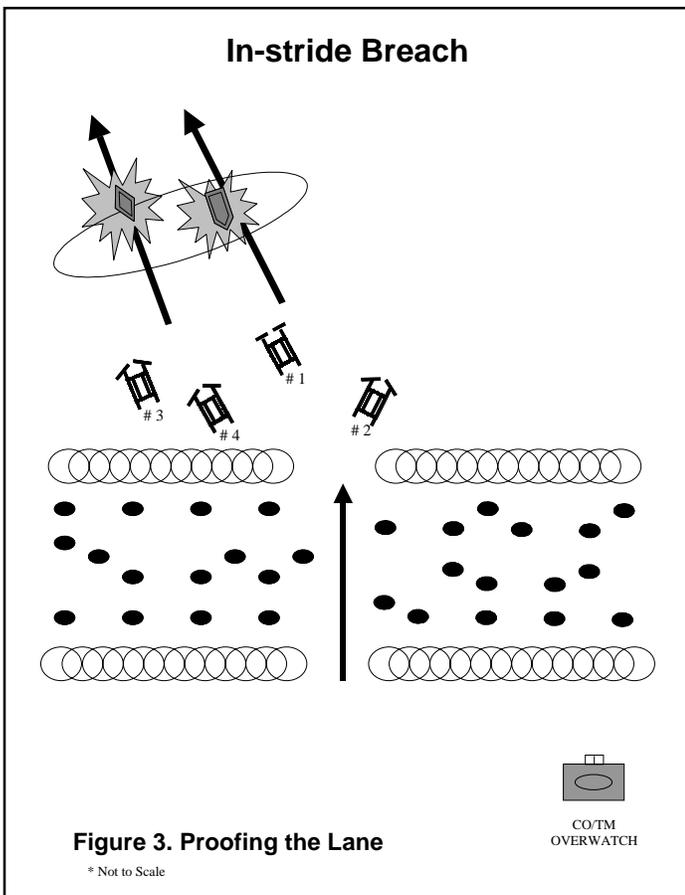


Figure 3. Proofing the Lane

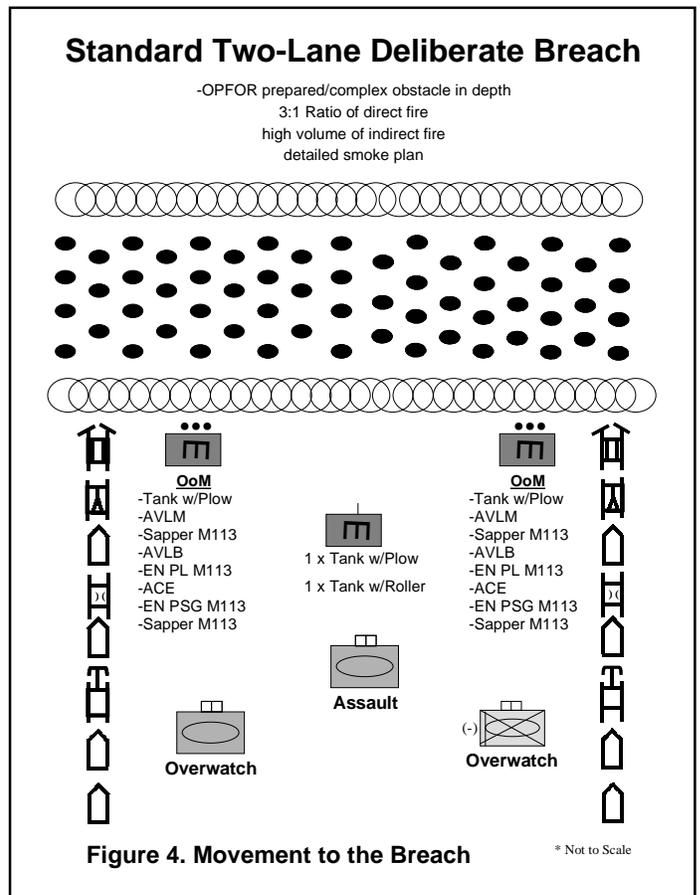
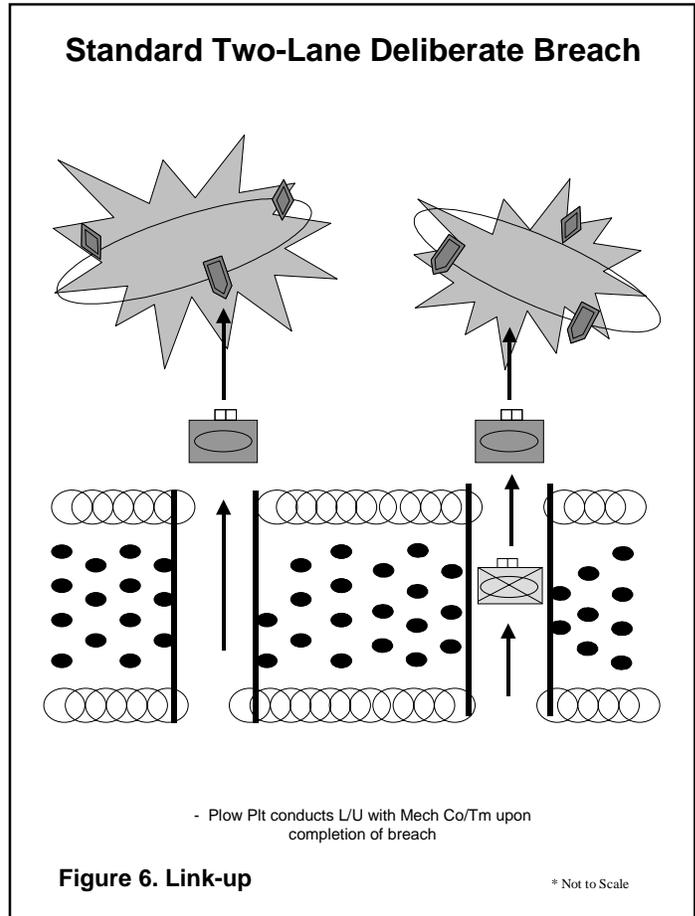
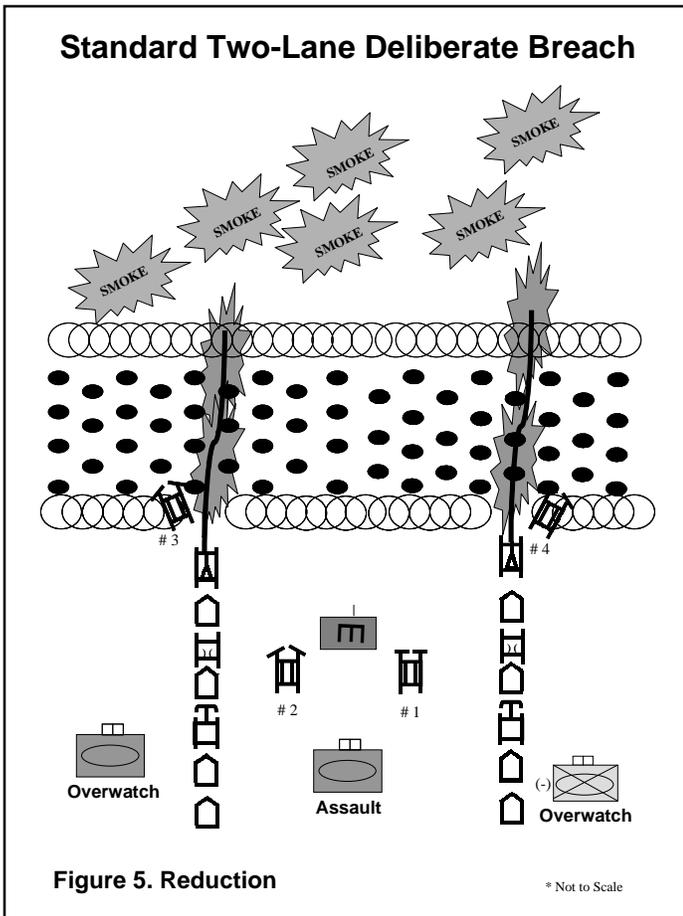


Figure 4. Movement to the Breach



Suppression (Figure 1) is conducted by the overwatch section and any other assets working to accomplish the breach.

Obscuration is called by the PL or the primary observer for the obscuration mission.

Security (near side) is conducted by the breach section as it prepares to execute the breach mission.

Reduction (Figure 2) is conducted by the #3 tank. It drops its plow 50-80 meters from the edge of the minefield while the #4 tank continues to provide near-side security (vic edge of minefield; enemy and terrain dependent). The #3 tank creates the lane.

Once the #3 tank creates the lane the #4 tank follows with its plow dropped in order to proof the lane (Figure 3). While the #4 tank is proofing the lane, the #3 tank provides far-side security.

Once the lane has been proofed, the #1 and #2 tanks advance through the obstacle in order to provide far-side security, additional suppression, or assist in assaulting enemy positions.

In order to provide redundancy, the #2 tank acts as the back-up breach tank in case the #3 and #4 tanks are rendered

NMC. The #2 tank also acts as the FASCAM response vehicle if the enemy places FASCAM on the breach site.

In that case, in order to re-establish the breach, the #2 tank drops its plow and breaches the same lane created by the previous plow tanks.

TF Deliberate Breach With Engineer Assets (See Figs. 4-6)

TASK ORGANIZATION:

TM BULLDOG/ B/317 EN (Breach Teams)

1/B/317 EN (#3 Tank, 1xAVLM, 4xM113, 1xAVLB, 1xACE)

2/B/317 EN (#4 Tank, 1xAVLM, 4xM113, 1xAVLB, 1xACE)

3/A/2-69 AR (#1 and #2 Tank)

Concept:

When breaching with engineer assets, the task force commander determines whether to create a one- or two-lane breach. If it is the standard two-lane breach, then the #3 and #4 tanks are OPCON to B/317 EN. The #1 and #2 tanks remain in a position to oversee the breach operation and act as a FASCAM breach reserve. The tank platoon

remains OPCON to TM BULLDOG until the breach mission is complete and lane(s) are established. The #4 plow tank must maintain FM comms with the platoon leader (#1 tank) in order to ensure the latest SITREPs are known within the platoon.

The plow platoon maneuvers as a platoon until the last covered and concealed position as designated by CDR, TM BULLDOG. Once in the final position, the #3 and #4 tanks separate from the plow platoon and prepare to lead their respective platoons toward the breach site. The typical order of march to the breach site for each platoon will be: tank w/plow, AVLM, sapper M113, AVLB, EN PL M113, ACE, EN PSG M113, and sapper M113 (Figure 4).

Suppression is conducted by the #1 and #2 tank and other units assigned the mission according to the TF play book.

Obscuration is called by the engineer commander or by the primary/secondary observer; designated by the TF FSO.

Security (near side) is conducted by TM_/2-69 AR from the overwatch.

Continued on Page 20

“Train in difficult, trackless, wooded terrain. War makes extremely heavy demands on the soldier’s strengths and nerves. For this reason, make heavy demands on your men in peacetime.” — Rommel, 1937.

Kasserine Pass and the Necessity of Training

by Captain James Dunivan

In the armor force of today, “train as you fight” and “tough, realistic training” are two of the most quoted axioms one will hear during the course of any training meeting or quarterly training brief. We, as armor leaders, pride ourselves on our gunnery scores and the field training exercises that culminate with glowing after-action reviews, bragging of fewer vehicles with blinking “whoopie” lights. While these criteria may gain favor with senior raters to justify an above-center-of-mass rating on an officer evaluation report, one must always ask the harder question, “Is my unit trained to survive and succeed on the wartime battlefield?” The wise leader answers this question honestly and uses these scores and AARs to evaluate strengths and weaknesses, then to train and sustain accordingly. The leader who trains only those tasks at which the unit already excels, or simply flips through the manual to fill a weekly training schedule, is leading his unit straight to a disaster.

History is full of such disasters — soldiers sent to an untimely death because of poor training, weak leadership, or an overall lack of readiness. One such disaster unfolded early in 1943 in North Africa, when an American command met the Germans for the first time in battle in World War II. These were not just any Germans, but Field Marshal Erwin Rommel and his *Afrika Korps*, veterans of two years of desert fighting. The result was overwhelming confusion: regiments were overrun and battalions broke and melted away in a mass slaughter of American armor.¹ The Battle of Kasserine Pass, as we

have come to call it, was actually a series of operations, from the start at Faid, through Sidi bou Zid and Sbeitla, to the final act at the Kasserine defile.²

About 30,000 American soldiers of the U.S. II Corps fought at the Battle of Kasserine Pass, and nearly 6,500 of these men were killed, wounded, or taken prisoner by the Germans. We lost nearly 400 armored vehicles, 200 artillery pieces, and 500 trucks and jeeps, along with large stockpiles of supplies — more than the combined stocks of all the American depots in Algeria and Morocco.³ These numbers painfully reinforce the certainty that a poorly trained force is a recipe for failure.

Although many factors contributed to failure at Kasserine, training was the shortfall identified by analysts at the time and by historians ever since. As historian Martin Blumenson put it, “Shortcomings shown by American troops in combat in North Africa... were attributed... in large measure to lack of opportunity to train with enough weapons and ammunition.”⁴

Another factor was the rush to train thousands of soldiers quickly. The patriotism stirred by Pearl Harbor, combined with the introduction of the draft, swamped the Army’s handful of regular officers and noncommissioned officers available for training. And most of these trainers had never seen action themselves, unless it had been in World War I. General Eisenhower realized that this new war would demand hard, trained soldiers, but time was just too short. As a result, American troops were ill-trained, ill-disciplined, and emo-

tionally unprepared for what was soon to come.⁵

After the battle for North Africa was finally won in the summer of 1943, an American ex-journalist and veteran of the campaign, Engineer Captain Ralph Ingersoll, summed up his thoughts about the training of the soldiers who had fought in Africa:

“It is the practice at home to put troops through rigorous exercises called maneuvers. During these maneuvers soldiers do sleep on the ground and get wet in the rain. But maneuvers are for so many days, for so many weeks, and at the end of them there are nice, warm barracks and the day-rooms and the U.S.O to go back to, and in which to sit around and beef about how tough it all was. This is an odd thing for a soldier who so intensely disliked his own basic training to say, but if I were to pray for a miracle, it just might be that every barracks in the United States would burn down! Then the American Army in training might start learning to live as it will one day have to live, with the sky for a ceiling and the ground for a floor... An army trained that way would be an army that was at home the day it arrived in the field.”⁶

The maneuvers Captain Ingersoll referred to included the Louisiana Maneuvers that were “fought” in Louisiana and the Carolinas in 1941. They were the final test of the training and organization of this great army prior to the war.⁷



A year earlier, in July 1940, the entire world had been awed by Germany's armored blitzkriegs through Poland and France. And two weeks after the fall of France, the United States created its own armor force, part of the 1.4 million man army General George C. Marshall had been raising in anticipation that the United States would be drawn into the Second World War. The Louisiana Maneuvers, following earlier division and corps-level maneuvers, meant hard work and misery for America's new soldiers.

In Louisiana, they battled mud, dust, bugs, and sudden downpours. In the Carolinas, they found ice in their water buckets in the morning and scrambled to find kerosene heaters.⁸

Elaborate and intricate umpires' rules were in effect for the maneuvers since people could not really be killed, nor shells really fired, or bridges really blown up. Human "casualties" would not drop out; a unit's firepower points would simply be reduced in propor-

tion to them. A "destroyed" tank was deemed "resurrected" and returned to its unit at midnight. The impact area of indirect fire would be marked with flags, and casualties would be assessed against a unit caught in that area.⁹ But all things considered, the training was demanding and made to be as realistic as possible.

The maneuvers were quite successful in giving the Army hands-on experience in the mobility of large units, and

in testing current organization and doctrine, for example how tanks should be employed and how combined arms units should be structured. The maneuvers also served their major purpose of testing the quality of essential training — and unfortunately found it lacking. Many small unit commanders failed to show a grasp of basic tactics. Communications, coordination, and reconnaissance had often been poor. Most orders had been slow in preparation and vague or ambiguous.¹⁰ As time would tell, the defeat at Kasserine would again bring these problems to the surface and show the Army what skills troops had to learn and execute. That they quickly became proficient in the warfare of the 1940s confirmed their spirit, flexibility, strong sense of purpose, and will to win.¹¹

The point of this comparison is not an attempt to give a history lesson on the Louisiana Maneuvers or the Battle of Kasserine Pass, but rather an attempt to show the historical relationship between training and combat. If this entire course of events seems familiar, perhaps it is because it mirrors in many ways our current method of training. In our armored force today, we have the best soldiers and equipment in the world. We have leadership that understands the importance of training and the need for constant readiness in a volatile world where anything can happen at any given moment. However, just as an infant armor force over fifty years ago trained hard but paid the price for battlefield experience in blood, we once again face a new era in armor as we begin a new century.

We, as armor leaders, cannot look into the future at the cost of removing ourselves from the ground our tracks are rolling over today. We must emphasize training to fight as we would right now, as realistically and safely as possible. Technology is full of wonderful tools that will continue to alter the face of battlefield communication, command, and control. Much is to be gained, but all the digitization in the world cannot replace situational awareness on the ground, troop leading procedures, battle drills, land navigation, and the logistics and maintenance-related training to make it all happen. We cannot move forward at the cost of current readiness.

While our mounted training centers are outstanding, units get only limited

opportunities to train there, so armor leaders need to place equal or greater emphasis on tough and demanding home station training. Once again, a focus on the “basics” is essential, and with minimal resources, any commander can exercise his platoons on the forms of contact, actions on contact, formations, movement techniques, transition to maneuver, and actions on the objective. Start in the classroom with a sand table and advance up through the gates of lane training to maximize time and resources when actual maneuver and force-on-force training is available.

Simulations and orders drills are very worthwhile and necessary in saving dollars, but should be utilized as a ramp-up or sustainment tool to improve maneuver training, rather than a substitute for it. The Close Combat Tactical Trainer (CCTT) is an excellent simulation tool that provides realistic training for the entire tank crew. Company commanders and tank platoon leaders can execute maneuver training against an opposing force, working everything from reporting to the most challenging tactical scenarios. All it takes is some prior coordination (experience shows that the CCTT is one of the most underutilized resources on post and can almost always be obtained within six weeks) and a training focus to get some first-class training.

In the realm of tank gunnery, Table XII should be the “main event” instead of everything beginning and ending with Table VIII scores. More importantly, units must plan and execute aggressive live-fire exercises that combine company or larger size elements with integrated indirect fire and engineer assets. Thorough risk management and properly executed gate training allows us to conduct realistic live-fire training at all levels with phenomenal results. Much is to be gained when soldiers and leaders integrate the challenge of command and maneuver with emotion and stimuli that comes from the recoil of the main gun, the blast of the MICLIC, and the impact of HE adjusted on target.

With all the challenges of personnel turnover and shortages, training distracters, limited funds and resources, and time constraints, it is too easy for us armor leaders to shrug our shoulders and hope for things to get better. How-

ever, it is imperative that we face these challenges and make use of everything in our power to ensure that our soldiers are trained and ready for war. What one has absolutely no control over is one thing, but if it is in our lane and can be corrected, then we owe it to our soldiers to provide the best training opportunities possible. Officers, especially company commanders and platoon leaders, cannot be afraid to highlight weaknesses during training, or refrain from trying new and innovative ways to train, at the cost of failing in what many consider to be a “zero defects” environment. The ultimate failure, as illustrated at Kasserine, would be the tragedy of allowing history to repeat itself.

Notes

¹*Kasserine: First Blood*, Charles Whiting, Stein and Day Publishers, New York, N.Y., 1984, p. 10.

²*America's First Battles*, Martin Blumenson, University Press of Kansas, Lawrence, Kan., 1986, p. 261.

³*Ibid.*

⁴Blumenson, p. 264.

⁵Whiting, p. 45.

⁶Whiting, p. 46.

⁷“Relax — It's Only a Maneuver,” *Military History Quarterly*, Thaddeus Holt, p. 30.

⁸Holt, p. 34.

⁹Holt, pp. 33-34.

¹⁰Holt, pp. 39 and 41.

¹¹Blumenson, p. 265.

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Obtaining Maximum Effectiveness From Your Chemical Assets

by Captain Tom Duncan

One of the most significant trends we have seen on the Bronco 62 Team (Brigade NBC Training Team) at the National Training Center (NTC) is difficulty integrating chemical assets into a task force or brigade combat team scheme of maneuver. This results in inadequate combat support from chemical assets and poorly developed unit Nuclear Biological and Chemical (NBC) defense measures. Failure to integrate all the battlefield operating systems into each operation increases the difficulty of achieving your objectives and can cost soldiers their lives. Reversing this trend requires a two-pronged attack.

First, we must educate combat arms officers, specifically task force (TF) and brigade combat team (BCT) commanders, operations (S3) and executive officers (XO), on how to get the highest possible return from their NBC section and chemical section with minimum effort.

Also, the Chemical School, the Combat Training Centers, and individual chemical soldiers must continue to strive toward improving our corps.

This article will focus on the first initiative, educating combat arms officers on the best use of chemical assets as a combat multiplier. You should expect your chemical officer (CHEMO) to aggressively pursue his role in the military decision-making process (MDMP), but the S3 or XO must also be aware of what to expect from him in order to assist in his professional development. My intent is for this article to serve as a start point toward understanding what to expect from your NBC staff section, and to familiarize you with some of the doctrinal references available to assist you in overseeing your chemical staff and attached assets.

Lack of NBC Asset Integration

It is Training Day 04 at the NTC. The brigade combat team's armor battalion



approaches the enemy's obstacle belt and prepares to establish a deliberate breach.

Although the task force commander has a mechanical smoke platoon and an NBC reconnaissance squad in his task organization, he will not use them in this fight. His task force chemical officer has not presented, or been asked for, recommendations on how to use these combat multipliers. The task force commander is also unaware that the chemical officer has not talked with the task force S2 to ensure accurate templating of enemy chemical munitions targeting. As a result, he will not see how the enemy will use these munitions to shape the battlefield.

His task force immediately begins to receive direct and indirect fire. Attrition

of the breach team significantly slows their efforts, allowing the enemy time to target the armor task force with non-persistent munitions to slow our breach efforts. The enemy shot a persistent chemical strike to slow the advance of the second echelon, while continuing the attrition of the task force with direct and indirect fires.

Our attempt to establish a breach without the use of mechanical smoke has allowed the enemy to accurately target us with multiple weapons systems. The lack of focus for NBC recon resulted in the slow establishment of a safe bypass route for follow-on forces. The failure of our battle staff to use all available assets has resulted in our failing to seize the objective. **NoBody Cares** can quickly turn into **Nothing But Casualties**.

Chemical Officer Duties and Responsibilities

So what is the best way to get the most out of your chemical officer, NCO, and attached chemical assets? The answer begins with knowing what to demand from that individual. The following are some of the chemical officer's duties and responsibilities IAW *FM 101-5, Staff Organization and Operations*:

- Recommends course of action (COA) to minimize vulnerability (to enemy NBC munitions).
- Plans, supervises, and coordinates NBC decontamination operations.
- Plans, supervises, and coordinates NBC reconnaissance operations.
- Plans and recommends integration of smoke and obscurants into tactical operations.
- Collects, evaluates, and distributes NBC attack and contamination data.

This is not an all-inclusive list of CHEMO duties. However, I will focus on these main areas in this article. The questions we will examine now are:

- What do these duties mean during day-to-day field operations?
- How do we integrate our CHEMOs to gain maximum value with minimal effort?
- What doctrinal products should we expect from our CHEMO to facilitate giving clear and concise recommendations to the commander?

Military Decision-Making Process (MDMP)

One of the three advantages of the MDMP is to produce "the greatest integration, coordination, and synchronization for an operation and minimize the risk of overlooking a critical aspect." (*FM 101-5, Staff Organization and Operations*, p. 5-1) We have already seen that the CHEMO is responsible for integrating NBC recon, mechanical smoke, and decon assets. This process begins with the first step of the MDMP, Receipt of Mission.

At the NTC, I have often seen NBC soldiers excluded from the MDMP. Successful integration of chemical assets requires a chemical representative in the MDMP. This does not have to be a member of your staff NBC section. It can be the leadership from the chemical element that is task organized to your

TF or BCT. You should expect the same work from your CHEMO that you expect from your other staff sections. The CHEMO should begin as soon as we receive the mission by ensuring he has all tools required for mission analysis (i.e., maps, unit SOPs, FMs, existing staff estimates, etc.)

During Mission Analysis, your CHEMO should begin analyzing the base order, task organization, and NBC annex to determine if there are specified, implied, or essential tasks that impact attached chemical assets or our MOPP analysis. You should also expect your CHEMO to begin integrating with the rest of the staff, specifically the S2. Your CHEMO should assist the S2 in templating the most dangerous and most-likely NBC weapons use. This analysis drives our task organization of NBC recon and decontamination assets.

Just as with all of your staff officers, your CHEMO owes you an NBC staff estimate, IAW *FM 3-101, Chemical Staffs and Units*, p. D-3. This estimate doctrinally includes the following at the end of mission analysis:

- Restated mission.
- Effects of weather and terrain on enemy smoke and NBC weapons, or weapons of mass destruction (WMD), employment.
- Enemy situation as it relates to WMD use.
- Friendly situation as it relates to chemical assets and initial recommendations for MOPP levels.

Keep in mind that this estimate is a tool for your CHEMO to use to facilitate clear and concise information flow, recommendations to the commander, and staff integration. This is a working document that should be developed throughout the course of the MDMP. As your CHEMO works through the COA development, he should continue to develop the four paragraphs mentioned above, then develop the rest of the estimate to provide a tool for the COA decision brief.

The remainder of the NBC staff estimate (*FM 3-101, Chemical Staffs and Units*, p. D-3) includes the following:

- COA analysis
- Course of action comparison – Compares advantages and disadvantages of each as it relates to enemy use of weap-

ons of mass destruction and our utilization of attached chemical assets.

- COA recommendation – The COA that is least affected by enemy WMD use, and chemical assets can best support.

The NBC estimate must be complete by the end of COA analysis (wargame). One of the best ways to ensure the CHEMO is integrated is to ensure his involvement in COA development and analysis. This uses your CHEMO's technical expertise and ensures staff integration. For example:

- S2 and CHEMO – Refine templated WMD targets.
- S3 and CHEMO – Ensure clear task/purpose and expedient task organization of chemical assets.
- S4 and CHEMO – Ensure detailed plan in place to support logistical requirements of decontamination operations.
- Fire Support Officer and CHEMO – Develop a smoke plan that incorporates artillery and mechanical smoke that best supports the mission.

We need to take a closer look at what we specifically expect from your CHEMO's recommendation at the end of COA analysis. His recommendation should include the following details:

- Chemical asset mission priorities ensure there is a clear task and purpose for chemical elements prior to COA analysis, and that the task and purpose best support the chosen COA.
- Identify critical anticipated enemy NBC and smoke actions, both friendly and enemy, and ensure there is a planned counteraction.
- Ensure our planned task organization best supports our chemical assets task and purpose.
- Critical task (and purpose) for subordinate units. (This may not just be a chemical asset. For example a company team may be tasked to provide security to a smoke platoon until they are in position to begin smoke operations.)
- NBC recon, decontamination and smoke graphic control measures in order to ensure clarity to supporting and supported elements. For example, the smoke platoon has to know what box on the ground they are to cover with smoke, and the company team and engineers working in that smoke must understand the planned smoke coverage

so they can include that in their planning process.

- MOPP levels must also be considered. MOPP level 2 for an entire brigade may not be the answer. Infantry on a 10 km road march may need to be at MOPP level 0. A tank may need to be buttoned up with their overpressure system on while in MOPP level 2, and systems lacking overpressure may need to be in MOPP level 4, when going through terrain where a chemical strike has been templated. MOPP analysis needs more attention by the S2, S3 and CHEMO than we typically see given at the NTC.

- Assumed risks need to be made clear to the commander. Too often commanders are unaware of risks assumed by the staff.

The NBC estimate format found in *FM 3-101, Chemical Staffs and Units*, D-4, gives your CHEMO a clear and concise format that will allow him to contribute during the MDMP. It also provides focus to Annex J (NBC Annex) in your operations order (OPORD). When the CHEMO is involved in the entire MDMP, the final step of orders production should simply be a matter of cutting and pasting known information into the proper format IAW with *FM 101-5, Chemical Staffs and Units*, p. H-56.

Your CHEMO in Rehearsals

FM 101-5, p. G-9, states a rehearsal allows participants to visualize and synchronize the concept of operation. Incorporation of your CHEMO and chemical asset leadership is just as critical to mission success as the integration of any other battlefield operating system. Another technique is to ensure the CHEMO's key points have been incorporated into the S3, S2, FSO, and chemical unit leadership's briefs. This can be successful if the proper staff interaction has conducted throughout the MDMP. The OPORD brief and rehearsal are the only way your subordinate commanders will truly understand how to protect themselves from enemy WMD use, and how attached chemical assets will help them to stay alive and accomplish their mission.

Your Chemical Officer During Execution

If your CHEMO is not involved in the MDMP during execution, he should be keeping a running estimate. (If he is not

available due to ongoing MDMP, his NBC NCO can keep the running estimate). A staff estimate consists of facts, events, and conclusions (based on current or anticipated situations) and recommendations on how available resources are best used and what additional resources are required (*FM 101-5*, p. 4-4).

As the first paragraph changes, you expect your S2 to tell you what the enemy will do next, the S3 to explain what our counteraction will be, and the FSO to be ready to support that plan with timely and accurate fires. But we often do not integrate all of our combat multipliers, to include chemical assets.

If the enemy does not use his persistent chemical munitions where they were templated to be used, your CHEMO may recommend refocusing NBC recon, moving decon assets to a different decontamination point, and raising the MOPP level (and/or buttoning up) different units than were planned. Inserting your CHEMO into the MDMP is the place to start, but demanding that your NBC section remains situationally aware is essential to maintain your combat power in an NBC environment.

You must create the conditions for your NBC section to succeed during execution. The CHEMO can still serve as a battle captain, plans officer, or other roles within the Tactical Operations Center. But there must be established systems for allowing the CHEMO to maintain situational awareness and be available to make recommendations through the S3 or XO to the commander.

Another technique to consider is splitting your CHEMO and chemical NCO. Either by putting them on different shifts to ensure 24-hour coverage, or placing one with the TOC and the other with the TAC. This will facilitate the availability of NBC specialists at critical times during your operations.

What You Owe Attached Chemical Asset Leadership

You must meet the chemical company commander or platoon leader half way when they are integrating themselves into your task force. Although your CHEMO should be the point man for this coordination, your job is not simply to provide quality assurance. Chemical leadership must receive WARNOs, be present for the OPORD brief, receive relevant graphics (SITEMP, ma-

neuver, combat service support at a minimum), as well as a clear task and purpose.

Remember that no one in your command knows how to use these assets better than the young officers, NCOs, and soldiers operating the equipment. We have to ensure they have the tools to formulate their plan and the opportunity to bring recommendations for the use of their assets back to your staff.

Our Army's doctrine, *FM 3-101, Chemical Staffs and Units*, p. 4-7, states that the supported unit commander has only one primary responsibility, effective use of chemical assets to accomplish missions. All you need to do to accomplish that task is to integrate your CHEMO and chemical unit leadership into the MDMP, allow them to contribute in the TOC at critical times during execution to make recommendations to the commander, and always provide a clear task and purpose to chemical assets.

What to Expect from Company NBC NCOs

The last task you should expect of your NBC staff section is that they are assisting company commanders to professionally develop company NBC NCOs. *FM 3-101, Chemical Staff and Units*, p. C-8, is the source document for your company NBC NCO's duties and responsibilities. The company NBC NCO is the specialist who will assist his commander in preparing to fight in an NBC environment. The NBC NCO is also responsible for the following:

- Ensuring NBC common task training is done to standard.
- Integrating NBC collective tasks into unit training.
- Integrating NBC as a condition for performance of METL tasks.
- Maintaining chemical defense equipment status.
- NBC warning and reporting.
- Advising his commander on NBC avoidance, protective posture, Flame Field Expedient use, decontamination and smoke operations.

Your CHEMO is not doing his job if he is not assisting the chain of command in professionally developing these junior NCOs.

Chemical Assets

from Page 19

Conclusion

Looking at the example in the beginning of the article, the enemy used non-persistent and persistent chemical agents on the battlefield. Your unit must be ready to fight with NBC as a condition of the battlefield.

The trends we see at the NTC are our staffs' failure to template chemical weapons use, then focus NBC recon and decon assets on the most dangerous or most likely templated target, smoke plans that are poorly developed and do not integrate artillery *and* mechanized smoke, and no detailed decon planning. Reversing these trends requires proper staff integration from the beginning of the MDMP through re consolidating/reorganization. You should expect your CHEMO to aggressively pursue his role in the MDMP, but the S3 or XO must also be aware of what to expect from their CHEMO in order to assist in his professional development. The bottom line is this: training and integrating your CHEMO will help you to maximize combat power and accomplish your mission.

CPT Thomas A. Duncan II received his commission in 1991 from the University of Northern Iowa ROTC program after enlisted service in the Iowa Army National Guard. He has served as a battalion chemical officer, headquarters battery executive officer, and chemical company platoon leader and executive officer in the 25th Infantry Division. He was the assistant secretary of the general staff and commander of a chemical detachment while at Headquarters, V Corps, and commanded a heavy divisional chemical company while serving in 1st AD. At the National Training Center, he served as an observer/controller, NBC trainer for the Armor and Cavalry Training Team, and as the Chemical Company trainer. A graduate of the Officer Basic Course, Ranger School, Airborne School, Air Assault School, Chemical Officer Advanced Course, and CAS3, he is currently assigned to Fort Leonard Wood as an SGI for the Chemical Captain's Career Course.



Plow Platoon from Page 13

Reduction. (Figure 5) The #3 and #4 plow tanks drop their plows 50-80 meters from the edge of the minefield (due to the standoff range and limited range of the AVLM). Once everybody within the safety range of the AVLM is "buttoned up," the AVLM fires the rocket and detonates the line charge that clears the lane of mines. Once the lane is detonated, the #3 tank and #4 tank proceed to clear the lane. If necessary, the plow tanks need to be prepared to stop and allow the AVLM to fire another rocket (if the minefield is over 100m in depth). Once the lane is cleared, the #2 tank provides security (far side) should the #3 and #4 tank become NMC.

Upon completion of the breach mission, the tank plow platoon conducts link up with the follow-on company/team (Figure 6). It is the responsibility of the plow tank platoon leader to ensure FM comms has been established between the plow platoon and the mech or tank company/team after the breach. (*According to the TF playbook IN is the team that the plow platoon is attached to once the breach has been completed and the task force continues the attack.)

FASCAM Re-Seed

While B/317 EN conducts the breach, the #2 tank must be prepared to clear a FASCAM re-seed. On order, the #2 tank advances from the overwatch position to clear a lane through the FASCAM minefield. CDR, TM BULLDOG will specify which lane to clear.

Upon completion of lane proofing, the sapper squads begin marking the lane entrance and exit points (see the 2-69 Armor Battalion TACSOP for marking identification). Violet smoke marks the breach entrance. Once the lanes are cleared, the lead elements continue to attack.

The author would like to thank Mr. Alex Spencer (late of 3 Pl, D/2-69 AR Bn) for being first through the breach and LTC David Styles for giving us his guidance during planning and his patience during execution.

CPT P.A. Callahan enlisted in the infantry as an 11M in 1988 and was assigned to 3d Bde, 3AD, Friedberg, Germany. After finishing his degree and being commissioned as a chemical officer from Georgetown University, he was assigned to 3d Sqdn, 3d ACR in 1993. In 1994, he branch transferred to armor and served as a tank platoon leader and rear detachment S3 when the regiment moved to Ft. Carson in 1996. After attending the advanced course, he was assigned to 3d Bde, 3D ID (M) serving as the assistant brigade ops officer; S4, 2-69 AR Bn; commander, D/2-69 AR Bn; and commander, HHC/2-69 AR Bn. He is a graduate of the Airborne, Air Assault, BMO, and TCCC (M1A1) courses. Currently, he is the U.S. liaison officer to the Royal Military Academy Sandhurst.

The Secret Museum at Kubinka:

This Russian museum's armor collection
Includes most of Nazi Germany's WWII tanks
And even some U.S.-made Cold War "defectors"

by James M. Warford

In 1936, a secret Russian armored vehicle testing facility was established at Kubinka, a large site approximately 60 kms west of Moscow. Over the years, this facility has been used for the testing of both new armored vehicle designs intended for the Russian Army, as well as captured war trophies dating back to World War II.

Since this facility is also the home of the Russian Scientific Research Institute for Armored Vehicle Technology (NIIBT), most of the attention directed at Kubinka focused on former Soviet and Russian armored vehicles. In recent years, however, the focus of attention broadened when it was revealed that Kubinka also includes a massive collection of foreign armor, a collection described by Russian sources as the "biggest in the world," totaling 290 vehicles. This collection includes several modern U.S. MBTs like the M46, M48, and M60. We have also begun to learn how these U.S. vehicles came into Russian hands during the Cold War.

In the late 1980s and early 1990s, the armored vehicle collection housed and maintained at Kubinka's Military Historical Museum of Armored Vehicles and Weaponry (officially established in 1972), was first revealed to the public. Since then, the museum has gradually become more accessible to Russian citizens and visiting foreigners. The armored vehicle collection is primarily housed in nine large buildings or sheds that resemble open-bay maintenance facilities, without the large bay doors. Each building contains approximately 30 well-maintained vehicles parked side-by-side. The building contents or "themes" in most cases have been confirmed by western visitors and are as follows: Building 1 houses Soviet/Russian heavy tanks. Building 2 contains Soviet/Russian medium tanks and

Building 3 Soviet/Russian light tanks. A fourth building is devoted to Soviet/Russian armored cars. Buildings 5, 6, and 7 house foreign armor, including a collection of German armored vehicles, circa 1941-1945 in Building 5, and other foreign armored vehicles in the remaining two buildings.

Building No. 8, on the other hand, is more mysterious and some sources report that it is still not open to visitors. But Building No. 9, also closed to foreigners for many years, has just recently been explored and includes a variety of rarely seen Soviet/Russian armored vehicles. Interestingly enough, Building 9 is much less well maintained than the other buildings and clearly hasn't been intended for foreign visitors. A few of the relatively modern vehicles in this building include: the Object 219A T-80 tank variant, which was standardized as the rarely seen T-80A Main Battle Tank (MBT), the Object 219RD early diesel-powered T-80B MBT prototype, and the Zhalo-S ("Sting-S") tank destroyer prototype based on the BTR-70 Armored Personnel Carrier (APC).

Since information regarding the museum's collection of armored vehicles first started to reach the west, its comprehensive representation of Soviet/Russian tank development has received the most attention. Among the armored vehicles from 13 different foreign countries, the most impressive is the complete collection of German armored vehicles from World War II, unique in that it includes the sole surviving German Maus heavy tank. The story explaining how the massive Maus found its way to the museum at Kubinka is still unconfirmed. Reportedly, the two working prototypes of the Maus at the German Kummersdorf testing facility were destroyed by German forces near

the end of World War II to prevent them from being captured by the advancing Russian Army. According to the available information, the Russians managed to combine the two damaged prototypes, along with parts of six other partially-completed vehicles, to build the Maus currently on display at Kubinka.

Unlike the German armored vehicles from World War II, many other foreign vehicles in the Kubinka collection are rarely photographed and have only been seen by visitors. This lack of photographic evidence has historically been characteristic of the U.S. armored vehicles at Kubinka. While the museum currently includes 21 U.S. vehicles, the post-World War II U.S. tanks have been virtually unseen in the west until now. The photographs of the U.S. M46 Patton Medium Tank, M48A3 Patton MBT, M60A1 MBT, and the Israeli Magach 4 MBT (a modified U.S. M48A3) are very rare and have been used here with permission. Although very limited, the available information regarding each of these tanks and how they eventually found their way to Kubinka is included below.

The U.S. **M46 Patton Medium Tank** was presented to the former Soviet Union by the North Korean government in 1953. Reportedly, there were originally two M46s provided, with one being destroyed in live-fire testing. Interestingly enough, until very recently the foreign tanks maintained at the museum were all painted dark green. After many years, an effort was made by the museum staff to portray these vehicles more realistically. One of the results of this effort is the very colorful M46 currently on display. During the Korean War, a UN offensive called Operation "Ripper" was launched in March 1951. This marked the first use of the unusual



U.S. M60A1



U.S. M48A2



U.S. M46

Photos by Roman Bazalevsky

“cat” or “tiger” paint scheme that appeared through the remainder of the Korean War. According to intelligence reports at the time, the Chinese were superstitious of tigers. In an attempt to take advantage of this, several U.S. armored units painted large cat faces on their tanks. These paint-jobs were complete with exposed teeth and claws. In some cases, entire tanks were painted with tiger stripes. While this interesting example of psychological warfare may have actually had more of an impact on the morale of the U.S. crews manning the tanks than it did on the Chinese, it did inspire the Kubinka museum staff to display their M46 with fangs. The paint job added to the M46 at Kubinka is very similar to that used on the M46s belonging to the 6th Tank Battalion, 24th Infantry Division during the Korean War. The U.S. **M48A3 Patton MBT**, provided by the Vietnamese government either during or after the Vietnam War, is also painted with a large animal mouth with exposed teeth on the tank’s glacis.

The U.S. **M60A1 MBT** at Kubinka was hand-delivered to the Soviets by an Iranian defector. Reportedly, Iran originally acquired over 400 M60A1s before the fall of the Shah in 1979. The Soviets were, however, well aware of the M60A1 and its capabilities before its arrival in the Soviet Union. In fact, the M60A1’s 105mm main gun and very effective armor protection were already considered a big problem for the Soviet Ground Forces at the time. The acquisition of the M60A1, however, did provide the Soviets their first opportunity to examine the tank close-up. While the available information continues to support Iran as the source for the single M60A1 on display at Kubinka, there are other unconfirmed reports that another M60A1 was supplied to the Soviets from Syria in 1983. This tank was apparently damaged in combat in 1982 and was delivered in poor condition. Additionally, there are re-

ports that live-fire testing was conducted at Kubinka in 1983 involving an M60A1 and captured Israeli M111 105mm ammunition. Reportedly, the exceptional performance of the M60A1’s gun and the Israeli ammunition surprised and impressed the Soviets enough to add additional glacis armor to many of their own tanks.

The Israeli **Magach 4 MBT** (also known as the “Patton 105”) on display at Kubinka started life as a U.S. M48A3 that was upgraded in Israel. These M48A3s were fitted with the 105mm main gun, a 750 hp diesel engine, and a new low-profile commander’s cupola. The Magach 4 was considered the backbone of the Israeli armored forces in the War of Attrition, the Yom Kippur War, and the Peace for Galilee Operation. The Kubinka Museum’s Magach 4 was provided by the Syrian government in 1982/1983. This Magach 4 is also fitted with Israeli “Blazer” Explosive Reactive Armor (ERA) that the Israelis first used in 1982. While certainly decommissioned for safety purposes in the museum, the displayed tank provides a good example of the extensive array of ERA “bricks” fitted to the tank for combat operations.

The confirmed existence of this particular Magach 4 at Kubinka is important for another reason as well. During the Peace for Galilee Operation in 1982, a Magach 4 was captured by Syrian forces during the battle of Sultan Yacoub. On June 11, 1982, at the end of hostilities, a “victory parade” was held in Damascus, Syria, that included a captured Israeli Magach 4 flying Syrian and Palestinian flags. Several sources reported that the tank’s Israeli crew was also on display during the parade. Three of these crewmen are now listed as MIA by the Israeli government. According to the International Coalition for Missing Israeli Soldiers (ICMIS), there is reason to believe that

this captured tank and the Magach 4 at Kubinka are one in the same. In January 2001, the ICMIS asked Israeli officials to request that an upcoming trip by the Israeli President to Russia include an examination of the Magach 4 at the museum. Reportedly, the Israeli tank (with turret serial number 94866 and hull serial number 817581) arrived at Kubinka still containing human remains, personal belongings, and documents belonging to the tank’s crew.

Over the years, there have been a small number of people in the west who were aware of Kubinka and the potential intelligence bonanza it represented. Recent events around the world and in Russia have led to the gradual lifting of some of the secrecy surrounding the facility and the museum. For those who have studied the available information and for those lucky enough to visit the museum, one thing is clear: this first look at these U.S. tanks displayed at Kubinka is just the beginning. Only time will tell what other secrets Kubinka continues to keep behind closed doors.

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A Second Look

An Easy Way to Cut the Cost of Live-Fire Gunnery Evaluation

by Dr. Joseph D. Hagman

In the 1999 March-April issue of *ARMOR*,¹ Dr. Monte Smith and I proposed a strategy for freeing up about 20% of the ammunition, range time, and operational tempo (OPTEMPO) resources typically spent on Tank Table VIII (TTVIII). The strategy did so by enabling armor unit commanders to predict which of their crews would, and would not, first-run qualify (Q1) — *before* they had fired all ten engagements. Predictions were based on cutoff scores against which crew performance was compared after each engagement was fired. The fewer the number of engagements that needed to be fired before a prediction could be made, the greater the resource savings would be.

Soon after we developed the strategy, the TTVIII engagements used to derive its predictions were changed.² Consequently, the cutoff scores have had to be updated and the strategy revised accordingly. In reading on, you'll find out how the revised strategy works, what the new cutoff scores are, and how much can be saved by using this strategy. The analysis is based on TTVIII data collected from 171 M1A2 tank crews stationed at Fort Hood, Texas.

How the Revised Strategy Works

Like the initial strategy, the revised version uses cutoff scores to predict crew qualification status as early into the TTVIII engagement firing sequence as possible. These predictions are then used to qualify crews predicted to fire 700 or more, as well as to send predicted nonqualifiers back for remedial training — two actions that until now have had to await the firing of all ten engagements.

Table 1 shows the new cutoff score values associated with the firing of from two to nine engagements. Crews scoring lower than the values listed in the middle column would be predicted to first-run qualify no more than 5% of the time, if they were to go ahead and fire all ten engagements. Those scoring equal to, or higher than, the values listed in the right column would be predicted to Q1 at least 95% of the

time. Crews scoring in between these values would go on to fire the next engagement.

The resulting predictions will apply to whatever set of ten TTVIII engagements are fired, just as long as the selection and firing order of engagements are not based on their expected difficulty. Thus, neither the training program leading up to TTVIII firing, nor the table's engagement scenario itself need to be modified for the predictions to hold up.

Implementing the Strategy

The flowchart in Figure 1 shows one way the proposed strategy might be implemented in the unit using the cutoff scores in Table 1. All crews would begin TTVIII by firing the first two of the ten scheduled engagements. Those scoring lower than 114 would be pulled from the range and given remedial training, perhaps on the Conduct-of-Fire Trainer (COFT) or Abrams Full-Crew Interactive Simulation Trainer (AFIST). Following remediation, they would be given one rerun attempt, starting at the top with the first two engagements.

First-run crews scoring 166 or higher after the first two engagements would be awarded early qualification (Q1e); those scoring from 114 to 165 would go on to the third engagement. Crews scoring lower than 172 after three engagements would undergo remediation before beginning their rerun from the

top. Rerun crews would be evaluated as if they were firing their first run, except that predictions would now apply to Q2 rather than Q1. Those predicted to need remediation as a result of low scores on their rerun would receive an unqualified rating. First-run crews scoring 248 or higher after three engagements would be awarded early qualification; those scoring between 172 and 247 would go on to the fourth engagement, and so on.

Of course, other implementation approaches are possible. A commander might, for example, want to delay making any predictions until after his crews have fired at least five engagements. While the cutoff scores will apply under either implementation approach, the former is likely to be more cost effective.

What's the Payoff?

Generally speaking, the earlier in the TTVIII engagement firing sequence that predictions can be made, the greater the resource savings will be. Assuming that each engagement accounts for roughly 10% of the total resources spent on TTVIII, crews predicted to Q1 after only two engagements would save about 80% of the resources needed to fire all ten. Those predicted to Q1 after three engagements would save about 70%, and so on.

Resources can be saved by predicted Q1 crews as well as by those predicted to need remediation. Using the current

# of Engagements Fired	Remediation Cutoff Scores (<)	Q1 Cutoff Scores (≥)
2	114	166
3	172	248
4	234	326
5	299	401
6	363	477
7	435	545
8	511	609
9	587*	673

*mathematically eliminated

Table 1. Cutoff Scores For Remediation and Q1 Predictions

tank crew sample, we calculated (a) the number of crews in a 44-crew battalion that would be predicted to Q1 after each engagement, and (b) the predicted number of engagements they would save. As shown in Table 2, the five crews in the current sample predicted to Q1 after two engagements would save a total of 40 engagements (5 crews x 8 engagements = 40), the three crews predicted to Q1 after three engagements would save 21 engagements, and so on, with 88 engagements saved in all by the entire battalion. Thus, on predicted Q1 crews alone, 20% (88/440) of an armor battalion's first-run engagements could be saved merely by applying the proposed evaluation strategy.

Battalion resources should also be saved in cases of crews predicted to need remedial training simply because they can be identified before they've fired all ten engagements. Just exactly how much savings, however, would depend on how many rerun engagements are fired. Having crews start their reruns from the top, and then reapplying the cutoff-score values, should help to maximize the savings on the rerun attempt. Thus, in general, reducing the number of engagements fired through early prediction of which crews will, and which won't, first-run qualify should translate into less range time, fewer rounds, and reduced OP-TEMPO costs each year on TTVIII.

# of Engagements Fired	Predicted # of Early Q1 Crews	Predicted # of Engagements Saved
2	5	40
3	3	21
4	1	6
5	1	5
6	1	4
7	1	3
8	3	6
9	3	3
	Total: 18	Total: 88

Table 2. Predicted # of engagements saved by an armor battalion on the first run of TTVIII

Final Thoughts

The updated strategy proposed here shows that the cost of crew-level tank gunnery evaluation can indeed be cut considerably by simply changing the content of TTVIII, to include fewer engagements, as well its structure, to include performance cutoff scores or "gates" to support early qualification and remediation decisions. The resulting savings can be used to offset any future resource cuts, be pocketed, or be used for other purposes, such as platoon-level gunnery.

As of now, this strategy applies only to Active Component (AC) tank crews because no Reserve Component (RC) crews were included in the current analyses. Although the specific cutoff score values for early qualification and remediation decisions, as well as the size of expected cost cuts, may change somewhat from those reported here,

we've already shown that the use of cutoff scores for prediction purposes works for the RC with the old TTVIII engagements.³ So, there appears to be little reason why it won't work with the new engagements. We'll just have to wait and see how well.

In the meantime, more efficient AC tank gunnery evaluation on TTVIII is possible by evaluating crew performance as each engagement is fired, rather than waiting until the firing of all ten. In today's do-more-with-less environment, more efficient ways are needed for training and evaluating tank gunnery. The strategy proposed here is an easy, albeit controversial, way of doing so that we think will work without jeopardizing the purpose and results of the TTVIII evaluation process.

We'd like to hear your thoughts. You can reach us by regular mail at the U.S. Army Research Institute, 1910 University Drive, Boise, ID 83725, by telephone at (208) 334-9390, or by e-mail at Hagman@ari.army.mil.

Notes

¹Hagman, J.D. and Smith, M.D., "How the Guard Could Cut Costs on Table VIII Without Really Trying," *ARMOR*, March-April 1999, pp. 47-48.

²Department of the Army, *FM 17-12-1-2, Tank Gunnery Training (Abrams)*, 1998, Washington, D.C.

³Hagman and Smith.

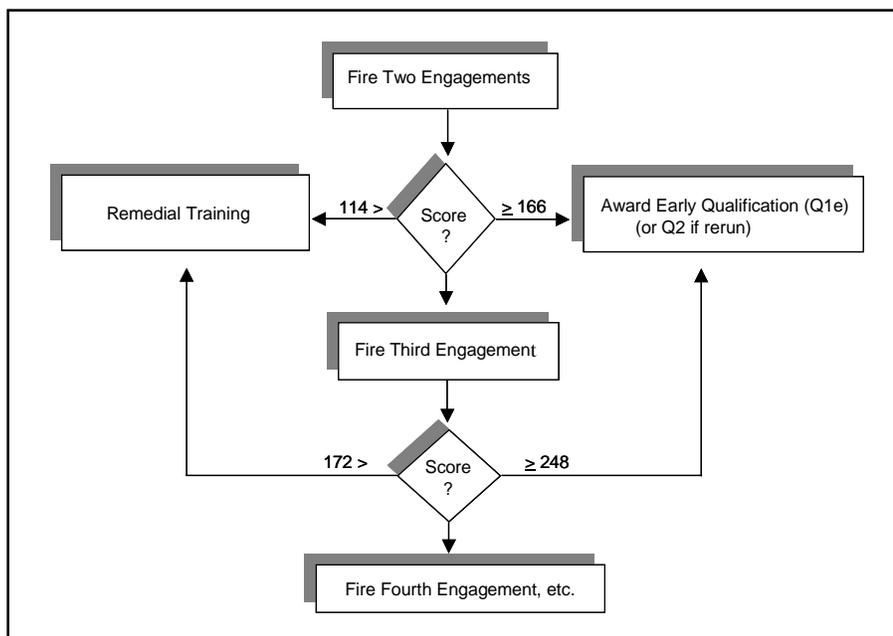


Figure 1. Flowchart of TTVIII engagement sequence.

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BUSTING THE BARRICADES:

How Armor Was Employed In the Urban Battle of Seoul

by Captain Matthew H. Fath

As noted in a recent *Army Times* article entitled “Urban Crisis,” few armor or mechanized infantry units — and not one active duty armor or mechanized infantry unit — has yet trained or was scheduled to train at the Zussman Village Mounted Urban Combat Training Site at Fort Knox, Kentucky.

This is a startling fact, considering that the facility cost over 15 million dollars to build and is touted as the premier urban warfare training center for armor units.¹ This apparent lack of interest by the heavy force community, coupled with the light infantry’s increasing reliance on “precision” urban warfare, is a disturbing trend. By disregarding the likelihood of future battles in urban terrain, many heavy units, with their emphasis on desert or rural warfare, allow the special operations and elite light infantry units to write the Army’s future urban warfare doctrine. For example, a cursory reading of doctrinal proposals or combat training center articles demonstrates that the correct training emphasis of conventional U.S. Army units should be on proper room-clearing techniques and well-aimed rifle fire.² Moreover, the focal point for “precision” MOUT adherents seems to be on aggressive light infantry forces, to the neglect of the combined arms team. Disregarding both the very nature of urban warfare and history’s past urban battles, “precision” MOUT supporters have wrongly implied that future urban fights will require less firepower.

General Douglas MacArthur once stated that it is the study of military history that brings to light “those fundamental principles, and their combinations and applications, which, in the past, have been productive of success.”³ An examination of the Battle of Seoul during September 25-28, 1950, refutes

the “precision” MOUT theory and demands that armor and mechanized leaders claim their rightful place at the table of doctrinal discussions. Specifically, the Battle of Seoul demonstrates that armor, with its ability to survive on the battlefield and produce large, concentrated amounts of firepower, was an integral component of the combined arms team. During X Corps’s “Battle of the Barricades,” Marine and Army tactics stressed the punching power of tanks as a decisive and necessary complement to the rifleman. Tanks, in the role of mobile assault guns, reinforced the rifle companies with destructive and suppressive fires to overcome the North Korean People’s Army’s (NKPA) strongpoint defenses. Additionally, they provided commanders flexibility by shifting tanks to decisive points on the battlefield. As a veteran of the fighting in Seoul, Private First Class Lee Berger of E Company, 2d Battalion, 1st Marine Regiment, stated, “Thank God we had tanks with us. Without them, we’d still be fighting there.”⁴

Given the military, psychological, and political importance of Seoul to both the UN (United Nations) and NKPA forces, it is hardly surprising that the city would become a battleground. Seoul, the capital of South Korea, was also an important logistics node. General MacArthur believed that the recapture of Seoul was an important part of Operation Chromite (The Inchon-Seoul Campaign) and stated:

“By seizing Seoul, I would completely paralyze the enemy’s supply system — coming and going. This in turn will paralyze the fighting power of the troops that now face Walker. Without munitions and food they will soon be helpless and disorganized, and can be easily overpowered by our smaller but well supplied forces.”⁵

MacArthur also believed that the recapture of Seoul would undermine the morale of the NKPA and boost the morale of the ROK forces. Author Clay Blair in *The Forgotten War: America in Korea, 1950-1953*, noted that MacArthur placed great emphasis on the psychological benefits of capturing Seoul. MacArthur professed that Seoul’s capture would shock and demoralize the North Korean government and armed forces.⁶

For the North Koreans, Seoul was the logistical hub for its forces south of the Imjin River, a lifeline of sorts. As author James Stokesbury, in his work *A Short History of the Korean War*, stated, “The vast majority of the support for the Communist offensive, therefore, funneled through the fairly narrow corridor in and around the capital city.”⁷

Two important factors in understanding the need for armor support during the Battle of Seoul center on the nature of the city’s urban terrain and the NKPA defenses. In 1950, Seoul had a population of nearly two million people. The city proper was surrounded by hill masses, mostly rural villages of huts. However, its core contained modern office buildings, residential structures, and ancient palaces. Many of the buildings were solidly constructed and structurally sound. Wide arterial boulevards crisscrossed the city, and it was these avenues of approach that would become the focal point for NKPA strongpoints.⁸ One such major road was Ma Po Boulevard. General Edwin H. Simmons, then a weapons company commander in the 3rd Battalion, 1st Marine Regiment, described Ma Po Boulevard as a “solidly built-up street, mostly two- and three-story structures of stucco and masonry construction, and occasional more impressive build-

ings — churches, hospitals, and so on — often enclosed with a walled compound.”⁹

In charge of the NKPA defense of Seoul was Major General Wol Ki Chan. Chan’s initial plan was to concentrate his forces on the hills surrounding Seoul and in the city itself. However, after the 32d Infantry Regiment of 7th Infantry Division seized South Mountain on the 25th of September, Chan believed that the city was lost and withdrew many of his units. Nevertheless, he left a sizeable force to defend Seoul’s city core, in an effort to delay and attrit X Corps forces. Chan hoped that this delaying action would also allow NKPA units south of Seoul to withdraw north and avoid being smashed between X Corps and Eighth Army.¹⁰

Opposing UN forces were an amalgamation of various NKPA units under the newly formed 31st Rifle Division or Seoul City Regiment, numbering approximately 8,000 to 10,000 men. The 31st Rifle Division consisted of units from the 25th NKPA Separate Infantry Brigade, 18th NKPA Rifle Division, 42d NKPA Tank Regiment, 19th NKPA Anti Tank Regiment, 513th NKPA Artillery Regiment, 10th NKPA Railroad Regiment, and the 36th Battalion, 111th NKPA Security Regiment.¹¹ The NKPA defenders also employed a large majority of Seoul’s inhabitants as forced labor to construct their barricades.¹²

To defend the nucleus of Seoul, the NKPA developed a potentially deadly defensive scheme. On the outer edges of the city core, the NKPA employed ambushes and sniper teams in order to attrit and disrupt Marine or Army attacks. Photojournalist David Douglas Duncan, with A Company, 1st Battalion, 1st Marine Regiment, testified to the frustrating effects of these ambushes in his book *This Is War: A Photo-Narrative of the Korean War*. He stated, “Other Reds, armed with rapid fire burp guns and hiding behind the gutter walls along the way, squirted



quick bursts at the steadily pushing Marines — then melted away.”¹³

After the ambushes had taken some toll on the attackers, the NKPA hoped that their series of successive strong-point defenses or barricades would destroy them. Barricades were established every 400 to 600 yards. If the attacker could not be halted, the NKPA’s defensive depth would allow their defenders to break contact, withdraw, and then occupy a supplemental or alternate barricade.¹⁴ The major weakness of the NKPA’s defense was that many strong-points were isolated and lacked mutual support. As author Bevin Alexander explained in his book *Korea: The First War We Lost*, “Thus the Americans were able to reduce each barricade independently with no fear that the enemy could develop a coordinated counterattack or pose any threat to possession of the city.”¹⁵

Despite the NKPA’s lack of an overall coherent defensive plan, at the small unit level each barricade was individually formidable and deadly to the potential attacker. These barricades were essentially fortified islands. As author Robert Tallent, who

was with D Company, 2d Battalion, 1st Marine Regiment, stated:

“In actions of this type there can be no flanking of a position — only so many men can get into the fight. The width of the street, available cover and strength of the enemy fire dictate the number of troops that can be brought to bear on any one position... The barricade is a separate battle all to itself.”¹⁶

Each barricade was centered on a street intersection. The entire width of the street was blocked with a wall constructed of rice bags filled with earth. The barricade was generally eight feet high and approximately six feet deep, making it impervious to machine gun or small arms fire. Many barricades were reinforced with various materials such as overturned trolley cars, automobiles, barrels, streetcar rails, or other debris. In front of each barricade were rows of antitank mines. Covering this kill zone were interlocking fires from towed 45mm antitank guns, individual T-34 tanks or SU 76 self-propelled guns, antitank rifles, and Maxim heavy machine guns.¹⁷

Each barricade was also tied into adjacent buildings. NKPA soldiers occu-



pied defensive fighting positions inside the buildings and fired from doors and windows.¹⁸ These positions offered excellent cover and concealment and degraded the attacker's target acquisition. Snipers also fired from rooftops. Staff Sergeant Lee Bergee of E Company, 2d Battalion, 1st Marine Regiment, stated that, "It seemed that every building in Seoul housed an enemy sniper."¹⁹ Each barricade was also supported with mortars and artillery fires, which were often registered in front of the enemy barricades. For extra defense against tanks, the NKPA also resorted to suicide detachments armed with satchel charges.²⁰

Against these defenses, the X Corps commander, Major General Edward Almond, ordered General Oliver P. Smith's 1st Marine Division to seize Seoul. Smith planned a multi-pronged advance that was centered on major roads in Seoul, in an effort to capture the city quickly.²¹ Based on the limited intelligence of NKPA defenses in Seoul, the operation was essentially an urban movement to contact. On September 25, the 1st Marine Division began its attack on Seoul. In order to support the 1st Marine Division's at-

tack and isolate the city from the south, the 32d Infantry Regiment of the 7th Infantry Division seized South Mountain and cleared the surrounding urban area.²²

Marine Regimental Combat Team One, consisting of the 1st Marine Regiment and the 2d Korean Marine Corps Battalion, attacked in zone (its "zone of action" approximately one mile to one and half miles wide with a final objective of six miles in depth — the high ground near the northeastern outskirts of Seoul) oriented on the Ma Po Boulevard. In RCT-1's zone were Seoul's main business and hotel section; the main Seoul railroad station; the French, American, and Russian consulates; City Hall; the Duk Soo Palace; and the Museum of Art.²³ To give the reader a flavor of the scope of RCT-1's mission, General Edwin Simmons stated that their attack was analogous to "moving up Pennsylvania Avenue to capture the Capitol, taking Union Station along the way."²⁴

Regimental Combat Team Five, consisting of the 5th Marine Regiment and the 1st Korean Marine Corps Battalion, attacked in zone (its "zone of action"

also approximately one to one and a half miles wide, with a final objective of six miles in depth — the high ground overlooking the Seoul-Uijongbu Road) oriented towards the northwestern part of the city, which included the Government House, Sodaemun Prison, Changdok Palace, and the Royal Gardens. Regimental Combat Team Seven, consisting of the 7th Marine Regiment, the 1st Marine Recon Company, and the 5th Korean Marine Corps Battalion, was originally ordered to protect the division's left flank and seize the high ground astride the Seoul-Kaesong Road to the northwest of Seoul in order to block enemy escape routes.²⁵ However, after Smith realized the intensity of the fighting in Seoul, he reoriented RCT-7s axis to the south down the Kaesong-Seoul highway and ordered them to attack abreast of RCT-1.²⁶

Despite MacArthur's premature pronouncement of the city's liberation on September 26, the seizure of Seoul did not come quickly. After defeating a NKPA armored counterattack during the night of September 25, the Marine forces soon became bogged down in a street-by-street war. As Colonel Lewis "Chesty" Puller, the commander of the

1st Marine Regiment stated, "Progress was agonizingly slow."²⁷ Sometimes, the Marine regiments averaged a total of 1,200 to 2,000 yards a day.²⁸ This was due to the fact that the lethal NKPA traps produced murderous amounts of fire and posed significant challenges for the Marine or Army attackers. They also had the propensity to inflict large numbers of casualties. Private First Class Jack Wright of G Company, 3rd Battalion, 5th Marine Regiment, remarked that his company nicknamed one intersection "Blood and Bones Corner."²⁹ Army Signal Corps Lieutenant Robert Strickland, who was with the Marines in Seoul, stated:

"The air was whipping with everything from flying stones to big antitank shells... Right after this, we got so much fire of all kinds that I lost count. There was more mortar shells, more antitank stuff, and more small-arms fire, and then it started all over again. I have seen a lot of men get hit in this war and in World War II, but I think I have never seen so many men get hit so fast in such a small area."³⁰

Given the nature of the intense fighting described above, it becomes abundantly clear that the "sugar-coated version" of precision MOUT could not have possibly overcome these defenses.³¹

Instead, in order to breach these barricades and destroy the NKPA defenders, the Marine and Army forces developed a highly effective combined arms team, in which tanks played an indispensable role. Most UN forces quickly discovered that rifle or machine guns lacked the penetrating power and punch to overcome the hardened NKPA barricade defenses. Moreover, only the tank proved to be effective at physically breaching the barricade. It simply blasted it to shreds with its main gun or plowed through it.³²

The typical tactical pattern for the Marines or Army units began with a bombing or strafing of NKPA positions by Marine Corsairs. Next, mortars and artillery suppressed the enemy while a team of infantry and armor moved into support-by-fire positions. Tanks destroyed NKPA machine guns, tanks, and antitank guns, while engineers breached the minefields.

After a breach lane was created, tanks rolled forward and demolished the barricade. Then infantry, following behind the tanks to take advantage of their armor protection, entered buildings and

completed the destruction of the enemy. On the average, this whole process took about an hour per barricade.³³ Staff Sergeant Chester Bair of the Heavy Tank Company, 32d Infantry Regiment, which was often attached to Marine units, praised these tactics. He stated:

"The Marines used tanks very well. They would use the telephone located on the rear of each tank which talked to the commander inside. In this way the Marines acted as our eyes. Buttoned up inside, depending on a periscope, our vision was limited. Working outside in the streets, the Marines tremendously increased our ability to close with the enemy and to direct our firepower."³⁴

The two tanks that were used by UN forces during the Battle of Seoul were the M-26 Pershing and the M4A3 Sherman. The M-26 Pershing was used by the Marine Corps. Its armament was a 90mm main gun and two .30 caliber machine guns. The Army used the M4A3 Sherman. Also, some Marine units received support from the Sherman tank companies of the 7th Infantry Division. The Sherman's armament consisted of a 76mm main gun and three .30 caliber machine guns. In addition to the Pershing and Sherman tanks, other variants, such as flame-thrower tanks and bulldozer tanks, were also used.³⁵

Tanks were often rotated in order for the attacking units to sustain the momentum of the attack and prevent many withdrawing NKPA soldiers from bolstering the defense of the next barricade. Chester Bair stated, "As soon as one had been eliminated, there would be another. After a tank overran three or four of them, another one would replace it.

In this manner each tank could refuel, clean its guns, receive ammo, and allow the crew to work and do maintenance."³⁶ If a tank "rotation" policy was not possible, attackers waited for tanks to rearm and refuel before continuing on to the next barricade fight.³⁷

One hallmark of the tank's effectiveness was its ability to generate large amounts of accurate and deadly firepower in a very short time. During the destruction of one barricade by D Company, 2d Battalion, 1st Marine Regiment, Tallent stated that it appeared that the "tank guns went into a rampage."³⁸ Tanks assisting companies from the 1st Battalion, 1st Marine Regiment were also instrumental in de-

stroying NKPA defenses around the railroad station and government compound.³⁹ Often, tanks proved to be the decisive arm when the momentum of attacks began to stall and fire superiority needed to be regained. Duncan observed:

"From behind their barricades they (the NKPA) started spraying endless rounds into the station and its plaza out in front. The Marines burrowed into the shell holes and dared not raise their heads, for the crack of bullets overhead was close and constant and meant for them. Back along the street, other Marines heard the fire, leaned dangerously

"The tanks traded round for round with the heavily-armed, barricaded enemy — and chunks of armor and bits of barricade were blown high into the air."

far out from their own barricades to see how they might relieve their buddies, and had found no answer — when deep, ground-shivering roars took the problem from their shoulders... tanks, those long-overdue tanks, growled up across the railroad tracks, into the plaza — and met the enemy fire head on. The tanks traded round for round with the heavily-armed, barricaded enemy — and chunks of armor and bits of barricade were blown high into the air."⁴⁰

Tanks were also very effective at quickly destroying NKPA heavy weapons and armored vehicles which, left alone, would have cut advancing infantrymen to pieces. During a fight near Duksoo Palace, Lieutenant Bryan J. Cummings's M-26 Pershing destroyed two NKPA SU-76s and allowed the Marines to seize the enemy barricade.⁴¹ Blair's Sherman crew also destroyed a NKPA T-34 in a battle in the street, "ripping their turret completely off" with one round.⁴²

Attacks that were launched without tank support often ended in failure. In fact, many of these units had to be rescued by tanks; the presence of a few tanks often favorably shifted the tide of the battle towards the UN side. For example, on September 26, a platoon

from C Company, 32d Infantry Regiment encountered a NKPA defense in vicinity of the Seoul City Racetrack. Suffering heavy casualties within seconds and lacking any tank support, the platoon established a hasty defense and began fighting for their lives. The platoon just simply did not have enough firepower to overcome the NKPA defenses. The platoon leader, Lieutenant James Mortrude, wisely requested assistance from some tanks that he saw in an adjacent sector. As author Shelby Stanton described in his book, *Ten Corps in Korea, 1950*:

“He (Lieutenant Mortrude) spotted a trio of three tanks clanking forward to their assistance, and dashed 25 yards through withering enemy fire to reach them before more casualties were inflicted on his platoon. Grabbing the external interphone system phone on the rear of the “buttoned-up” lead tank, he yelled directions to commence firing immediately into the enemy-held roadway. The tanks smothered the road berm in geysers of blackened earth as the uninjured and walking wounded retreated to safety.”⁴³

The initial advance by D Company, 2d Battalion, 7th Marine Regiment is another vignette that demonstrates the vital need for tank support during the urban fight at Seoul. Moving to conduct link-up with elements of the 5th Marine Regiment, D Company was punished by NKPA defenses near the Arch of Independence, suffering heavy casualties within minutes. D Company was soon surrounded by NKPA counterattacks and had to establish a perimeter defense and wait for support. The next morning, tanks smashed through the enemy’s defenses and liberated the lost company.⁴⁴

The liberation of Seoul actually occurred on September 28, when fittingly, a flame-thrower tank destroyed that last real NKPA defense near Kwang Who Moon Circle.⁴⁵ Seoul was ripped from the hands of the NKPA at a high cost. For example, the 1st Marine Division lost 121 killed in action and 589 wounded. NKPA casualties were estimated at 4,284 dead or wounded.⁴⁶ U.S. tanks proved to be quite resilient. Not one tank was destroyed by an NKPA tank but several were destroyed by suicide detachments or mines.⁴⁷

The use of armor during the Battle of Seoul provides the modern military leader with key insights on the possibilities of future urban warfare and the

need to train units to meet this challenge. The Marine and Army experience in Seoul demonstrates that armor plays a critical role in destroying a resolute enemy in urban battles. Armor has the ability to rapidly destroy enemy strongpoints and create breach holes for the infantry assault, while using its armor protection to survive on the battlefield.

Like the Marines and the Army at Seoul, successful future MOUT operations should be conducted with combined arms teams, with armor or infantry fighting vehicles playing a requisite role. The current fad of believing that infantry alone, employing “discriminatory” rifle fire and hostage rescue tactics, can overcome an urban defense may well be a recipe for disaster. Precision MOUT techniques, while admirable and alluring in its concept of minimizing noncombatant casualties and collateral damage, does not pass the test of history.

Notes

¹Sean D. Naylor, “Urban Crisis,” *Army Times*, 20 November 2000, [on-line].

²The definition of precision MOUT can be found in the Department of the Army *Field Manual 90-10-1, An Infantryman’s Guide to Combat in Built-Up Areas* (Washington, D.C.: GPO, 1993).

³John E. Jessup and Robert W. Coakley, *A Guide to the Study and Use of Military History* (Belmont, Calif.: Wadsworth Publishing Company, 1998), 38.

⁴Donald Knox, *The Korean War, Pusan to Chosin: An Oral History* (New York: Harcourt Brace Jovanovich, 1985), 293.

⁵William T. James, “From Siege to Surgical: The Evolution of Urban Combat from World War II to the Present and Its Effect on Current Doctrine,” (M.M.A.S. thesis, United States Army Command and General Staff College, 1998), 27.

⁶Clay Blair, *The Forgotten War: America in Korea, 1950-1953* (New York: Times Books, 1987), 231-232.

⁷James L. Stokesbury, *A Short History of the Korean War* (New York: William Morrow, 1988), 66.

⁸Roy E. Appleman, *United States Army in the Korean War: South to the Naktong, North to the Yalu* (Washington, D.C.: Office of the Chief of Military History, Department of the Army, 1961), 531; Knox, 288; James, 27-28.

⁹Edwin H. Simmons, “The Battle For Seoul,” address to the U.S. Marine Corps Amphibious Warfare School, 15 March 1985, [on-line], <http://www.geocities.com/pentagon/6453/seoul.html>, accessed 14 September 2000.

¹⁰G.W. Smith, “The Blinding Sand of MacArthur’s Hourglass: The Race to Seoul,” *Marine*

Corps Gazette (September 2000), [on-line], accessed 7 Sep 2000; Robert E. Everson, “Standing at the Gates of the City: Operational Level Actions and Urban Warfare,” (M.M.A.S. thesis, School of Advanced Military Studies, United States Army Command and General Staff College, 1995), available from the Center for Army Lessons Learned Database (Public Access), <https://calldbpub.leavenworth.army.mil/call.html>, accessed 8 September 2000; Bevin Alexander, *Korea: The First War We Lost* (New York: Hippocrene Books, 1986), 214; James, 29.

¹¹Lynn Montross and Nicholas A. Canzona, *United States Marine Corps Operations in Korea, 1950-1953, Volume II: The Inchon-Seoul Operation* (Washington, D.C.: Headquarters, United States Marine Corps, 1955), 325-326.

¹²Shelby L. Stanton, *Ten Corps in Korea, 1950* (Novato, Calif.: Presidio Press, 1996), 106.

¹³David D. Duncan, *This Is War! A Photographic Narrative of the Korean War* (Boston: Little, Brown, and Company, 1990).

¹⁴Robert Tallent, “Street Fight in Seoul,” *The Leathernecks: An Informal History of the U.S. Marine Corps* (New York: Franklin Watts, 1963), 240-241.

¹⁵Alexander, 218.

¹⁶Tallent, 240.

¹⁷Robert D. Heinl, Jr., *Victory at High Tide: The Inchon-Seoul Campaign* (New York: J.B. Lippincott, 1968), 229; Andrew C. Geer, *The New Breed: The Story of the U.S. Marines in Korea* (New York: Harper and Brothers, 1952), 171; Simmons; Tallent, 240-241; Montross and Canzona, 271-272; Knox, 289.

¹⁸Alexander, 215-216.

¹⁹Knox, 289.

²⁰Montross and Canzona, 272.

²¹Anthony Harrigan, “Combat in Cities,” *Military Review* 46, No. 2, (May 1966): 29; Montross and Canzona, 255-256.

²²Montross and Canzona, 273-274.

²³*Ibid.*, 255-256; Appleman, 531.

²⁴Simmons.

²⁵Montross and Canzona, 255-256; Appleman, 531.

²⁶Montross and Canzona, 264.

²⁷*Ibid.*, 272.

²⁸Montross and Canzona, 273; Heinl, 242.

²⁹Knox, 292.

³⁰Stanton, 108-109.

³¹George Mordica, “Urban Combat: It’s A Dirty Business, But Someone Has to Do It,” Center for Army Lessons Learned Newsletter — Urban Combat Operations: Tactics, Techniques, and Procedures, November 1999, No. 99-16, 1-2. Mordica coins the term “sugar-coated,” when referring to precision or surgical MOUT.

³²Tallent, 244; Heinl, 229-230.

Continued on Page 35

Modernizing India's Tank Fleet

by Lieutenant Colonel Mark A. Olinger

India's Army appears to have embarked on a major modernization effort. The Indian Army has one million soldiers organized into five regional commands (North, West, Central, South and East). It has separate divisional structures to manage threats for China and Pakistan, the former with nine mountain divisions and the latter with three armored and four mechanized divisions. Nineteen infantry divisions, 15 independent brigades, and other support units round out the current army force structure. In response to the Kargil crisis in the summer of 1999, new equipment is being purchased. While artillery fire control and mountain gear are at the top of the priority list, the major end-item is T-90 tanks.¹

Indian Main Battle Tank Fleet

It is estimated that the Indian Army main battle tank (MBT) fleet consists of 3,400 tanks, including those held in reserve. These include 1,170 Vijayanta (a British Vickers export model built for India), 1,530 T-72M1, and 700 T-54/T-55 MBTs. These are organized into 60 armored regiments, each of which has an authorized strength of 45 MBTs. Of the 60 regiments, it is estimated that 34 are equipped with the T-72M1 with the remainder being equipped with the Vijayanta. The T-54/T-55 MBTs are held in reserve.²

The Vijayanta: In late 1950, Vickers Defence Systems designed a new MBT specifically for export that used the standard 105mm L7 rifled tank gun, the same gun that was used on the U.S. M60 and early M1 tanks, with automotive components from the British Chieftain MBT. Following the evaluation of competing British and German designs to meet an Indian Army requirement for a new MBT, manufactured in India, an agreement was signed in August 1961 between Vickers Defence Systems and the Indian government. This agreement covered building prototypes in the United Kingdom, supplying 90 production tanks, and building a new tank facility at Avadi to undertake production of the Vickers

Mk 1 MBT. The Indian Army calls the tank the Vijayanta.³

The first two prototypes were completed in 1963. One was sent to India and the other remained in the United Kingdom for research and development work. In 1965, the first production models were delivered from Vickers. Indian production models rolled off the production line in January 1965. The initial Indian Vijayanta was built mainly from parts supplied by the United Kingdom. Progressively, India undertook production of the tank, and eventually, the majority of the tank was produced in India.⁴

By the mid-1980s, production in India was finished, by which time an estimated 2,200 had been built. The Vijayanta has a crew of four, 105mm rifled main gun, 7.62mm coaxial machine gun, 7.62mm machine gun for anti-aircraft defense, 12.7mm machine gun for ranging, and two sets of smoke-grenade launchers. The 105mm main gun is not fitted with a thermal sleeve. A Leyland L60 engine powers the tank and it has a welded turret.⁵

The T-72M1: India originally intended to order only a limited number of export T-72M1 MBTs from Russia until production could begin on the locally designed Arjun MBT. It was

decided to undertake local production of the T-72M1s at Heavy Vehicles Factory (HVF) at Avadi in Southern India. The first vehicles were completed in 1987 with delivery to the Indian Army the following year. In the Indian Army, the T-72M1 is known as the Ajeya.⁶

The first 175 tanks were produced with kits supplied by Russia. This was followed by progressive local manufacture in order to produce as much as 97 percent of the MBT's components in India. Production of the T-72M1 in India was running at an estimated 70 vehicles per year with the final tanks being delivered in March 1994.⁷

Ajeya T-72M1s have a 125mm smooth bore main gun with 45 rounds and six Svir anti-tank guided missiles, 7.62mm coaxial machine gun, and smoke grenade dischargers either side of the turret. Layout is conventional, with driver front, turret center, and engine and transmission rear. Commander sits left, gunner right. There is no loader as the 125mm main gun has an automatic carousel loader with charge above and projectiles below.⁸

Reserve T-54/55s: A limited number of the T-54/T-55s have been modernized at the Narsik ordnance facility with the installation of a 105mm rifled gun, driver's passive night vision peri-

TABLE 1: FIRE CONTROL COMPARISON

	<u>T-72BM</u>	<u>T-80U</u>	<u>T-90</u>
Fire Control	1A40	1A45	1A45T
Gun Stabilization	2E42-2	2E42	2E42-4
Gunner's Rangefinder Sight	1K13-49	1A42	1A43
Ballistic Computer	1V528	1V528	1V528-1
Wind Sensor	Crosswind	DVE-BS	DVE-BS
Guided Missile	Svir	Reflects	Reflects

Source: *Jane's Armour and Artillery 1998-99*, Nineteenth Edition

scope and the Bharat Electronics Limited Tank-Fire Control System similar to that fitted to the Vijayanta MBT.⁹

The Arjun MBT: In 1972, the Indian Army issued a requirement for a new MBT to replace the Vijayanta. Work began on the Arjun tank at the Combat Vehicle Research and Development Establishment (CVRDE) in 1974. By the time the first prototype of the Arjun was unveiled in April 1984, 300 million rupees had already been spent on the project.¹⁰

Between 1983 and 1989, India is reported to have imported 42 engines and transmissions for the prototypes at a total cost of U.S. \$15 million. By late 1987, ten prototypes of the Arjun MBT had been completed and six had been delivered to the Indian Army for extensive trials. The remaining four have been retained for further development work and trials at CVRDE.¹¹

In March 1993, it was reported that the Arjun MBT had successfully completed its firing tests. During a demonstration in the Rajasthan Desert in western India, two prototype Arjuns hit static and mobile targets at ranges between 800 and 1,200 meters, broke through concrete walls, climbed 60 percent slopes and maneuvered through depressions. The prototypes were built by HVF.¹²

The Arjun has a third-generation fire control system with a 120mm rifled main gun that will fire APFSDS, HE, HEAT, HESH (High Explosive Squash Head), and smoke rounds. All the 120mm rounds use a semi-combustible cartridge case. A 7.62mm machine gun is mounted coaxial with the main gun and a 12.7mm machine gun is installed for anti-aircraft defense. The gunner's main sight consists of day sight, thermal sight, laser rangefinder, and stabilized head common to all three channels. Turret traverse and weapon elevation are all-electric with prototype systems provided by FWM of Germany.¹³

It was intended that the production Arjun MBTs were to have had a locally designed 1,500-horsepower engine coupled through a locally designed semi-automatic transmission with four forward and two reverse gears working through a hydrodynamic torque converter, retarder, and integral system. The Arjun has a NBC system designed and built by Bhabha Atomic Research Center. To further enhance battlefield survivability, it has an automatic fire detection and suppression system. Am-

The Indian Army has used British tanks, Russian tanks, and some of their own...



The Vijayanta, a British Vickers export MBT of the 1960s, built in India.



India's own Arjun MBT project has been in development for many years.



The Indian Army may upgrade to Russian T-90s, above, after acquiring many T-72s, which are similar. This purchase might force cancellation of the Arjun project.

munition is stowed in watertight containers to reduce fire hazards.¹⁴

Two years ago, the Indian government approved the series production of 124 Arjuns, but little has been done at the HVF to produce them. The domestically produced Arjun MBT was intended to replace the Vijayanta MBT, but consideration has also been given to the purchase of either Russian T-80 or T-90 MBTs. India recently signed a contract to buy 310 Russian T-90S MBTs for an estimated U.S. \$600-\$800 million. The Indian Army will be the first export customer for the T-90, which has been in Russian Army service since the 1990s.¹⁴

The T-90 MBT: Developed by the Kartsev/Venediktove Bureau at the tank plant in Nizhnyi-Tagil southeast of Moscow, designated Obiekt 188, the T-90 was revealed in 1993 and believed to have entered low rate production in 1994 for the Russian Army. Based on the T-72BM MBT that was also designed and built at Nizhnyi-Tagil and incorporates some of the advanced features of the late production T-80 tank. Advanced features include the fire control; defensive aids systems and Kontakt-5 Explosive Reactive Armor (ERA) systems.¹⁶

The T-90 MBT was exhibited for the first time outside Russia in March 1997 in Abu Dhabi. By early 1998, production of the T-90 had reached more than 120 units and at least two Russian tank regiments had been equipped with them. As previously stated, the T-90 tank is a further development of the T-72BM but has the latest armor package and a new fire control system. A comparison of the fire control system installed in the T-72BM, T-80U, and T-90 MBTs is given in Table 1.¹⁷

Layout of the T-90 MBT is almost identical to that of the T-72 MBT, with the driver's compartment in the front, turret in the center, and engine compartment in the rear. The hull and turret of the T-90 is fitted with the latest Kontakt-5 ERA over the forward arc, providing protection against APFDS and HEAT type projectiles.¹⁸

The driver is seated at the front of the hull in the center and has a single day periscope that gives observation through the frontal arc and a single piece hatch cover that lifts and opens to the right. For driving at night, the day periscope can be replaced by a TVN-5 night vision device. The other two members of the crew are seated in the turret with the commander on the right and the

gunner on the left. The tank commander's contracting cupola has a single piece hatch cover that opens forwards with two rear-facing TPNA day vision blocks. In the forward part of the cupola is the TKN-4S Agat-S stabilized day/image intensification sight with a TNP-160 day periscope on either side.¹⁹

The gunner's hatch opens forward and has a circular mounting for the snorkel tube that allows deep fording. In front of the gunner's hatch is the TNPA-65 vision block while a TNPA-65 day vision block is fitted in the hatch itself. The gunner of the T-90 is provided with a day and thermal sighting system with the tank commander being provided a screen to monitor the thermal view seen by the gunner.²⁰

The T-90 has a computerized fire control system that allows the tank commander and gunner to lay and fire the main armament while the vehicle is stationary or moving under day or night conditions. The gunner's sighting system includes the 1A43 day sight with stabilized field of view in two planes and laser rangefinder, IG46 rangefinder with missile guidance channel, 1V528-1 digital ballistic computer, DVE-BS wind gauge, gunner's T01-K01 infrared vision equipment and TPN4-49-23 sight Buran-PA. The last can be replaced by the Agava-2 roof mounted stabilized thermal sight.²¹

Main armament is the 125mm 2A46M1 smoothbore gun fitted with a fume extractor and a thermal sleeve. This gun is stabilized in both planes by the 2E42-4 system and fed by an automatic loader. The 125mm gun fires ammunition of the separate loading type and it can also fire a special high explosive fragmentation projectile that can be detonated over the target using the tank's fire control system. It is estimated the T-90 has a maximum rate of fire of seven rounds per minute.²²

The 125mm main gun can also fire the 9K119 Refleks laser-guided projectile out to a range of 5,000 meters. This has the U.S./NATO designation of AT-11 Sniper. Weighing 17.2 kilograms, the AT-11 Sniper has four wraparound fins at the rear for stability when the missile leaves the launch tube and two towards the front for steering. The T-90 normally carries six AT-11 Sniper missiles. Only the gunner can launch the Refleks guided missile.²³

A 7.62mm PKT machine gun is mounted coaxially to the right of the main gun and a 12.7mm NVST machine gun is mounted on the commander's cupola.

Mounted either side of the turret is a bank of six electronically operated 81-mm smoke grenade launchers. The T-90 MBT can also lay its own smoke screen by ejecting diesel fuel into the exhaust outlet located on the left side of the hull.²⁴

To improve its battlefield survivability, the T-90 is fitted with the TshU1-7 Shtora-1 (which means "shutter" or "blind") countermeasures system, which is also fitted to some models of the T-80UD and the Ukrainian T-84 MBTs. The TshU1-7 Shtora consists of an infrared source, power supply, and control panel. The T-90 MBT has two infrared sources; one mounted either side of the 125mm main gun.²⁵

The V-84MS diesel engine is fitted with a pre-heater for use in cold weather. It is coupled to a mechanical transmission that consists of a primary reduction gear, two final gearboxes, and two final drives. The engine is also fitted with an effective two-stage cleaning system and a temperature-warning device. Although a diesel engine, it will also run on gasoline, kerosene, and benzene, blended or unblended. For trial purposes, T-90 MBTs have been fitted with other, more powerful engines, including the V-92 diesel which produces 950 horsepower and the V-96 producing 1,100 horsepower. A turbine has also been fitted to the T-90 similar to that fitted in the T-80U MBT.²⁶

Standard equipment includes NBC protection, fire detection and suppression system, nose-mounted dozer blade and a deep fording kit. To increase operational range, two fuel drums can be carried at the rear of the hull. The T-90E and T-90S are understood to be the export models of the T-90. The T-90 MBT remains in production and is currently in service with the Russian Army.²⁷

Procurement Controversy

The Russian's T-90 offer was made to Defense Minister Mulayam Singh Yadav during his September 1997 visit and, early in 1998, the Indian Government began negotiations with the Russians to add this MBT to its inventory. Dissenting Indian Army officers quickly claimed they did not need, nor could they afford this tank. An Indian Army technical evaluation team went to Russia in February 1998 to test the T-90 at one of Russia's proving grounds and came back praising the Russian tank. The Indian Army finally announced a decision to buy two regiments worth in

TABLE 2: MAIN BATTLE TANK COMPARISON

	T-72M1	T-80U	T-90
Crew	3	3	3
Combat Weight	44,500 kg.	46,000 kg.	46,500 kg.
Ground Pressure	0.90 kg/cm ²	0.92 kg/cm ²	0.91 kg/cm ²
Engine	840 hp diesel	1250 hp turbine	840 hp diesel
Fuel Capacity	1000 liters	1090 liters	1200 liters
Maximum Speed	60 km/hr	70 km/hr	60 km/hr
Range (without long range fuel tanks) (with long range fuel tanks)	480 km 550 km	335 km 440 km	450 km 550 km
Electrical System	24V	27V	24V
Gradient	60%	63%	60%
Side-Slope	40%	46%	40%
Vertical Obstacle	0.85 meters	1 meter	0.85 meters
Trench Crossing	2.28 meters wide	2.85 meters wide	2.8 meters wide
Armament (main) (coaxial) (anti-aircraft)	1 x 125mm gun 1 x 7.62mm MG 1 x 12.7mm AAMG	1 x 125mm gun 1 x 7.62mm PKT MG 1 x 12.7mm NSVT MG	1 x 125mm gun 1 x 7.62mm PKT MG 1 x 12.7mm NSVT MG
Gun Elevation/Depression	+14° to -6°	+14° to -5°	+14° to -6°
Smoke Grenade Launcher	8	8	8

SOURCES: *Jane's Armour and Artillery 1998-99*, Nineteenth Edition and 1LT Adam Geibel, "Updating India's T-72 MBT Fleet," *ARMOR*, May-June 1998.

early November 1998, to augment its armored forces on the western border with Pakistan.²⁸

The biggest surprise concerning the Russian T-90 came in late December 1998 when the Indian media announced that the deal would total 200 T-90S MBTs. In January 1999, the Cabinet Committee on Political Affairs approved the purchase of 310 tanks. This was enough to equip five regiments, with tanks left over for war reserves and spares.²⁹

Controversy has surrounded the T-90S purchase after former Prime Minister H.D. Deve Gowda questioned the motives behind senior army officers keen on acquiring the Russian tanks. Former Prime Minister Gowda claims that an upgraded version of the locally built T-72M1 (referred to as the T-72S) would be cheaper and as effective as T-90S. He also wanted the T-72S reevaluated; because he claims the T-90S is expensive and it had not been tested under Indian weather conditions.³⁰

In addition to trials at the Indian Armored Corps Center and School at Ahmadnagar, with hot weather tests in the Rajasthan desert, a limited number of the tanks were deployed during Exercise Shiv Shakti in November-December 1998. Shiv Shakti involved an estimated 66,000 soldiers, 700 combat vehicles, 300 tanks, and 200 artillery pieces.³¹

Other sources have indicated that it would be less expensive to produce a further development of the T-72 in India, for example the T-72S or T-80. Indian Army officers consider the T-90S to be superior to the Ukrainian built T-80UD MBT that entered service with the Pakistani Army in 1997. A comparison of the T-72M1, T-80U, and T-90 is given in Table 2.³²

Indian Army senior armor officers admit that the T-90S purchase will cause the cancellation of the domestic Arjun MBT project that began in the 1970s. The T-90S purchase will also render the Indian Army potentially vulnerable to an unreliable supplier of

repair parts and backup support. The 1,000 horsepower engine will not power initial Indian Army T-90S.³³

Under the agreement signed in New Delhi by Indian Ministry of Defense officials and representatives from Rosoboronexport, Russia's main export agency, the Nizhnyi-Tagil plant will deliver 124 completed MBTs with the remainder to be assembled by HVF at Avadi. HVF currently builds the T-72 MBT and is expected to eventually produce the T-90S under license.³⁴

The purchase was delayed for several months following Moscow's reluctance to provide financial guarantees to India in exchange for New Delhi making an advance payment of an estimated 55 percent. In February 2001, the contract was signed following talks between visiting Russian Deputy Prime Minister Ilya Klebanov and Indian Defense Minister George Fernandez. Deputy Prime Minister Klebanov indicated that Russia was interested in acquiring information technology and software development from India. During this visit, the



Strong concerns about the survivability of the Russian T-72 after Desert Storm seem to have eased with time.

two nations finalized the agenda for the newly instituted Indo-Russian commission on technical cooperation.³⁵

Cost is the key factor in Russian export success of both the T-80 and the T-90. Both tanks enjoy a significant cost advantage over the American M1A2, French Leclerc, and the German Leopard 2. In years past, buyers were concerned with the survivability of Russian tanks after seeing the poor performance of the T-72 in Desert Storm, but the passage of time has eased these concerns.³⁶

Current and Future Threats

Pakistan, China, extra-regional, internal separatist insurgencies, and acts of terrorism are the threats that India faces. In Pakistan, five infantry divisions have been added to the Pakistani Army, but manpower was increased by only 40,000. A majority of the 2,320 Pakistani tanks are obsolescent, with the exception of 310 modern T-80UDs. Mechanized forces have M113 armored personnel carriers. Pakistan's heavy forces appear incapable of sustaining offensive action. The real threat posed by Pakistan has shifted from mid-intensity conventional warfare to the two extremes on the conflict spectrum — nuclear and low-intensity conflicts.³⁷

The nuclear threat has become an established part of regional security affairs and Pakistani experts credit their nuclear deterrent with having prevented several Indian invasions. Pakistan also supports Kashmiri insurgents and Islamic volunteers, largely from Afghanistan, who want to fight India. This support included infiltration of Pakistani Northern light infantry as well as artillery support into Kargil in 1999. Analysts on both sides of the border anticipate further clashes in the border region. In early May 2001, India launched Exercise Complete Victory near its

border with Pakistan. This five-day exercise involved 50,000 soldiers and an estimated 100 combat aircraft.³⁸

China's conventional threat has declined notably since the crisis of 1986-1987. The Lanzhou military district, which includes most of its common border with India, has 220,000 soldiers organized into four infantry and one armored division. Its forces in the Chengu military district number 180,000 soldiers organized into four infantry and one artillery divisions. In 1990, there were 19 regular Peoples Liberation Army infantry divisions and one tank division between these two military districts.³⁹

China has also been undergoing modernization, so far concentrated in the southeast to threaten Taiwan. Beijing has participated in incidents that have troubled New Delhi, including development of intelligence assets in Myanmar, port facilities in Pakistan and intervening across the de facto boundary with India in 1999. Barring an outbreak of unrest in Tibet, it is unlikely that China will increase its forces in the region.⁴⁰

The extra-regional threat is notional at best. India has misgivings about use of international interventions to resolve human rights abuses and their implications for national sovereignty. This issue is particularly persuasive given the situation in Kashmir. The Indian armed forces are capable of deterring any adversary or coalitions from conducting sustained assaults on its territory and to defend against all but worst-case scenarios.⁴¹

Since 1990, the internal threat has diminished but remains the primary security concern for the near term. The resolution of the bloody revolt in the Punjab ends a major danger to stability. An insurgency in Kashmir continues and the northeast remains restless. Ethnic conflict rages in Sri Lanka and there will be concerns about the Tamils. Despite positive movement in the Punjab and the northeast, internal separatist movements remain a concern.⁴²

Conclusion

Modernizing India's MBTs does not suggest hostile intent toward neighbor-

ing states. Capabilities may be improved over time; but the pursuit of a domestically designed and produced MBT appears unlikely at best. There is no predictable threat that India's armor forces cannot manage with its existing or planned acquisitions and force structure. State of the art technological solutions are expensive. Indian Army tank acquisition policy demonstrates continuity with tradition rather than a vision to the future. India can be expected to maintain the initiative in obtaining new weapons and to retain a substantial conventional advantage.

Notes

¹Timothy D. Hoyt, "Modernizing the Indian Armed Forces," *Joint Forces Quarterly*, Summer 2000, pp. 17-18.

²Foss, Christopher F., editor, *Jane's Armour and Artillery 1998-99*, Nineteenth Edition, Jane's Information Group Limited, 1998, p. 44.

³Foss, Christopher F., *Jane's Tank and Combat Recognition Guide*, Harper Collins Publishers, 1996, p. 98, and *ibid.*, p. 46.

⁴Foss, *Jane's Armour and Artillery 1998-99*, p. 46.

⁵*Ibid.*, p. 46, and Foss, *Jane's Tank and Combat Recognition Guide*, p. 98.

⁶Foss, *Jane's Armour and Artillery 1998-99*, p. 46, and Geibel, Adam, 1LT, "Updating India's T-72 MBT Fleet," *ARMOR*, May-June 1998, p. 35.

⁷Foss, *Jane's Armour and Artillery 1998-99*, p. 46. It is understood that the 97 percent target was not achieved.

⁸Geibel, p. 35, and Foss, *Jane's Armour and Artillery 1998-99*, p. 46. Late in 1997, it was revealed that more than 30 125mm tank barrels had burst during gunnery and that efforts were being made to determine the cause of this problem.

⁹Foss, *Jane's Armour and Artillery 1998-99*, p. 44.

¹⁰*Ibid.*, p. 44.

¹¹*Ibid.*, p. 45.

¹²*Ibid.*, p. 45.

¹³*Ibid.*, p. 45. The Indian Explosive Research and Development Establishment at Pune in Maharashtra developed the main gun rounds.

¹⁴*Ibid.*, p. 45.

¹⁵Rahul Bedi, "India To Buy Russian T-90S MBTs," *Jane's Defence Weekly*, February 21, 2001.

¹⁶Foss, *Jane's Armour and Artillery 1998-99*, p. 85.

¹⁷*Ibid.*, p. 85.

¹⁸*Ibid.*, p. 85.

¹⁹*Ibid.*, pp. 85-86.

²⁰*Ibid.*, p. 86.

²¹Ibid., p. 86.

²²Ibid., p. 86.

²³Ibid., p. 86. The complete missile system is called the 9K119.

²⁴Ibid., p. 86.

²⁵Ibid., pp. 89-87.

²⁶Ibid., p. 87.

²⁷Ibid., p. 87.

²⁸For further details, see Defence Notes, "India's Latest Armour Addition – the T-90S," <http://www.defencejournal.com/apr99/t-90.htm>.

²⁹Ibid.

³⁰Rahul Bedi, "India To Buy Russian T-90S MBTs," *Jane's Defence Weekly*, February 21, 2001 and see Defence Notes, "India's Latest Armour Addition – the T-90S."

³¹For further details, see Defence Notes, "India's Latest Armour Addition – the T-90S."

³²Ibid., and Rahul Bedi.

³³Rahul Bedi.

³⁴Ibid.

³⁵Ibid.

³⁶COL James H. Nunn, and Paulson, John C., LTC, "Three Tanks Featured In Russian Arms Show," *ARMOR*, September-October 1999, p. 26.

³⁷Timothy D. Hoyt, "Modernizing the Indian Armed Forces," *Joint Forces Quarterly*, Summer 2000, pp. 20-21.

³⁸Ibid., p. 21, and "India's 'Complete Victory' Is Set for Pakistan Border," May 2, 2001.

³⁹Ibid., p. 21.

⁴⁰Ibid., pp. 21-22.

⁴¹Ibid., p. 22.

⁴²Ibid., p. 20.

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³³Heinl, 229-230; Alexander, 216; Appleman, 535.

³⁴Knox, 294.

³⁵Birchard L. Kortegaard, "Korean War: Tanks and Fighting Vehicles," <http://rt66.com/~korteng/SmallArms/tanks.htm>, accessed on 15 November 2000; Appleman, 535.

³⁶Knox, 293.

³⁷Heinl, 242.

³⁸Tallent, 243.

³⁹Montross and Canzona, 279.

⁴⁰Duncan.

⁴¹Montross and Canzona, 278; Heinl, 245.

⁴²Knox, 294.

⁴³Stanton, 106-107.

⁴⁴Appleman, 534-535; James, 32.

⁴⁵Appleman, 535.

⁴⁶James, 35.

⁴⁷Appleman, 540.

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TANK MYTHS



U.S. M4 Sherman



Soviet T-34/85

*On TV lately, there's been lots of information on World War II tanks ...
...And unfortunately, a lot of it is wrong*

by Charles M. Baily

Editor's Note: Charles M. Baily's book on the development of U.S. tanks and tank destroyers in World War II (Faint Praise: American Tanks and Tank Destroyers in World War II) is considered by many experts to be a definitive study of this subject. (Unfortunately, the book is currently out of print and is difficult to find.)

I'm mad as hell, and I'm not going to take it anymore. Continuing reiterations of myths about World War II tanks, particularly American tanks, on television and in print are driving me to distraction. Adding injury to insult, the facts to quash these myths are available on library shelves for anyone willing to do the most basic research. With so many myths and so little time, this article will only address two: the Christie myth and the Patton myth.

The most recent version of the Christie myth seen by this author was an episode entitled "Tanks," one of the History Channel's series *Weapons at War*. In this episode, George C. Scott's sonorous tones describe J. Walter Christie's tanks and their revolutionary torsion bar suspension. Later in the segment, the curator of an Army museum, with a Christie tank in the background, tells us that the Christie suspension was so good that the Soviets used it in their

tanks through the T-62. Implicit in the presentation is the larger part of the Christie myth — that the U.S. Army could have had a tank as good as the Russian T-34 if it had only heeded the genius of J. Walter Christie.

The technical facts of this program are dead wrong and the implication is tenuous at best. The Christie suspension was *not* a torsion bar suspension. It was a system of large roadwheels attached to bell cranks and coil springs. While the T-34 did have a Christie suspension, its immediate successor, the T-44, and all Soviet medium tanks ever since, have used torsion bars. This information is in standard texts that have been on library shelves for years.¹

Both the suspension system and Christie's quarrels with the Army were best described by George Hofmann on these pages in 1976.² To summarize Hofmann's excellent article, Christie simply would not work with users to fulfill the military requirements but, instead, wanted the Army to fund the tanks that he wanted to build.

To address the larger myth, that the Army could have had its own T-34 if it had only listened to Christie, requires a brief examination of the Russian tank. The myth fails on two counts: the fea-

tures that made the T-34 an excellent tank owed little to Christie and, in any case, the T-34's superiority over the U.S. M4 Medium tank is not convincing.

After purchasing models of Christie tanks in 1930, the Russians embraced the notion of fast tanks with enthusiasm. Their version of the Christie, the BT-7, follows Christie's concepts quite closely, including narrow tracks and thin armor. Russian ideas are evident by the tank's main gun, a 45mm, which was heavy armament for its day. (Firepower was never a distinguishing feature of Christie's designs.) As the Russians developed the fast tank idea, their own genius contributed the features that made the T-34 such a shock to the Germans in 1941. They added a 76mm gun, 45mm armor angled at 60 degrees, broad tracks, and a dependable engine. The only Christie feature on the T-34 was the suspension system.

Further, if we are to credit Christie with an overarching contribution to tank design, we should also look at those "other" Christie tanks, the ones built by the British. Like the Russians, the British also purchased Christie tanks in 1936 and used them as the basis for their cruiser tanks, such as the *Covenanter* and *Crusader*. These tanks

	T-34/76	M4A1
Gun/Muzzle Velocity (fps)	76mm/2160	75mm/2050
Armor	20-70mm – turret 45mm at 60 degrees – hull	3 inches – turret 2 inches at 47 degrees – hull front
Top Speed	31 mph	24 mph
Track Width	19 inches	16 inches
Weight	28 tons	33 tons

are far more similar to Christie's ideas than the T-34, being poorly armed, thinly armored, and notoriously unreliable.

Finally, the U.S. M4 medium tank does not suffer by comparison to the T-34. The table above summarizes some salient characteristics of both tanks.

The T-34's broad tracks relative to its weight offer the only obvious advantage over the M4. However, the T-34's two-man turret was clearly inferior to the three-man turret on the M4, which also had an efficient turret traverse that was better than either Russian or German equipment. Because its armor was sloped at 60 degrees, the T-34 was actually better protected than the M4, although this marginally superior protection had little practical advantage: German 75 and 88mm guns could readily penetrate either tank.

Both Russia and the U.S. improved their tanks during the conflict. Later T-34s had a three-man turret with an 85mm gun. Later M4s were fitted with wider 23-inch tracks and a 76mm gun. On paper, the T-34/85 was nominally superior to the M4 because of its larger gun, but, in the few confrontations during the Korean War, M4s easily killed the Russian tanks. In sum, the superiority of the T-34 over the M4 is not convincing.

The remarkable reputation of the T-34 is primarily based on the technological shock that it delivered to the Germans in 1941. Popular German military histories enhanced this repute. By the time the Germans encountered M4s in late 1942, they were already coping with the T-34 and heavier Soviet tanks by increasing the firepower of their tank armament, self-propelled guns, and towed anti-tank guns. As a result, the M4 never enjoyed a notoriety similar to the T-34 with the Germans or post-war Western writers.

The Patton Myth

While there is some basis in fact for the Christie myth — his ideas *were*

associated with the very successful T-34 — the origin of the Patton myth is shrouded in mystery.

In *A War to Be Won*, authors Millet and Murray make the astonishing assertion, without any supporting evidence, that George S. Patton blocked introduction of the M26 with its 90mm gun, which they claim could have been in full production in early 1944.³ In *Death Traps*, Belton Cooper also accuses Patton of blocking introduction of the M26, illustrating that this notion may be widespread.⁴ None of these authors offer their readers a clue as to what Patton actually did or when he did it, probably because they do not have one.

What makes Millet's and Murray's claim even more astounding is the fact that among the supporting volumes for the relevant chapter are two excellent biographies of George Patton: Martin Blumenson's *Patton: The Man Behind the Legend, 1885-1945* and Carlo D'Este's *Patton: A Genius for War*. Neither biography mentions anything whatsoever about Patton being involved in tank development or production during World War II. While researching the development of the M26, this author examined the records of the Ordnance Department, Army Service Forces, Army Ground Forces, War Department G-4, and European Theater of Operations. There is nothing in those records associating George S. Patton with the development, production, or introduction of the M26. Nothing.

Besides ignoring their own sources, Murray and Millet should have been extremely skeptical about the possibility that Patton blocked production of the M26. By their own account, they were very much aware that following the slapping incident during the Sicilian Campaign, Patton was on very thin ice. Arguably, only Eisenhower saved him from George Marshall's wrath and an assignment training troops in the U.S. The idea that Patton had sufficient clout to block a major production program strains credulity.

The timeline on the following page summarizes the Army's decisions about producing the M26 and who made them. All this is in the author's book, *Faint Praise*,⁵ but the reader is respectfully asked to suffer through the citations in order to be assured that those decisions can be documented from primary sources.

As the timeline shows, George Patton was not involved in the decision to produce 250 T26s. The possibility that he would have inserted himself into the process in September 1943, when LTG Leslie J. McNair (responsible for ground force doctrine and equipment) was involved, is incredible. After General Jacob Devers weighed in with a production request, the idea that Patton would have interfered in an exchange between George C. Marshall and his theater commander is absolutely fatuous.

Possible production of the T26 in April 1944 is nearly as difficult to sustain. After the war, Ordnance spokesmen argued that McNair's opposition to an additional production order in September 1943 delayed production of the tanks, but he did not explain the cause and effect. No one interfered with the order of May 1943 for 10 T26s, but prototypes were not completed until February 1945. In September 1943, the tank was still in the blueprint stage. Further, to begin production in April, Ordnance would had to have found some way to rush the prototype into production, but the prototype was unsatisfactory to the users. Of course, at the time, not even the Ordnance Department predicted production before the fall of 1944.

As a minimum, if someone can develop a scenario showing how the disputes during the fall of 1943 over producing additional T26s actually delayed final production, they should leave Patton out of it. If someone was to blame for delaying introduction of the T26, it was NOT George S. Patton.

This author hopes that those writing or speaking about tanks during World War II, even if they are constrained from looking at primary source documents, will at least consult references already on library shelves. Particularly, if they are prone to sully reputations, as Murray and Millet are, their conclusions ought to be based on meticulous research rather than sloppy scholarship.

Thank you dear readers, for allowing me to vent.

Notes

¹See Peter Chamberlin & Chris Ellis, *Pictorial History of Tanks of the World 1915-1945* (Harrisburg, Pa.: Stackpole Books, 1972) pp. 93-97, 169-172, 206-207, and 220-225 for details on British, U.S., and Russian tanks. John Milsom, *Russian Tanks 1900-1970* (New York, N.Y.: Galahad Books, 1970), pp. 96-111 have further details on Russian tanks.

²George F. Hofmann, "A Yankee Inventor and the Military Establishment," *ARMOR*, March-April 1976, pp. 13-17, 50-52.

³Williamson Murray and Allan R. Millet, *A War To Be Won: Fighting the Second World War* (Cambridge, Mass.: Belknap Press, 2000), pp. 463.

⁴Belton Cooper, *Death Traps: The Survival of an American Armored Division in World War II*, (Novato, Calif.: Presidio Press, 1998), p. 139.

⁵All details and their supporting footnotes are from Charles M. Baily, *Faint Praise: American Tanks and Tank Destroyers during World War II*, (Hamden, Conn.: Shoestring Press, 1984), Chapters 4 and 5.

⁶Memorandum from Assistant Chief of Staff, G-4 to CG, Army Service Forces (ASF), 24 May 1943, Records of Army Ground Forces (AGF), file no. 470.8, Record Group 337, National Archives and Records Administration (NARA).

⁷Letter from MG T.J. Hayes, Acting Chief of Ordnance, to HQ, ASF, 13 September 1943, Document collection entitled T20 History, Research and Development, Records of the Ordnance Department, Record Group 156, NARA.

⁸Cable from Devers to the War Department, 13 November 1943, Records of the Army Staff, G-4 Decimal File, file no. 470.8, Record Group 165, NARA.

⁹Cable from McNarney to Devers, 7 December 1943, Records of the Army Staff, G-4 Decimal file, NARA.

¹⁰Cable from Devers to McNarney, 10 December 1943, Records of the Army Staff, G-4 Decimal file, NARA.

¹¹Memo from Maxwell to CG, ASF, 16 December 1943, Records of the Army Staff, G-4 Decimal file, NARA.

¹²Cable from Marshall to Devers, 21 December 1943, Records of the Army Staff, G-4 Decimal file, NARA.

¹³Cable from Marshall to Eisenhower, 15 January 1943, Records of the Army Staff, G-4 Decimal file, NARA.

¹⁴Memo from HQ, ASF to Assistant Chief of Staff, G-4, Records of ASF, file no. 470.8, Record Group 407, NARA.

¹⁵Letter from the President, Armored Board, to CG, ASF, 20 May 1944, Records of ASF, NARA. See Baily, *Faint Praise*, page 122 for details on the serious problems with the T26 prototypes.



This Signal Corps photo from the latter days of WWII shows the then-new M26 tank of the 9th AD in action near Vettweiss, Germany in March 1945.

Oddly enough, the official photo caption notes that the new tank had a "Christie suspension," which it did not. Of U.S. WWII armor, the M26, along with the M24 light tank and the M18 Hellcat tank destroyer, used the more modern torsion bar suspension.

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24 May 1943	The War Department approved production of 10 T26 tanks as part of a larger production order on T20-series tanks. ⁶
13 September 1943	In an indorsement to an earlier Armored Command letter requesting adjustment to the production numbers of M4, the Ordnance Department requested production of an additional 500 T26s. ⁷ General Lesley J. McNair, CG of AGF, successfully opposed this request.
13 November 1943	General Jacob Devers, CG of the European Theater of Operations, requests production of 250 T26s. ⁸
7 December 1943	Because of McNair's continued opposition to production of the T26 and other objections, MG Joseph McNarney queried Devers whether his request was based on operational requirements. ⁹
10 December 1943	Devers confirmed his request for production of 250 T26s. ¹⁰
16 December 1943	General Russell Maxwell, Army G-4, directed the CG, ASF to produce 250 T26s to meet Devers' requirements. ¹¹
21 December 1943	General Marshall demonstrated his personal involvement in the T26 by cabling Devers about the decision to produce them, advising a nine-month delay before production. ¹²
15 January 1944	General Marshall asked the new CG, ETO, General Eisenhower, if the requirements for the T26 still stood. ¹³ Eisenhower confirmed it.
21 February 1944	The Ordnance Department estimates first production of the 250 T26s in October 1944. ¹⁴ Production actually began in November. Prototypes from the batch of 10 ordered in May 1943 started arriving during February 1944.
20 May 1944	The Armored Board at Fort Knox emphasizes that the T26 was not ready for production in its present state. ¹⁵



An Abrams covers as they advance at the Fort Knox MUCT site.

All photos by Robert L. Stevenson

The Abrams Tank, Fulcrum of Army Transformation

by Lieutenant Colonel Dave Pride

In this era of transformation, the main focus of Army modernization is, with good reason, on the development of the Interim Brigade Combat Team (IBCT) and the Objective Force. The Interim and Objective axes of the Army's three-pronged Transformation Campaign are under a watchful eye and remain topics of professional debate around every coffeepot. As the Interim Armored Vehicle (IAV) and the Future Combat System (FCS) are developed, one must not lose sight of the fact that the Abrams tank is undergoing a positive, and often overlooked, transformation process of its own.

In the last year, the Abrams tank achieved major fielding milestones and received funding for selected upgrades and recapitalization. This good news deserves our acknowledgement, not our neglect. This article will highlight the most significant Abrams tank milestones achieved during the last year and offer some insights into the Abrams' challenging future.

Modernization

Abrams tanks are not being modernized but selectively upgraded and rebuilt. True modernization, according to the Army definition, involves "a new program start" like the Crusader, Comanche, and the Tactical Unmanned Aerial Vehicle (UAV). During the last 18 months, certain organizational realignments and deactivations reduced the number of tanks in the force. To the 2LT and PFC, it may at first glance appear to indicate doom and gloom for the U.S. Tank Corps. On the contrary, the future is very bright for the 3,325 armor officers and 9,232 NCO/enlisted who wear tanker's brass. Lurking quietly in the shadows of Army Transformation are spectacular tank developments, each one worthy of a little chest thumping and fanfare.

Every day, dozens of stories emerge from the field praising the tank's capabilities and warfighting potential. Here are just a few of the more salient events that took place over the last year.

Fielding

- In June 2000, the Army fielded the first M1A2 SEP battalions to 2nd Bde, 4ID at Ft. Hood, Texas. Fielding to 3-67 AR, 1-67 AR, and 1/10 Cav marked the introduction of the Army's first weapon platform equipped with second-generation forward-looking infrared (2nd gen FLIR) sights and the new fully integrated brigade and below digital battle command system. The 1CD is fielding its M1A2 SEP tanks now through 2003. (See story, Page 42)

- In July 2000, we fielded the first digitized M1A1D battalions (1-66 AR and 3-66 AR) to 1st Bde, 4ID. The "D" identifier signifies the tank is modified with the appliqué version of the new digital battle command system and possesses the Far Target Locate (FTL) capability.

- Additionally, 1-66 AR marked the first fielding of tanks from the highly acclaimed Abrams Integrated Management (AIM) depot overhaul pro-

“The M1A2 SEP tank is the most lethal land combat system in the world and will continue to be so for the foreseeable future....”

gram. When a unit receives their AIM tanks, they are receiving a depot rebuilt tank (zero miles/hours), complete with a new paint job and that new tank smell. USAREUR (1-1 Cav) received their first AIM tanks in May 2001. The next battalion scheduled to receive the AIM M1A1 is 1-37 AR, 1AD in October 2001. The remaining two 1AD armor battalions will complete AIM fielding by May 2002.

Demonstrations of Warfighting Capability

- During August-September 2000, M1A1D's from C-1-66 AR successfully participated in the Joint Contingency Force (JCF) Advanced Warfighting Experiment (AWE) at the JRTC. In the pine forests of Fort Polk, elements of C-1-66 AR demonstrated complete digital command interoperability with their supporting light force. This digital connectivity demonstrated the Army's growing capability to operate seamlessly at the tactical level in a light-heavy environment.

- From March-April 2001, during the Division Capstone Exercise (DCX) at Fort Irwin, 4ID successfully demonstrated its digitally interconnected command and control (C2), intel, and admin-logistics systems. The DCX displayed for the first time the awesome lethality of M1A2 SEP and Bradley A3's equipped with second generation FLIR sights, FTL, and integrated digital battle command. The tanks from 4ID also premiered the Under Armor Auxiliary Power Unit (UAAPU). This addition saves fuel, reduces wear and tear on the main engine, and improves survivability during mounted surveillance by reducing the tank's overall thermal and noise signature. The OPFOR, when asked what challenged them the most during the rotation, replied emphatically — “the SEP.”

Threat and the Contemporary Operating Environment

In view of the changing operational environment, TSM Abrams led an interagency team of subject matter experts on a task to conduct a comprehensive Threat and Vulnerability (T&V)

assessment of the Abrams main battle tank. Numerous organizations from around the Army participated in the T&V Integrated Product Team (IPT) to review threats to the Abrams tank and identify vulnerabilities as a result of the threats. The T&V assessment verified traditional threats and uncovered some newer threats which emerged from the new contemporary operating environment. Few deficiencies were identified during the vulnerability assessment that weren't already known to us. Vulnerabilities encountered are minor and will be factored into the Abrams 1-N list for correction.

While most details of the T&V assessment are safeguarded, it is clear that the M1A2 SEP is the “baddest beast on the battlefield” and completely capable of full spectrum warfare. Even the 2001 M1A2 SEP Live Fire Test and Evaluation (LFT&E) verified the tank is fully capable of withstanding the most severe battlefield threats. Provided adequate tactics, techniques, and procedures are in place for non-MTW related tasks, the Abrams will still function extremely well in future fights. Today, the tank's biggest problem is getting to the fight quickly. The tank just cannot rapidly get to all of the locations our Army needs it to go, and get there fast enough, with all of its enablers. Hence, a new Future Combat System (FCS) is needed.

The Future of Abrams

The M1A2 SEP tank is the most lethal land combat system in the world and will continue to be so for the foreseeable future. Our Legacy Force is, and will remain, a key component of our National Military Strategy. There are over 4000 Abrams tanks and over 5000 Bradley fighting vehicles in the force. Irrespective of transformation, these armored systems will not disappear overnight. The Abrams is expected to be in the Army until 2031, which means that it is conceivable that second lieutenants in today's Armor Basic Course could still command an Abrams battalion.

The Abrams tank will continue to evolve. While major block modifica-

tions to the Abrams tank are not feasible, selective upgrades will be. Moreover, the Abrams may be the recipient, later this decade, of some key FCS technologies. During the 2001 Armor Conference, an International Tank Panel convened to discuss tank modernization. Representatives from France, Germany, Russia (United States subject matter expert), United Kingdom and the United States discussed national tank initiatives and shared ideas on potential tank upgrades in the new operating environment. Some of the upgrade and recapitalization plans for the Abrams include:

- In November 2000, the Army awarded a contract to develop and replace our older AGT-1500 tank engines with a new Abrams/Crusader Common Engine (ACCE). The new turbine engine will be 30 percent more fuel efficient and five times more reliable than the 1970's vintage AGT-1500. Fielding of the new engine is anticipated in FY04 and will be installed in M1A1D and M1A2 SEP tanks.

- Earlier in 2001, the Army approved the requirement for a 120mm canister anti-personnel round. This “shotgun-like” round (already dubbed the XM1028) will fulfill an urgent requirement to defeat massed dismounted threats with one blast of the main gun. This new requirement did not fall on deaf ears. Approved by the Army as a Warfighter Rapid Acquisition Program, the canister round will enter development a year earlier than forecast. This essential capability is targeted for fielding by 2004.

- Increasing lethality in the close combat zone is critical to success on future battlefields. We must preserve our lethality overmatch because, despite what you might think, our adversaries have not stopped modernizing their tanks. The threat continues to upgrade their tanks with thermal sights, improved armor and countermeasures systems, and more lethal ammunition. Our solution to this challenge is the M829E3, APFSDS-T round. This Kinetic Energy (KE) round is guaranteed to blow through the toughest of armor targets. The M829E3 design was ap-



annual training at Fort Knox's MOUT Site in July 2001.

Summary

The Armor Corps is experiencing many exciting transformation-re-

lated changes. We are fielding two upgraded tanks — the M1A1D and the M1A2 SEP, each complete with a sporty new paint job, that new tank smell, and zero miles/hours on the powertrain. (Note: The M1A2 SEP even has an air conditioner, Bose speakers, and a Rolls-Royce auxiliary power unit.)

New materiel upgrade initiatives are emerging that will preserve our Armor Force's combat overmatch capability as the Army undergoes its necessary metamorphosis. Team Abrams is committed to maintaining the necessary overmatch required to guarantee a superior 21st century main battle tank, with full spectrum capabilities. Our Abrams strategy is simple — provide full spectrum combat capabilities overmatch while simultaneously improving reliability and reducing fleet operating and support costs.

The Abrams tank remains lethal, survivable, and its future secure. The Abrams tank, along with its Bradley counterpart, continues to provide this nation with a critical warfighting capability. During Army Transformation, the Abrams serves as the fulcrum. Constantly under pressure to fight and win our nation's wars, the Abrams force will support the other two axes of transformation (Initial and Objective) until they achieve initial operational capability. The Army continues to demonstrate its continued commitment to the Abrams fleet. In joint testimony to Congress, the Secretary of the Army and the Army Chief of Staff reported:

"Today's force, the Legacy Force, enables the Army to meet near-term national military strategy commitments. Until the Objective Force is fielded, the Legacy Force — augmented or reinforced with an interim capability — will continue to engage and respond to crises to deter aggression, bring peace and stability to troubled regions, and enhance security by developing bonds

*of mutual respect and understanding with allies, partners, and potential adversaries. It must remain ready to fight and win if necessary, giving us the strategic hedge to allow transformation."*¹

While much of the Army's modernization and transformation attention is focused on developing the other two axes of the Transformation Plan, it is important to remember that the Abrams- and Bradley-equipped Legacy Force is still our decisive, ground fighting force. The future is bright and all tankers should know they are in the finest tank in the world. This situation will not change until significant numbers of Future Combat Systems are fielded in the next decade that take the Abrams' place as the new "king of the killing zone."²

Author's Note: The organization within TRADOC that conducts total system management for the Abrams tank across the DTLOMS is TRADOC System Manager (TSM) Abrams. This organization represents the "Field" and serves as the TRADOC advocate and voice for tank issues. TSM Abrams coordinates user requirements for the tank, fights for high-payoff improvements, and oversees all issues related to the modification (safety, training, survivability, lethality, digitization, etc.) of the Abrams tank and its training devices.

Notes

¹Joint Statement by the Honorable Thomas E. White, Secretary of the Army and General Eric K. Shinseki, Chief of Staff United States Army before the Committee on Armed Services, United States Senate, First Session, 107th Congress, 10 July 2001.

²Orr Kelly, *King of The Killing Zone: The Story of the M-1, America's Super Tank*, Berkley Books, N.Y., 1989.

LTC Dave Pride was commissioned in Armor in 1980 from the University of Tennessee. He has had various tactical, joint, and armor acquisition assignments. He is currently assigned as the Assistant TRADOC System Manager (TSM) for the Abrams Tank at Fort Knox, Ky.

proved this year and should be fielded by 2003. For long-range targets, we have the Tank Extended Range Munition (TERM) planned. The TERM requirement was approved at HQ TRADOC this year. TERM will provide the Abrams-equipped force with the ability to destroy high value targets at extended line-of-sight and beyond line-of-sight ranges out to 10 kms.

Tanks in Complex and Urban Terrain

There have been several articles published that call for upgrading the Abrams to be more versatile in complex and urban terrain. To provide the tank with full spectrum capabilities, the Armor Center gained approval for fielding the 120mm canister anti-personnel round. Other initiatives that posture the tank for 21st century operations in complex and urban terrain include:

- Contingency Side Armor – This low-weight, non-obtrusive, add-on armor provides additional protection to the side of the tank without major modification. This additional protection will be used in contingency operations should the threat dictate its use. Effective against a full range of threats, contingency armor will be required in urban and complex environments where added flank protection is critical.

- Secure, wireless tank-infantry communications – The U.S. Marine Corps put the tank external phone back on its tanks. While the Army is monitoring this effort, a more flexible system is under development that provides tank crewmen continual connectivity to the vehicle intercom even when dismounted from the vehicle. This system has tremendous application to heavy-light operations, as well as peacetime safety and training utility. The mounted crewmen cordless communications set was successfully demonstrated by 5-112 AR, Texas National Guard, during its

1-12 Cavalry Fields New Abrams M1A2 SEP Tanks

by Specialist Jonathan Del Marcus, 1st Cavalry Division Public Affairs Office

The 1st Battalion, 12th Cavalry Regiment, 1st Brigade, 1st Cavalry Division, became the first unit in the division, and only the second in the Army, to begin fielding the new Abrams M1A2 SEP main battle tank, at Fort Hood, July 9-13.

As America's First Team transitions from the 'legacy force' into the Force XXI structure, the M1A2 SEP (System Enhancement Program) is among many new pieces of equipment that will add the capability of digital connectivity to the division's arsenal, gradually integrating the new technology fully into the division by the end of fiscal year 2003.

The most important characteristic of the Abrams M1A2 SEP that distinguishes it from its predecessor, the Abrams M1A2, is an embedded battle command system that allows soldiers to communicate with each other, within and across echelons, to relay and share information, said Cathy Oldham, Chief of Force Integration, 1st Cav Division.

This ability increases command and control as well as situational awareness on the battlefield, Oldham noted.

"Unlike an analog system, all M1A2 SEP tank crews will have instant access to the latest information on battlefield conditions, and everyone will have a common operating picture through the use of the same graphics," said Major David Farlow, Public Affairs Officer, 1st Cav Division.

The commander's display unit (CDU) displays a map showing terrain features with grids that show your tank's location, the location of your unit's tanks, and any known enemy locations or equipment, said Sergeant Michael W. Steward, gunner, Co. A, 1-12 Cav. The CDU can also send and receive e-mail messages.

There is also a second-generation forward-looking infrared sight, with five different powers of magnification, that displays the environment outside of the tank on the commander's independent thermal viewer, added Staff Sergeant Derek J. Hall, master gunner, Co. A, 1-12 Cav.

"What the SEP tank will do as part of the modernization of the Army is give us the digital systems — what's called the Army battle command systems — and it will allow tank crews to know where they are on the battlefield, where the rest of the formation is and where the enemy is. That's pretty powerful stuff," said Major General David D. McKiernan, 1st Cav Division commander.

"The best description I heard used some years ago was from then Chief of Staff of the Army Gordon Sullivan. He said, 'You know what's really important is that a soldier knows where he is, knows where his buddy is, and knows where the enemy is,'" McKiernan explained.

1-12 Cav's tank crews spent much of the work week in the motor pool preparing the new tanks to standard for use as lethal, digitally capable, and combat-ready chariots of fire.

Before they could draw the new tanks, the tankers spent more than three months on the arduous and tedious task of readying their M1A2 tanks for turn-in.

"It's not like going down to the Ford dealership, saying 'here's my old car, give me some trade in on it, and let me drive away in my new car,'" McKiernan said. "They have had to do thousands, literally thousands, of supply transactions — moving equipment around, reorganizing soldiers — how they battle-roster soldiers, and the most glamorous part of it, the biggest part, is turning in their tanks and drawing new tanks. But, it's only one of many equipment issues that they are working on.

While the process was demanding for 1-12 Cav, the ends have justified the means. "I know I'm excited, and my sense is the soldiers are excited about getting this as well," said Lieutenant Colonel Robert Forrester, 1-12 Cav commander.

"We'll start a fairly structured new equipment training program for about 50 days, and then we'll go into platoon-, company-, and battalion-level training

exercises, all of the time trying to hone the skills that we are going to need so we can employ the SEP tank to its full potential," he said.

Much of the anticipation for fielding the M1A2 SEP surely stems from one other new addition to the tank.

The M1A2 SEP adds a new air conditioning system, an air-handling unit that will bring the temperature inside the tank down 22 degrees from 110 degrees to 88 degrees, Hall said.

This will add to the comfort of the crews, particularly in places like Texas, as well as possible deployments in other hot environments, said Specialist Marion Saunders, loader, Co. A, 1-12 Cav.

Not only are the leaders and soldiers in 1-12 Cav pleased, the fielding of the M1A2 SEP will undoubtedly add much excitement within many units in the First Team.

Each of the First Team's four maneuver brigades will field new equipment, successively, in the next three fiscal years, beginning with 1st Brigade during fiscal year 2001 and finishing with 4th Brigade by the end of fiscal year 2003.

October will be a busy month for 1st Brigade. 2-5 Cav will start fielding the new Bradley M2A3 and 2-8 Cav will draw the Abrams M1A2 SEP.

By the end of fiscal year 2001 alone, approximately 6,700 pieces of equipment will have changed hands within the division, said Major Frank Schneck, Division XXI Project Officer.

After the change has been made to outfit all of the tank units with the M1A2 SEP, the division will require fewer tanks to do the same job, Oldham said.

The Force XXI conversion process is a "comprehensive process for modernizing and preparing for the challenges of the 21st century. It provides our soldiers with the necessary doctrine, organizations, the most realistic training and the best equipment and weapon systems that our nation can provide," Schneck said.

How to Build a Successful Scout Platoon

by Sergeant First Class Shawn E. Wallace

SITUATION: You are a newly assigned scout platoon sergeant to TF 03-00 and your unit has just deployed to CMTC for the first time in a year. The task force mission is to attack in zone. The time is 0530 and the TF commander has just received his brief from the S2 on the reconnaissance effort. The scout platoon was assigned four NAIs (Named Areas of Interest) in zone; out of the four patrols tasked:

- One is confirmed destroyed in a minefield.
- One had to return to his vehicle hide after moving six kilometers to change out his short whip antenna with a long whip.
- Third patrol's plugger battery has died and they're without a compass, reporting enemy locations by sending wrong grids.
- There's been no comms with the last patrol in four hours and, by the way, the TF commander just found out that the PL is with this patrol.

Unfortunately, too many times, this same or similar scenario plays out here at CMTC and, when leadership is asked what happened and why, it's almost always the same answer. The TF gave us a messed-up mission, undo-able, or nobody listens to us. My question is WHY? In this article, I'm going to identify the WHY and also how we can fix it.

The single best way to prevent this kind of report is through training. Scout platoons come to the CMTC undermanned mainly because soldiers do not reenlist to be scouts. The scout platoon is viewed as the detail platoon or sacrificial lambs when it becomes time for the unit to conduct its mission. As an O/C monitoring the scout reporting nets, the spot reports are scrutinized in such a manner that the report becomes old and changes seem unbelievable (i.e., scouts report BMPs at a specific location, and the confusion infiltrates in



Photo by Robert L. Stevenson

when the report doesn't match the S2's enemy sittemp).

MISSION: Build a successful scout platoon. The scout platoon sergeant has a very important job. He has to train a platoon leader coming from a tank or infantry platoon. The PSG also is responsible for the motivation, morale, discipline, accountability, serviceability, and training of all soldiers and equipment in his platoon.

In my experience, as a scout from squad leader to PSG, building a successful scout platoon greatly depends on three areas: assessment, training, and validation. The worst thing we can do is jump into this new position and make corrections in areas that are not broken. This not only undermines your subordinate leadership, but it also builds a wall between you and your soldiers that says, it's all about me, your ideas are appreciated but not welcome.

EXECUTION: Assessment, training, and validation phases.

ASSESSMENT PHASE

Shortly after assignment as a scout PSG, it is imperative that you begin an immediate assessment in the following areas:

1. Physical fitness – Administer a diagnostic PT test and observe your platoon's strengths and weaknesses.

This also marks your starting point for daily physical fitness. Set challenging but realistic platoon goals, and don't stop until you hit the mark. Provide incentives and reward soldiers with high PT scores; it challenges the others to do better.

2. Small arms marksmanship – Set up an M16 range and have everyone in your platoon qualify at the same time, whether they need it or not. This allows you not only to get everyone in tolerance, but it also allows you to see the level of excellence at which your platoon can run a range.

Take the time to get one-on-one with your soldiers who have problems qualifying.

3. Navigation – Withhold all pluggers from the platoon for a time period. Set up a land navigation course, with different day and night runs, and break the platoon into two-man teams with comms. Give the task, conditions, and standards, and run the course. This allows you to see your strengths and weaknesses in NCOs and juniors and how to direct your training. Afterwards, place your strong navigators with the weak. Once a month, send them out to retrain.

4. Team building – Set up a 12-mile road march course with a detailed and challenging packing list, and break the platoon down into their sections. Give different incentives for best times, stagger their start times, and run the course. This will allow you to see how well your NCOs conduct PCIs (Pre-Combat Inspections) and PCCs (Pre-Combat Checks).

5. Living area – Give your soldiers their private space IAW the single soldier policy. At the same time, standardize some things across the board, i.e., a clean and healthy environment; then hold them accountable. It's very important to treat **all** your soldiers as men and women and not kids; they're our future NCOs.

"This scout lane should take at least five days to run, however, train to the standard and not to time. Remember the art to learning is through repetition...."

6. Off-post home visit – Make appointments to visit your soldiers' homes off post and spend no more than 20 minutes per visit. Meet their spouses. See how your soldiers live, and ask both wives and soldiers if they have any problems with their home or landlord. When visiting junior soldiers, take the section sergeant with you. Insist, no meals! Soldiers don't care how much you know, until they see how much you care.

TRAINING PHASE

The crawl, walk, run approach to training is one of the best ways to get everyone, down to your juniors, on the same sheet of music.

1. Crawl phase:

The PSG is the primary instructor for every class. On occasions, coordinate classes to be taught by subject matter experts (i.e., mortar NCO on call for fire and S2 on the scout role as an intelligence collection asset, the importance of accurate reports and IPB). The scout platoon should train on everything from tactics, techniques, and battle drills, including all seven forms of actions on contact:

- 1) Direct fire
- 2) Indirect fire
- 3) Red air
- 4) Obstacles
- 5) NBC
- 6) Radio jamming
- 7) Chance contact

Thoroughly teach and test reports. Scouts must send timely and accurate reports. Schedule a call for fire trainer or set one up at your LTA (Local Training Area): a hill, a HMMWV with a plugger and smoke to mark the area called, and a target HMMWV. **Scouts must be proficient on call for fire.**

The platoon's SOP (Standard Operating Procedure) is now under construction or revision based on whether the platoon already has an SOP.

2. Walk phase:

Gather all materials needed and construct a sand table box for future missions. Show the platoon what scout movement techniques look like on the table. Go over battle drills and report formats just like you would mounted.

The art of learning is through repetition.

Establish the scout platoon **PCI** and give the platoon a mission to bring in all designated items on a packing list. Establish a checklist for your leaders and an SOP for your vehicle load plan. Settle for nothing less than what is published. Consider tactical movement and safety. Always remember the doer will do what the checker will check.

Oversee your scout platoon's maintenance program, ensure it's being done IAW the TM. Develop a good working relationship with the mechanics and stay on top of parts ordered and dead-lined vehicles. Always reinforce the crew's responsibilities.

Mount up and take the scout platoon to the LTA and go over section movement techniques, battle drills, actions on contact, casualty evacuation, assembly area procedures, and the importance of security IAW *FM 17-98*. Get the platoon used to responding to **FRAGOS**, and not just reacting to them. **No opposition needed.**

The scout platoon should have a standard way they do business, OP (Observation Post) occupation, crossing danger areas, clearing ORPs (Objective Rally Points), and OBJs (Objectives), establishing TRPs (Target Reference Points) and triggers, use of range cards and sector sketches.

Get your leadership used to conducting their **TLPs** (Troop Leading Procedures) in a timely manner. Conduct a good map recon and plan routes using IPB (Intelligence Preparation of the Battlefield) (think like the enemy) so danger areas are avoided or approached with caution.

Establish a scout platoon **battle book** with a skeleton operations order, WARNO (Warning Order), and all needed reports. This book will also include coordinating instructions and questions for passage of lines, and coordinating with adjacent units.

REHEARSE, REHEARSE, REHEARSE!

3. Run phase:

Establish scout platoon section STX (Situational Training Exercise) lanes at the LTA. Use either internal assets or coordinate this training with other TF

scouts. When using internal assets, break the platoon down into their four respective sections. Build two scout lanes IAW the scout MTP (Mission Training Plan), two sections will provide opposition, one section will be in the prep phase, and the other in the execution phase. Ensure you have different scenarios for each section.

The PL will give an OPORD (Operations Order) to the section in the prep phase, and the section sergeant will begin to prepare for his mission. Base areas to be trained on the strengths and weaknesses of the platoon. The PL and PSG will shadow the section as it negotiates the course to provide feedback and C2.

The lane will have no less than the following: control measures, an obstacle, an enemy OP, an enemy patrol, an objective with targets for fire missions.

This scout lane should take at least five days to run; however, train to the standard and not to time. Remember the art to learning is through repetition. Don't settle for anything less than a **T** in execution. The PL and PSG will conduct a hot wash AAR upon completion of the course.

The scout lane should be run both mounted and dismounted to develop infiltration techniques.

When the scout lane runs with another scout platoon, the same concept is used, except you have the capability to build a longer lane with more scenarios and opposition.

Always train individual tasks at crew level. Train section tasks at platoon level, and train platoon tasks at TF level.

4. Validation phase:

Upon completion of the run phase, publish a working copy of the scout platoon SOP. The scouts should now be ready to validate their training. NTC, JROTC, and CMTC will provide that validation. During the validation phase, take notes and make refinements.

Scout gunnery is a special area of emphasis on which the scout PSG and PL focus. With the aid of a master gunner, together IAW *FM 17-12-8*, the light scout gunnery field manual, or *FM 23-1*, the Bradley Fighting Vehicle gunnery manual, establish a training

program. The PSG takes the time to plan and execute gunnery skills training at individual and crew level. All ranges and ammo are forecast and scheduled three to six months in advance with range control and S4.

Now, the scout platoon SOP is proofed and ready for print. This SOP includes, but is not limited to, garrison duties of reception and integration, to tactical operations, to deployment operations. The scout platoon SOP is designed to standardize the way the platoon does business. A new soldier should be able to read this SOP and understand how to plan and prepare for future operations.

Conclusion

This article outlines a technique I have successfully used as a scout PSG. Everything mentioned above is incorporated with a will to learn, hard work, discipline, and no tolerance for failure due to incompetence

Your soldiers will learn to work a couple of skill levels higher than their present level.

Always prepare and train as you will fight! Keep your equipment as though you are the ready platoon in DRF 1; settle for nothing less. Your soldiers will become so well rounded and flexible that they will be able to quickly adapt to any situation.

SFC Shawn E. Wallace enlisted in the army in 1982 as a cavalry scout. He has served as a squad leader, section sergeant, platoon sergeant, S2 NCOIC, drill sergeant, observer controller, and instructor. His assignments include: 1/9th Cav, Ft. Hood; 1-72 AR, Camp Casey; 2/9th Cav Ft. Stewart; 3/11th ACR, Germany; 3-73 AR, Ft. Bragg; 2/13th Inf, Ft. Jackson; 2/5 Cav and 2/8 Cav, Ft. Hood; and CMTC, Hohenfels, Germany. His military schools include: Airborne, Air Assault, Drill Sergeant, NCO Battle Staff, NBC, Opposing Forces Weapons Course, Light Armor Vehicle Course, PLDC, BNCOC, ANCOC, ITC, and SGI. Currently, he works as an ANCOC instructor at the NCO Academy at Fort Knox, Ky.

This amusing account, from the British armor journal, Tank, recounts the impressions of British troopers attached to U.S. forces during a search for weapons in the Balkans. From time to time, it is rewarding to see ourselves as others see us.... - Ed.

Last One to Find a Gun Buys the Beers*

A Search Operation in the Zegra Valley

by Trooper M. T. Llewellyn, British Army

Whilst on Op Flers, Corporal Nash, Trooper Cheetham and myself were attached to the Americans for a search operation to see how they did things differently to us. The night before the operation, we attended the American brief to see where we would fit into the search. However, nothing was said about our role because they all seemed more interested with the search dog than an actual plan.

The brief went on for about 20 minutes, 15 of which were devoted to the damn dog. One of the officers asked the dog handler, 'Hey, doesn't the damn dog ever get tired?' and the dog handler stood up and said, 'Sir, yes Sir, the dog does get tired, Sir, but we take it away for a rest and then the dog and myself will rock and roll again, Sir!'

In the morning, we parked up at the front gate and waited for the rest to turn up. The Americans arrived in 10 massive Humvees (4x4 jeeps) ready for war. All of them wore body armor, helmet and pistols, carried rifles with grenade launchers, and had machine guns on all of their vehicles. I thought we were going to wait for an Apache escort, but we left for the target house without air cover.

We pulled up at the house and waited for the dogs to unload. We were expecting spaniels or something like that, but the door of the Humvee opened and two fiery-eyed hellhounds jumped out, causing a

mass dash of people trying to escape a savaging. We let them search the house first, on their own, which was best for all of us.

When the dogs finally tired and had gone to sulk in their Humvee about not being allowed to eat anyone, we gathered our kit and went into the house. When we do a search on a house, two men do each room so that we stay out of each other's way, and so that the house gets a thorough going over. However, our Yank colleagues have a competition to see how many people they can cram into one room, and so after a day's disorganized searching, they had only found an AK-47 magazine, whilst we had found a loaded 9mm pistol. Everyone then congratulated each other on being either members of, or friends of members of, the most fabulous country in the world, and true defenders of democracy.

On a serious note, it was good to see how other nations operate, and the Americans were very friendly, helpful, and just as keen as us. After this mission, we moved on to patrolling once more, but it would be fun to work with them again, and the finds made the whole thing worthwhile.

(Reprinted with permission)

*While the Americans may be able to purchase the beer, they would not be permitted to drink it in either Bosnia or Kosovo.

The Adventures of a Liaison Officer at the NTC

by Captain Clinton D. Alexander

FM 71-2 describes the duties of a liaison officer as follows,

Liaison officers (LO or LNO) are commissioned and noncommissioned officers who represent their commander at other headquarters. Through personal contact, they promote cooperation and coordination, and facilitate the exchange of information. LOs are tasked with general coordination instructions in the task force SOP and with specific coordination instructions each time they are dispatched to another headquarters. Their role as task force commander representative requires LOs to know all task force plans and dispositions. LOs ensure that critical information is passed between the task force headquarters and the headquarters to which they are dispatched. When operating in the main CP, LOs are supervised by the shift OIC.

This was the guidance I received in May of 1999. I had recently finished a stint as a company executive officer in Charlie Company (Cobras) 1-64 Armor at Fort Stewart, Georgia, and was told I would finish my time in the unit in the S3 shop before leaving for the Captain's Career Course. The S3 was deployed, and his assistant (CPT Dan Peck) told me I was going to be the LNO, and that there was not a lot of information on what an LNO does, but that I could look in *FM 71-2* for some guidance. After reading the above guidance, the crusty master gunner said, "the LNO is a Lieutenant with Nothing to Offer."

Non-deterred, I searched for more information. In *FM 100-5*, I found my answer, "The Army provides specialized training (for example, language) to liaison officers." Now I was getting excited; after all, I was going to language school. A year and a half later, as I sat in the three shop with the Ironhorse Brigade in the 1st Cav, I realized that I should have written down everything I learned as an LNO, and captured it for future LNOs. That way, the next time I am at NTC executing my duties in the brigade CP, the LNOs for the battalions will have some TTPs to work with.

The first question you need to discuss prior to an NTC rotation is, who should be your LNO? Some might say the LNO should be a newly assigned captain; but for several reasons, I believe that a senior first lieutenant would be preferable. A senior first lieutenant — one who's been an XO or on staff for a while — knows just about everyone in the brigade. He knows who he can trust, who he can't, and who the "go-to" guys in the units are. While the newly assigned captain might have more book knowledge, he probably won't have the contacts that the senior lieutenant has developed. Instead, let the new captain wow the staff with his OPORD skills, battle captain prowess, and CAS3isms.

Just as with any task in the Army, you cannot just show up at the NTC and expect to be a great LNO. The skills you will learn during your train-up will serve you well. During this train-up, you will quickly learn what equipment you will need. I could probably write an entire article on what equipment you will need as the LNO; the next couple of paragraphs are just a synopsis.

Wheels – The first thing you've got to have as the LNO is a set of wheels — your own set of wheels. One thing you will quickly learn is that the LNO is not an MTOE position that comes with driver, vehicle, weapon, etc. You have to scrounge. During our NTC train-up, I shared a HMMWV with the OPS SGM. This worked out great until the OPS SGM went to get chow. While he was gone, the brigade called saying there was a FRAGO to pick up. Since the 1/3-2/3 rule requires you to get information to and from higher in a timely manner, you'll need a set of wheels! If that means you commandeer the OPS SGM's HMMWV, leaving the HHC 1SG to deliver chow to the TOC, then so be it. In my case, I failed to learn this rule. I let the master gunner take back LOGPAC the second night in the box, but he got lost, the OPS SGM's HMMWV broke down, and a FRAGO, which drastically changed the mission, was not picked up. From about 1700 'til 2300, the FRAGO sat in the TOC, waiting for someone to get it.

Field grades, for some reason, don't like to loan lieutenants their wheels, but it doesn't hurt to ask. The bottom-line is, keep your own wheels. At NTC, you can request to draw an extra HMMWV; just work it out with your S4 ahead of time.

Equipment – As LNO, you will need a pack full of good staff officer equipment. You will need: acetate, pens, computer disks, folders, zip-lock bags for waterproofing orders, and 100 mph tape, to name a few. Twice, the diazo machine broke during our rotation, once at brigade and once at battalion. When this happens at brigade, you can either wait until someone makes you a copy of the graphics, or spring into action, copy your own (neatly), and run it back to your unit. The brigade will normally put in the timeline when sub-unit graphics are due, so that the brigade can produce consolidated graphics. If your diazo breaks, take out the markers and start copying. Here's another TTP: if your diazo breaks, and you are in good with the copy boys at brigade, run a copy up there and use their machine for your battalion. You will be a hero. You'll also need a compass (the TOC only had one GPS), map, weapon, etc.

Commo – Along with some wheels, you need some way to talk. At home station, it may be difficult to find an extra radio, but at NTC you can draw one. This is important, so you can relay information to the TOC. Also, get on the SIGO, and make sure the DNVT or MSRT (I don't know the difference, it's a phone) in the TOC works. The one at brigade will work, trust me. This is a quick way to relay information back and forth, without actually driving all the way back to your TOC, to simply pass on the timeline or an answer to an RFI (Request for Information). If you can scrounge an OE 254, and a couple of poles, you can also quickly throw that up, to help improve your range, which can be a challenge at NTC given some of the distances.

Driver – If your TOC is short on personnel, your unit may not want to give you a full-time driver. They might sim-

ply give you one as needed, and put him to work as RTO the rest of the time. This is hogwash. You need a full-time driver, who can do maintenance on his own, knows how to copy graphics, and has excellent night driving skills. My old driver was the best. SPC Hill kept everything tight, and often spent every night driving back and forth from the brigade headquarters. If he had to pull RTO all day, he would have been a safety hazard for all the night driving we did. Let him sleep, make him pull maintenance, and you will be all right.

With the basics established, I will now cover some of the duties and some of the TTPs I learned concerning mission analysis. As the LNO, your home must be the brigade or higher headquarters. This is where you will develop a rapport with the planners, and pick up tidbits of information, which will help your unit's planners. Our sister battalion used their LNO as a battle captain and TOC OIC. This worked great, until he got lost going to brigade one night. The reason he got lost was that he was so strung out from doing everything else, that he had not realized the brigade TOC had jumped. Also, by remaining at brigade, you can get what I call a "bootleg" copy of orders. The planner for the brigade would often give me copies on disk of the OPORDs, and FRAGOs before their approval, and I would run it back to our battalion planner. That way, he could begin writing our own order and save valuable time. Once the order was approved, I would then run the "real" copy down, and the battalion staff could begin the mission analysis, most of which was hastily done with the "bootleg" copy. You also should be at brigade to participate in their mission analysis and wargame, and speak on behalf of your battalion if asked for information. You must also learn to read personalities and know when to quit annoying everyone. There will be times when the planners need some quiet time to write the order, without some lieutenant bothering them.

Another thing you will need as the LNO is information. Every time you leave a TOC, write down every bit of information you might need to know. Every time I set foot in the brigade TOC, the battle captain would ask, "Hey 1-64, where are all your scouts at?" Every time I left my TOC, I had a standard list of information I would write down. These were: slant and location of all our companies, location of

each scout section, our battalion timeline, copies of our latest orders and graphics, and any RFIs that our staff needed answered. You also will need a good idea of your battalion's scheme of maneuver, because you will probably be asked by the brigade 3 or commander. Not a time to start tap-dancing. Likewise, when you leave brigade, you will need to be armed with the latest orders, graphics, timeline, answers to RFIs, and any guidance that your unit will need. The first thing you will be asked upon arrival at your unit is, "What time is the rehearsal?" You must know. Sometimes your unit will ask, "What are they smoking at brigade?" This is the time for you to share the brigade's logic for the tasks they assigned your unit. You understand the brigade's logic, because you sat in on the wargame. Timely information is the most important thing you provide as an LNO.

Along with providing information, you are also the link between the slice elements and their higher headquarters. In the brigade TOC, you will find combat engineer, ADA, fire support, and other assets. These folks write orders, but often have no way of getting them to their subordinate units that are attached to maneuver battalions. Every time I left the brigade TOC, I would simply stop by each cell, and ask if they had anything for the FSO, engineer, or ADA platoon leader. They normally will have an order, or a copy of their annex to give you far in advance of the issuing of the actual brigade order. This will help your attachments out immensely. You will normally get engineer, A2C2, and fire support graphics to pass along to your attachments as well.

This works both ways, because you will need to run your attachment's orders/graphics back up to their higher HQ as well. Too many times after a battle at the NTC, I would go into the TOC and find unit orders and graphics that were never picked up. It is not only a waste of time and effort to copy these orders, but important information that could synchronize a battle could be missed and lives could be lost.

The final area I want to discuss is the personality of the LNO, what *FM 71-2* calls the "human dimension" of combat power. You have to be outgoing and capable of finding who to go to. You must be a diligent listener, and be able to tell what is important and what is not. You must have the ability to know what your commander would say, if the brigade commander asks you a ques-

tion. You have to be able to scrounge parts, POL, Class I, and anything else you might need. You have to be independent. There is no wingman to follow to the BDE CP, through Indian country, at night, in the cold, as you find out that the CP jumped since the last time you were there. (Hint: use your PVS-7s, and look for all the lights. I always wondered how the OPFOR found us.)

In closing, when I was given the job of LNO, I was not thrilled. I thought I'd get some sexy job like the mortars or scouts. However, the information I learned as the LNO thoroughly prepared me for the Captain's Career Course and for my next job as a brigade assistant S3. Although I lost a lot of sleep, was miserably cold, and didn't get to fight the OPFOR like when I was a platoon leader, I learned more as the LNO and got to watch some fine senior officers at work.

On the future battlefield, orders may be passed by leveraging technology over a tactical internet. However, you will never be able to replace that "human dimension" that an LNO provides. A tactical internet will never be able to answer those questions like, "What's brigade saying about us," or "How's MAJ So-and-so holding up," or "What are they smoking at brigade?"

So do your job well, young LNO. Others are depending on the timely distribution of your information. As one old friend used to say, "Getting the battalions a 70 percent solution on time is better than giving them the 90 percent solution too late."

I'm still waiting; however, on the language school slot.

CPT Clinton Alexander is a 1996 Distinguished Military Graduate from the Citadel. He was a tank platoon leader in Charlie Company, 1-64 Armor at Fort Stewart, Ga. and served as executive officer of C/1-64, and then as the LNO/assistant S3 in 1-64 AR. After leaving Fort Stewart, he attended the Armor Captain's Career Course, followed by CAS3 at Fort Leavenworth. He returned to Fort Knox to attend the Cavalry Leaders Course and the M1A2 Tank Commander Certification Course. Currently, he is assigned to the 1st Cavalry Division, where he serves as an assistant S3 in 1st Brigade (Ironhorse).

into service. The T-90S is only a slightly improved T-72BM (renamed for overseas sales after the disastrous performance of the T-72 in Iraq, and a desire to disassociate the much different T-72B from the T-72s and T-72M/M1 tanks destroyed by the Coalition), and not a quantum leap forward. "Black Eagle" is also of a similar concept — still optimized for sweeping tank battles in Europe, not infantry support in the mountains. The much ballyhooed "T-95" has been promised to appear at two arms shows but is still missing, so the jury remains out on what it brings to the problem of city combat.

For those readers who also read Russian, there are two good books which cover much of the change in Russian thinking since 1992 and the whys behind it. They are *Russia (USSR) in Local Wars and Regional Conflicts During the Second Half of the 20th Century* and *The History of Russian Military Strategy*, both edited by Major General Vladimir A. Zolotarev, Academic of the Russian Academy of Natural Sciences and head of the Military History Institute (IVI). They are published by "Kuchkovo Polye" Publishing Company, Moscow, and are available from East View Publications for \$39.95 each plus \$6.50 shipping and handling. Les Grau and I have agreed to translate them, as all U.S. Army officers need to read these two excellent omnibus works on the past and present of the Russian Army, but thus far we have not received either permission from the Russians or found a publisher.

CPT Geibel means well, but too often the "shotgun" presentation of anecdotes without context can cause serious problems to become myths. Once the myths are embedded in commanders' minds, it is very hard to chase them out with the truth.

STEPHEN L. "COOKIE" SEWELL
CW2 (Ret.), AUS
Aberdeen, Md.

CPT Geibel Responds

Fellow *ARMOR* readers:

I'll keep this short. I congratulate Stephen Sewell on stepping up to the plate and sharing his information with *ARMOR's* readers. While I acknowledge Sewell's years of experience and his current access to information, I stand by every word I wrote. My sources "are what they are" — the open-source words of Russian tankers and journalists, as printed. I presented diverse accounts to the *ARMOR* community in a logical, readable manner.

... "Cookie" misinterpreted some items, so I'll address his problems in sequence.

* All of the "anecdotes on failings" are about Chechnya-2. Don't know where one could think they apply to Chechnya-1.

* On dismantling different kinds of ERA blocks — never underestimate criminal intent. In Footnote 2, third paragraph, I direct you to the verb "may be" — the issue is pilferage, which is NOT technology-specific.

"Cookie" and I could argue for hours whether an ingenious, thirsty Russian tanker could remove the explosives from a Kontakt-5 block and sell it on the black market, but I've got \$20.00 that says Ivan could.

* As for the strength of units deployed during Chechnya-2, that's why I gave readers tank counts — anyone slightly familiar with Russian TO&E will take one look at them and see the units aren't up to strength. Why be verbose and insult readers' intelligence?

* Regarding my 'glossing over Command Detonated Mines,' the issue was addressed earlier. (See *ARMOR*, Nov-Dec 2000, Page 24, 1st column, last paragraph, and Page 26, 1st column, last paragraph.)

"Cookie's" misinterpretations aside, the bottom line is that Russia's armor fleet is in a place where we, as American armor/cavalry crewmen, do not want to be. Space in *ARMOR* magazine is at a premium, so if "Cookie" Sewell — or others — wish to discuss this topic further, they can always feel free to contact me at ACARLG@AOL.COM.

ADAM GEIBEL
CPT, AR
S2, 5/117C

Some Cavalry Problems Stem from 1986 Reorganization

Dear Sir:

I wish to comment on CPT Benson's article, "The Cavalry Paradigm," in the July-August issue. The author has done a fair crosswalk and identified various disconnects, but I suggest an adjustment of focus is needed to more clearly identify the problems and to assign responsibility for correction. The bottom line is that Armor Center and TRADOC need to reestablish the Directorate of Evaluation and Standardization (DOES), but more on that at the end.

DOCTRINE. Cavalry doctrine is not broken. It is generally adequate as stated in *FM 17-95*. It addresses in broad terms the role of cavalry organizations. Doctrine is not intended to be all-inclusive, since that would be too voluminous and restrictive, stifling all initiative.

Economy of force is a role and not a mission. Nobody is ordered, "conduct an economy of force." The mission order is something like "attack and seize" or "defend in sector," etc. Cavalry organizations are suited for "economy of force" operations because they are already organized as highly mobile combined arms units. Instead of having to cross attach and task organize tank, infantry, and supporting units into an *ad hoc* company team or battalion task force, the brigade or division commander can simply assign a complicated mission to his organic cavalry squadron or troop.

The mission profile chart in *FM 17-95*, Fig. 1-4, is a guide. Cavalry *missions* can be assigned to tank and infantry units. If needed, supporting units like military police, engi-

neers, chemical, and any other unit that can move, communicate, and shoot can be pressed into service. The lack of cavalry units does not excuse the commander from assigning recon and security missions. Conversely, tank, aviation scouts, and other platoons and companies need not be included in detailed mission profiles since they are already collectively included within their parent cavalry troops, squadrons, and regiments. When reinforcing cavalry units, regular tank and infantry units are not retrained and reorganized, but are employed in their existing roles in support of the cavalry's mission.

The term "reconnaissance in force" is significant in that it denotes *at least* a battalion-size operation (*FM 17-95*, Chapter 3, Section V). The participating squadrons and troops are actually conducting zone recon and/or movement to contact, while the platoons are likely conducting travelling and bounding overwatch or fire and maneuver.

FM 17-95, Chapter 5, is very clear on deliberate and hasty attacks. The former is generally avoided but the latter is performed often to disrupt the enemy and seize the initiative. It is a mistake to suggest that cavalry must avoid attacking. Instead, cavalry must avoid *becoming decisively engaged* and losing its ability to maneuver.

If there is disagreement between *FM 17-95* and the cavalry MTP and ARTEP manuals, the latter need to be corrected (the responsible agency is the Directorate of Training and Doctrine Development). The FM is the primary document on which the others are based, and not the other way around.

EQUIPMENT. The author hits the nail on the head concerning a dedicated pure recon vehicle. No such system has ever existed, nor is one likely in the future. The role of cavalry is far too diverse, and combined arms operations are the norm.

TRAINING. Here, the author misses the mark. Company and field grade officers are, generally, not the problem. If the divisional cavalry squadron is poorly trained and misused, it is the fault of the division commander. If brigade commanders misuse divisional cavalry troops OPCONed to them, it is the division commander's responsibility to correct them. If brigade recon troops are assigned inappropriate tasks, it is the brigade commander's fault. Establishing an O-6 "Chief of Cavalry" at Fort Knox to tell brigade and division commanders that they are making mistakes in the field will do nothing. Instead, Armor Center, TRADOC, and FORSCOM need to examine "Leader Development" for senior leaders. Professional development does not end once stars are pinned on.

However, I must back up and emphasize that the author's concerns are anecdotal and I have no way of judging their true validity and scope. Are these really Army-wide problems, or just one or two training exercises that went a bit wrong? Well, that sort of issue used to be covered at each proponent school by the Directorate of Evaluation and Standardization (DOES). The true purpose

of DOES was to keep an eye on the state of the branch as it operates in the field. Unfortunately, under TRADOC's "School Model - 86" reorganization, DOES was denigrated to little more than monitoring of institutional training and was subsequently disbanded altogether in the early 1990s. With that decision, TRADOC proponent schools severed their linkage with the field and have never been adequately resourced to stay in touch.

Bringing back DOES should be the highest priority for all TRADOC proponent centers. Until then, nobody will understand the scope of the problems, let alone develop timely solutions.

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

Armor Junior Officer Says He's Right Where He Wants to Be

Dear Sir:

Having just read LTC Jim Pasquarette's article, "Some Thoughts for Junior Officers on Making a Career Decision," I must say that I agree with everything he wrote with one exception. I do not believe that LTC Pasquarette's reasons for making the Army a career 'sound ridiculous to the average junior officer' at all. Having been recently commissioned a 2LT in Armor and still waiting to start OBC, I am just about the most junior of any officer out there. There is no other career in the world that I would rather have than serving in the Army, and no other branch in which to serve than Armor. LTC Pasquarette's words really hit home with me as I hope they did with my fellow junior officers.

JIM MCCARTEN
2LT, AR

Tank-busting Is Only a Part Of Armor's Battlefield Mission

Dear Sir:

The letter from Mr. Harry Roach in the Jul-Aug '01 issue of *ARMOR* posed the interesting question, "Has the tank reached the apogee of its historical cycle?" It's very possible that future battlefield technology may lead to a radical evolution in armor branch in the 21st century, as Mr. Roach suggests. But he veers wide of the mark in his illogical conclusion to the story of how the railroad industry failed: because its executives thought they were in the railroad business and failed to recognize they were really in the transportation business. Harry Roach concludes that force developers must consider the evolution of armor in the sole context of being in the "tank-busting business."

This statement reveals a grave miscomprehension of the role of armor on the modern battlefield. The role of armor is shock, firepower, and mobility. Any peasant with an anti-tank rocket can "bust" a tank, but only armor units give the battlefield commander

the decisive firepower and maneuver capability offered by today's tanks.

The tank's futuristic replacement may indeed be a very different piece of equipment: perhaps a hybrid descendant of the Abrams tank and the Apache helicopter, or a flying saucer with a ray gun, or the armored suits of Robert Heinlein's *Starship Troopers*. But whatever the Army develops won't come from thinking of armor branch as being in the "tank-busting business."

Armor will still be in the business of providing shock, firepower, and mobility on any future battlefield.

CHARLES E. RITTENBURG
MAJ, MI, USAR, (Ret.)

Where Did All the Horses Go When the Horse Cavalry Disbanded?

Dear Sir:

I wish to provide some information related to the query by Gordon Douglas (Page 49, July-August edition): "What happened to all the horses, stud farms, and saddles/bridles/harness?"

My father, a lifelong horseman, has told a story over the years of attending an auction at the Cavalry Remount Station in Front Royal, Va., near Washington, D.C. (He describes the Remount Station as a large complex of barns, paddocks, and pastures. I expect by this time it is covered with town houses.)

The sale occurred sometime in 1941. Dad remembers that horses were openly offered for sale to all bidders, but couldn't remember if they were sold individually or in lots. He describes the horses being sold as "heavy," "medium," and "light," making a clear distinction between the heaviest draft animals, lighter artillery teams, and cavalry horses. It is not clear how successful these horses were as riding and plow horses. Dad said they were all "trained to charge" and once they got their head, they would "run away" and "couldn't be stopped." Dad's opinion is that these "civilianized" horses were pretty much "used up" within less than a dozen years, either being worn out on the many farms still using real "horse power" or as dog meat.

Based on the quantity of McClellan saddles and other tack in evidence in museums, antique shows, farm auctions, and in the hands of collectors, it is a reasonable assumption that this equipment was also auctioned off when the horse cavalry was disestablished. While Dad has no direct memory of how the equipment was disposed, we have certainly owned and used a lot of it over the years. While growing up in then-rural Maryland, I recall that almost every farm seemed to have at least one McClellan saddle hanging in a barn serving as a foundation for a bird nest. Dad once acquired about 300 lbs. of old tack with a \$.25 auction bid — enough to fill the trunk of his car.

Digging through this treasure, my brother and I were thrilled to discover bridles, bits, and other tack clearly marked "U.S." To this day, I still own a McClellan saddle and a bridle, proudly displayed in my office while on active duty. There are also stories heard over the years that the Army burned large amounts of cavalry equipment just to get rid of it. This would be consistent with our dumping of massive amounts of equipment into the ocean at the end of WWII and burying every manner of equipment as we departed Vietnam. "Excess," it seems, will always be with us.

I hope that these tidbits of information are of interest to all cavalymen and serve to document details of the end of the horse cavalry era now fast fading from memory.

Garry Owen!

GEORGE E. MAUSER
COL, USA (Ret.)
Littlestown, Pa.

Could Tracked Howitzers Fulfill a Dual Purpose Role?

Dear Sir:

I would like to put in a suggestion supporting the M113 APC as the proper vehicle for the Interim Armored Vehicle (IAV) program. It exists in large numbers. It has excellent logistics support and a wealth of experience on conversions. Experience with fiscal realities should indicate how the LAV III will be funded: remember the M8 Armored Gun System.

To get some kinetic energy weapons into service, one could use some of the many M109 self-propelled howitzer (SPH) vehicles. [We could] replace the existing 155mm howitzer with a M68 105mm tank gun, retaining the howitzer's elevation limits and add tank gunner/night vision gear while retaining the artillery fire control equipment.

This dual-purpose antitank/artillery vehicle is "portable" enough to get to the action, along with the M113s, in C-130s. Ammo for 105mm guns is readily available worldwide. Use 105mm howitzer HE shells for artillery purposes. The Navy "trick" of using reduced propellant charges will allow the gun to be used as a "howitzer" with greatly-reduced barrel wear. Armor is comparable to the M113, and can be upgraded to M113A3 level as needed. Add grab rails topside to allow troops to ride the vehicle — providing more mobility for airborne troops who would otherwise be on foot.

This proposed conversion is no panacea, but it may be available relatively soon and at much lower cost than an entirely new vehicle. My viewpoint on such conversions was learned as a naval architect in a Navy yard where conversions allow one to continually upgrade existing vessels to gain increased capabilities.

GORDON J. DOUGLAS JR.
Fullerton, Calif.

REVIEWS

The Myth of the Great War: A New Military History of World War I by John Mosier, Harper Collins Publishers, New York, 2001, 381 pages, \$30.00, ISBN 0-06-019676-9.

The prolific defense author James F. Dunningan once wrote something to the effect that the loneliest person in the world is an intelligence analyst who has got it right. If this new and different perspective on World War I is correct, there were not many lonely people in that war, but those who were redefined the term "loneliness."

This book is quite different than many past histories of World War I for a number of reasons. First off, it ignores most of the political questions of how European countries got so enmeshed in each other's affairs that they would be drawn into one of the bloodiest conflicts in history. Secondly, it places the blame for much of the failures of that war on the people who often are lauded as its heroes. Lastly, it is not written by an author with any military background or "credentials" in the sense of the word as defined by military historians. Rather, Dr. Mosier is a full professor of English and Associate Dean of Arts and Sciences at Loyola University in New Orleans, who has developed his knowledge of the war as part of a research project for the National Endowment for the Humanities.

So what does a liberal arts professor from the deep South have to do with in-depth analysis of one of the most complex wars in human history? Most of the military illuminati in this day and age like to trot out the tired phrase "thinking outside the box;" in that, Professor Mosier has done an excellent job, and this book bears reading on several levels.

Most armies throughout history that have failed have failed for one primary reason: they trained to fight the last war, not the next one. France, Britain, and Russia are all shown to be guilty of this thinking, and it was one of the main reasons that they were so rapidly forced into positional warfare. The British forces were too small to be an effective battlefield instrument of power projection in less than a year's time. Those of the French, while more rapidly mobilized, were prepared to re-fight the 1870 war as one of high-speed maneuver, using light artillery with high rates of fire and machine guns to win over the Boche. The Russians were a force in being, but ill-equipped.

The Imperial German General Staff, one of the most thorough military thinking bodies that has ever existed, examined all of their opponents in turn and made mental assessments of each one. They saw the French and Belgians build fortifications in depth, and immediately began developing different calibers and echelons of artillery to deal with them. They estimated the time it would take their three main opponents to assemble, organize, move, and supply their forces, and saw a window of opportunity to smash France and neutralize England before they

would have to turn to deal with the Russians. Using a modified version of the von Schlieffen plan, they swung into action in August 1914.

As most casual students of WWI know, the Germans failed to execute the plan as designed, coming to a halt in what was referred to as the (first) Battle of the Marne in September 1914. Here Mosier differs, indicating that the Battle of the Marne was a fabrication of the French General Staff to avoid having to admit the real reason for the German halt: the Germans simply overran their supply system, which could not support such a large deployed force in France.

Once the initial offensive petered out, the Germans reexamined the situation. With two forces of over two million men each facing each other in a continuous line of fieldworks stretching from the Alps to the Channel, the Germans came to the conclusion that neither side would ever be able to make the "big breakthrough" needed to force the other side to crack, nor could there ever be a single decisive battle like Austerlitz, Waterloo, or Sedan to break the back of the opponent. So they simply dug in and prepared to bleed France white.

The initial BEF commander, Sir John French, appeared to have figured this out early on and thus refused to commit the BEF in a position where it could be crushed by the Germans in this manner. He was sacked, and his replacement, Sir Douglas Haig, promptly committed the BEF and by the end of the year had taken 100,000 casualties with nothing to show for it but the loss of the trained cadre of the British Army.

The main problem in all of this was the failure of either the British or French to have a proper intelligence or operations staff. Both sides came to ridiculous conclusions without anything more than intuition to support their claims. The French and British took horrendous casualties, but since they were the "good guys," came to the conclusion that they HAD to be inflicting more casualties on the Germans, and thus were slowly running them out of men. It was the only conclusion that they could reach as to why the German offensive had stalled; they *must* have killed the flower of young Germany, and thus the Germans could press no further.

The Russians were much better and far faster in reaction than the Germans had figured; this seems to have always been the case, but it is never brought out in history. The Imperial Staff was able to get two full Russian field armies organized and sent forward on trains long before the Germans were prepared for them, and it was in a near panic that they sent for more troops from the Western front and two tough but egotistical leaders, von Hindenberg and Ludendorff, who were able to use their advantage of inner lines to defeat first one and then the second army, stalling the Russians on their borders. In fact, it was a near-run thing during the Brusilov offensive of 1916 that the

Russians did not crush the Austrians and move farther than they did. Again, a large number of German divisions had to be sent east to stop them, and it was with this stopping of the Russian army during that series of southwestern offensives that the real heart went out of the Russian Army.

The Germans realized when they came up with the strategy of bleeding the French and British that their forces were too large and cumbersome at the tactical level. As a result, they completely reorganized their divisional structure. They went from a two-brigade structure with two regiments in each brigade to one of three regiments, each of three battalions of four companies plus special troops. Artillery was reorganized, with larger caliber guns going down to lower echelons. Quite often, a German divisional commander would have up to twice the firepower of a French corps commander.

Their tactics changed too. Rather than defend up front, the Germans preferred to pick ideal sites for defenses, where they could easily move back to another line if needed and turn the first line of defenses into a killing zone for their artillery. The French fell for this tactic until 1916, when they started trying to avoid being caught in the "kill zone" by the Germans. The British, on the other hand, took much longer to grasp it; the first day of the Somme in 1916, where Haig sent his troops forward en masse in four neat, orderly lines, cost 60,000 casualties on that very day, nearly all to artillery and machine-gun fire.

The British and French assessment of all of the changes made by the Germans were that their own intelligence assessments must have been correct. After all, if the Germans were a healthy force, why did they cut down on the size of their divisions? The German preference for the defense also reinforced misguided British and French assessments that the Germans could not launch an offensive. When the Germans did, and usually with only a very short bombardment to warn the victims they were coming, it was a constant surprise to both armies' intelligence staffs.

The Germans were not invincible, as Professor Mosier points out, for when they were the attackers, quite often their casualties shot up to rates similar to those of the British and French. But the German offensives were fewer, and much better planned. First off, they tried to select areas of the front whose capture offered real advantage. Too often, British and French offensives were oriented around insignificant pieces of terrain, which cost them heavily and meant little, and were usually easily reclaimed by the Germans soon afterwards. The British were all too eager to squander their forces, losing nearly 60,000 Canadians and 60,000 ANZAC troops in these poorly planned offensives.

The second factor the Germans stressed in selecting areas for an offensive was the amount of artillery fire to which that area had

been subjected. They realized that speed was of the essence if positions and objectives were to be taken on schedule. The British, in particular, loved bombardments of up to seven days' duration prior to an attack, which usually meant that their troops were either exhausted from crossing no man's land on their way to their objectives, or became hopelessly mired down in the middle. The Germans preferred engineer mortars in these situations — the ones the Tommies called "Whiz-bangs," as it made a whiz when fired and detonated with a huge bang. These rounds carried about four times the explosive of a conventional artillery projectile. Again, the result was horrendous casualties, minuscule gain in territory, and more damage to the ground the poor infantry would have to cross.

Tanks did not prove to be a solution, as the British and French both thought. The main problem was the lack of sufficient horsepower (150 hp for a 37-ton British tank could move it at around 4 mph on flat ground; the shell-cratered lines were anything but that) and thin armor, which could easily shatter with a direct hit by a standard field gun. Such was the case at Cambrai; even though a handful of tanks made their objective, the infantry was caught in the craters of no man's land or pinned down by German artillery in the first line of trenches.

In 1917, the USA entered the war, and while up to that time the Americans were felt to be upstarts who would not be able to field a "modern" army until the fall of 1918 at the earliest, the Germans did more research and became worried. America had vast, untouched resources and, as a point of fact, had been supplying the Allies with war material for some time, especially explosives, small arms, and ammunition, plus food and raw materials. They could see that if the Americans wanted to create, train, and field an army of 2 million and send it to France, they would, and it could be the decisive force in Germany's defeat.

The American choice of commander was General John J. "Black Jack" Pershing, who was an astute politician but not adept at European military politics. Both Haig and Foch saw him as a major threat to their own plans on how to win the war, as the brash Americans might actually be able to do something right. While both countries had sent experienced cadres to the U.S., the best ones were those from the survivors of French Alpine battalions, who understood the German tactics and doctrine and passed this along to the Americans. The French wanted American units to be integrated into French armies and participate in joint operations with French forces; Haig, on the other hand, only wanted the manpower to integrate directly into his forces as replacements and to be used in the same manner as other British troops.

Pershing, although he may have lacked a bit on tact and ability to politically deal with his allies, would have none of it. The Ameri-

can forces were to fight as a body, and be controlled as a body, by American commanders. Admittedly, these commanders included Patton, Marshall, and MacArthur, which, in hindsight, we could say was playing with a stacked deck, but Pershing had faith in U.S. forces and was not going to allow them to be frittered away for naught.

The Germans therefore felt they had to make a few last gambles to try and first beat the British, and then the French, before the American army in being became a threat in reality on their front lines. As a result, the Germans hammered the Allies in three successive offensives, beginning in March 1918 and ending in September. While they easily beat the British, and, in the estimation of Professor Mosier, effectively eliminated the BEF as a fighting force, and then proceeded to inflict heavy damage on the French, they did not achieve their goal.

Pershing's staff by itself was far better than those of the British or French, and a captain in the AEF intelligence section correctly identified the goals and direction of the last big German push against the French. While warned, the French ignored the "newcomers" and then, as usual, were thunderstruck when hit when and where they least expected it.

Beginning in June 1918, the Americans did come to the fore. First taking an insignificant area around Bois de Belleau, the Americans proved that the Germans were not invincible. While this upset the British and French — who apparently took it as "beginner's luck" — the Germans were horrified. It was the first time since August 1914 that the Germans had been beaten in open combat in France, and they felt (even as small as the victory was on a grand scale) that this was the loss of the moral superiority needed to win. Again, in July, it was the Americans who first stopped the German offensives, and then burst through their lines on what the Germans felt was key ground: Saint Mihiel.

The French were aghast that the Americans focused on this section of the front for two reasons. First, they had sacrificed hundreds of thousands of troops in this area for naught. Secondly, they were now terrified that the Americans could break through and that the honor of winning the war would go to them, and not the French Army. Foch ordered Pershing to launch his offensive elsewhere; Pershing, politely, ignored him and went in anyway. Foch then tried to task the Americans for a second offensive, something neither the French or British could do, and was again horrified by the ease and speed in which the AEF responded with what was called the Meuse-Argonne offensive. At the end of this offensive, the Germans began to approach the Americans on the subject of an Armistice. While to this day some British and French historians state that the German preoccupation with the American offensive allowed their forces to win the war, Professor Mosier points out that they only took areas abandoned by the Germans, and that com-

bined British/French losses outstripped American losses by 4:1.

The British and French were furious, as they wound up being blackmailed into the Armistice by either having the Germans sign a separate peace with the Americans or with all of the Allied powers.

It is likely that Professor Mosier's book will not be well received overseas, as the subtitle of the book is "How the Germans Won the Battles and How America Saved the Allies." He presents a strong case for this taking place, and it does fly in the face of over 80 years of myths and anecdotal evidence to the contrary. As an "outside the box" writer, his credentials may well be called to account as sadly lacking. But then again, both the British and French looked down on the American Expeditionary Forces as we were an army of amateurs and had no "professional" staffs in 1918.

What today's readers need to take away from this book is the point that it takes a good intel staff and a good operations staff to correctly plan and fight wars. Over the course of 33 years of experience in the Army, active and civilian, I have seen all too often what happens when one side lets the other down or assumes it is superior. Happily, all but a few incidents took place in war games, where we are supposed to learn and progress with newfound wisdom.

The commander *has* to have a good intelligence section to rely on, and the losses of the BEF and French Army provide thousands of marble reasons why good interaction among the G-2, the G-3, and the commander is essential. Yet the commander cannot accept poor intelligence which, as with the British and French, only tells them what they want to hear. There are still intelligence analysts who will state — clear-eyed and with deepest sincerity — that the Russian Army is a viable combat force which can place several million troops in the field, or that the Chinese Peoples' Liberation Army is only a third-rate peasant force little changed from its Korean War days. Commanders who accept such findings will probably find themselves fighting the Sommes of the 21st century.

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A Soldier's Duty by Thomas E. Ricks, Random House, New York, May 2001, 320 pages, hardcover, \$24.95.

In this first novel, Thomas E. Ricks, a Pulitzer-Prize winning Pentagon correspondent for the *Washington Post*, weaves a very believable and modern fictional tale that focuses on the highest "brass" in the Pentagon, Washington politics, and a peacekeeping mission in Afghanistan, to deal with many of the issues and perceptions faced by our nation and its military forces today. Although the story takes place in the unidentified but

clearly distant future, and any resemblance to actual people and events are "coincidental," it is evident that the author is current and privy to many of the Army's current debates and challenges.

The essence of the story involves General John Shillingsworth, the U.S. Army Chief of Staff, and his personal turmoil in dealing with yet another unpopular "presence deployment" to Afghanistan. His antagonist, General Byron "B.Z." Ames, the vice-chairman of the Joint Chiefs of Staff, fuels an underground organization of Army officers known as the "Sons of Liberty" to undermine Shillingsworth and end the mission. Ames despises the current President, NSA, and most members of Congress, who never wore the uniform and have no understanding of the military or military operations, nor, in his opinion, have the right to send untrained troops to die in such a "political" mission in Afghanistan.

Many characters, specifically the aides-de-camp of both generals, move the story along to its somewhat predictable ending. Major Cindy Sherman and Major Buddy Lewis, aides to Shillingsworth and Ames respectively, cleverly enlighten the reader in areas running the gamut from junior officer mistrust of senior leaders, back-to-back deployments, officer and personnel attrition and retention, limited resources, training and readiness, gender integration, gays in the military, greed, and selfless service to the nation. The author professionally and tastefully addresses or highlights these issues in an almost neutral fashion without clear bias in order to seemingly allow the reader to make his or her own conclusions about the characters and their actions.

Anyone serving the Army or military today can easily and readily relate to this story and will most likely find some resemblance to subordinates, peers, and senior leaders as well as comparable events and dilemmas that they have encountered in their own careers in uniform. Although fictional, the story is very believable and not unrealistic in addressing the possibilities of events to come as the military continues to define its role in the twenty-first century and American politics.

A Soldier's Duty is a well-written adventure, conflict, mystery, murder, and even romance story that is entertaining and makes for a good novel if one is inclined to read such material. That being said, this is not a book that belongs on the bookshelf of every soldier and is not likely to make it onto any professional reading list, now or in the near future. Despite what the publisher's note would have you believe, it is unlikely that this novel will become the *Once an Eagle* for the twenty-first century. However, only time will determine if the lessons of leadership, character, and ethics present in this story will evolve this novel into another great military classic.

JIM DUNIVAN
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Retreat to the Reich, The German Defeat in France, 1944 by Samuel W. Mitcham, Jr., Praeger, Westport, Conn., 2000, 304 pages with index, \$27.50.

Samuel W. Mitcham is a Professor of Geography at the University of Louisiana in Monroe. He is also the author of numerous works of military history, most recently *Rommel's Greatest Victory, The Desert Fox and the Fall of Tobruk, Spring 1942* (Presidio Press, 1998). Just about everything he has written, in fact, has related in some way to the German Army of the Second World War. In this, his twentieth book to run through the same vein, he demonstrates that while he may not have acquired breadth in his understanding of the military history of the period, he certainly has the depth in one topic required to convey vast amounts of information to the reader. This new book is a solid "operational history" from the German point of view.

In military history, there are several sub-genres. There is, of course, the traditional "bugles and trumpets" sort of patriotic first-person military history made popular by several well-known military historians in the past few years. There is also a more sophisticated (but not always useful) sub-field one might call "social-military history." This is a type of history that seeks answers to broader questions or applies emergent theories of human behavior to questions of military history in search for "answers." Then there is one of the older types of military history, "operational history." This is the straightforward account, without interpretation, of events in a battle or campaign in a sequential narrative. Best written without emotion, this type of history forms the foundation for all others. It is the record of facts, not the interpretation of them. In *Retreat to the Reich*, Mitcham gives us a decent, single-source account of the German side of the Battle of France.

On the down side, one suspects after a while that perhaps Mitcham has become too enamored of his subject. His portrayals of the officers in the German Wehrmacht are generally favorable, and in some cases are openly admiring. After just a few dozen pages, one begins to wonder, given what we know of the actions of the German Army and nation in the Second World War, if these are the same officers that we were fighting in World War II. Mitcham generally accomplishes this historical sleight-of-hand by not delving too deeply into the personal histories of these officers and generally relying upon their own post-war memoirs for accounts of their actions and behaviors. Thus he avoids mentioning their participation in any massacres or pre-war applications of force against Jews or other minorities. One notes especially that he carefully avoids noting the actions of these German officers or their units on the Eastern Front. In fact, the only distasteful actions in the entire book are the summary executions of SS troops at the hand of some American MPs and another more general suggestion that this was a

common practice that summer and fall of 1944. Not once does a German unit or officer misbehave or maltreat prisoners or civilians in their precipitous retreat across France. Apparently only Americans (and Canadians) did that sort of thing. This was, I will admit, news to me.

What Mitcham does devote a lot of verbiage toward is a fairly complete account of the underground anti-Hitler conspiracies that permeated the Wehrmacht during the war. While the fact remains that these conspirators never actually made an attempt on Hitler's life until the summer of 1944, the fact that there was at least some movement cannot be ignored. I will readily concede that the few dozen pages Mitcham devotes to this aspect of German Army history are some of the best and most interesting in the book. In the end, however, I am reminded that there were hundreds of thousands of officers in the armed forces of Nazi Germany, and only a few dozen actually tried to do anything about Hitler. That's a fact that you tend to forget when reading this book.

However, there were some interesting parts. Among the most interesting facts Mitcham brings out is the history of one Lieutenant Colonel (later Major General) Henning von Treschow. Treschow, a career officer, had been coordinating various groups towards an attempt on Hitler's life as early as 1942. As the Chief of Staff of Army Group Center (on the Eastern Front) he had maneuvered to collect several like-minded officers together in that Headquarters so that it became the center of resistance to Hitler's régime. One by-product of this cabal was the creation of a military unit that could, should the situation arise, be used in direct combat against Nazi forces. That unit was a cavalry regiment commanded by the younger brother of one of Treschow's co-conspirators, Captain Georg von Boeselager. The "Boeselager Cavalry Unit" became the "Cavalry Regiment Center" and was essentially the fire-brigade for Army Group Center. With more than 600 Russian Cossacks in the ranks, and a specially selected cadre, it was also potentially the foundation for a coup. Such was not to be, alas, as the one attempt on Hitler's life in 1943 was an abysmal failure. (Obviously, this is the foundation for the famous Boeselager Cavalry Cup competition that all NATO tankers are familiar with.)

As an operational level history, the history of a campaign, this book does a decent job explaining how the German Army fell apart in the summer of '44. One learns from Mitcham's broad strokes where each unit was, what their missions were, and how their commanders interacted. It would be interesting to match this book against Stephen Ambrose's *Citizen Soldiers*. This approach would allow the readers to cover the same period and many of the same smaller unit actions, from both sides.

The straight military utility of this book is limited. Unless you are a die-hard history enthusiast you will not find much utility in this work. There is not a noncommissioned offi-

cer even so much as mentioned in the whole thing, but that is understandable when you remember that the focus here is on the movement of divisions, corps, and armies. For the same reason there is no mention of lieutenants or captains or majors, and even lieutenant colonels only appear as aides to the field marshals. If you are looking for something to help you become a better tank-er, you might look elsewhere. If, instead, you want or need to know about operational level maneuver, this might be a work you could consult.

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Military Briefs No. 2, Israeli Tank-Based Carriers by Marsh Gelbart, Mouse House Enterprises, P.O. Box 1174, Woden ACT 2606, Australia, 72 pages, estimated \$20.00.

Web: www.webone.com.au/~myszka/
Email: mousehouse@start.com.au

This is a must-have book for anyone seriously interested in broadening their knowledge in the area of armored fighting vehicle identification (AFVID). Marsh Gelbart is a widely known author in the field of AFVID, and this book would be a welcome addition to anyone's AFVID library.

The book is magazine-sized, in pamphlet-like style, with 126 pictures depicting various action and motor pool views of the selected tank-based carriers, and includes detailed captioning with each picture. Also included are line drawings that serve to detail the various ways these vehicles are configured. The text is not overly extensive but is more than adequate in covering the subject. The various features, markings, and components of each vehicle and an explanation on how these features are utilized is well represented with the author's judicious use of pictures and detailed captions.

As many know, the Israelis have a different perspective on infantry fighting vehicles (IFV) on the battlefield. (On this subject, see "Deployable Versus Survivable," in the March-April 2001 *ARMOR*. —Ed.) This book actually explains where this philosophy came from and how Israel developed the heavy APC over the last twenty years. This philosophy can be summed up with the statement found in the book that "an infantry carrier, by virtue of its function, is exposed to greater risk than a tank. A tank can command an objective by fire from some distance, whilst an infantry carrier may be called upon to traverse a fire zone in order to deliver its infantry onto that same objective." This philosophy resulted in the development of heavy infantry vehicles as a byproduct of the lessons learned in combat in southern Lebanon during 1982. Additionally, the selection of armament for heavy APCs is driven by the belief that since the primary mission is to deliver infantry, and the primary threat is from enemy infantry, vehicle firepower should be optimized for this threat in the form of machine guns.

Societal reluctance to accept heavy casualties also drove Israel's development of heavy APCs. The heavy APC is a natural development when force protection is given priority and when considering the Israeli philosophy in how APCs function on the battlefield. In the book's conclusion, Mr. Gelbart mentions — but does not elaborate on — the similar Russian development of a tank chassis-based heavy APC. This is interesting to note, because the Russians developed their heavy APCs from similar force protection issues that arose from combat operations in Chechnya. This trend, towards heavy APCs, adds credence to the debate on whether our nation's decision to develop lightly-armored, rapidly-deployable vehicles to transport infantry is correct.

What makes this book such a must-have item is the fact that it covers a class of vehicle not widely discussed in more mainstream literature. Published references on AFVID are often a collection of generic information on a selected list of vehicles, and most do not delve in-depth into why those vehicles were developed. Though only addressing a selected class from Israel, this well-prepared and documented reference should be in the library of all AFVID trainers.

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Kasserine Pass: Rommel's Bloody, Climactic Battle for Tunisia by Martin Blumenson, Cooper Square Press, 2000, 341 pages, \$19.95, paperback.

This is a re-publication of a classic 1966 book, *Kasserine Pass: Rommel's Bloody, Climactic Battle for Tunisia*. In it, Martin Blumenson provides a clear and objective recounting of the initial confrontation between German and American forces in World War II. Through meticulous research in the official records of the North African campaign, and discussions with surviving participants, Blumenson reconstructs the battle and personalities of this critical engagement in a very readable prose. He shows how the combination of Erwin Rommel's tactical genius, coupled with American ineptitude, overconfidence, and lack of experience resulted in a tactical defeat for the American army.

At the strategic level, Blumenson's book illustrates the command and control difficulties that both Eisenhower and Rommel had with combined operations. Eisenhower was hampered by ambiguous U.S., British, and French command arrangements and extreme political sensitivities. Similarly, Rommel was burdened by an unworkable Italian and German relationship which failed to react to the battlefield. At the operational and tactical level, Blumenson's historically accurate research minces no words in detailing the fumbings of the U.S. forces and their commanders.

The author shows that the Battle of Kasserine actually proved beneficial to the Allies by

shaking up coalition command arrangements and jarring U.S. overconfidence.

Although Blumenson's research is impeccable, and the book is fast-paced and easy to read, his use of maps is weak. They are present in the book, but their lack of detail in terms of force dispositions and unit movement makes it very difficult for the reader to follow the battle. This re-publication should have addressed this flaw. Otherwise, I can strongly recommend this book as a key building block to understanding the American Army in World War II.

KEVIN D. STRINGER
MAJ, AV, USAR
Switzerland

My War Gone By, I Miss It So by Anthony Loyd, Penguin, New York, 1999, 321 pages, \$14.00.

In a book that is almost as much a healing for the author as it is war correspondence, Anthony Loyd travels to Bosnia in the early '90s, to "find" a war that he never got to fight in Desert Storm as a British platoon commander.

In this 321-page book of a self-loathing death-wish, the author travels between Central Bosnia, a London flat and Grozny, Chechnya, revealing the most intimate details of his heroin abuse and the war he seeks out as the only refuge from his addiction. If this book had included a 17th-century composer and Stanley Kubrick's permission, Loyd could have written a sequel to "A Clockwork Orange," only on a national level. The almost-surreal nature of combat, both in the Balkans and in Chechnya, reveal the worst in combat, something not seen in the likes of World War II, Korea, or even Vietnam.

His harrowing tale of murder, rape, and carnage on the front lines of Bosnia are a must read for anyone who will serve in the Balkans. One must appreciate the hell that was forged by all three guilty parties in Bosnia and Loyd does a perfect job of capturing it. He also portrays the Bosnian people openly and accurately, accentuating their bravado as well as their kindness on a personal level. Also reflected in his work is the pure evil that comes from a battle where the combatants are fighting for everything from Allah to fascism.

Once you stomach the "stream-of-consciousness" chapters in which Loyd battles his addiction to heroin, he allows you to see the demons he is fighting and his need to go to war as a means of self-destruction in a time of his life where he is drifting between boredom, "smack" withdrawal, and self-disgust.

Loyd captures combat better because he was there. Read this book before you land in Tuzla or take the bus up from Skopje to Camp Montiet, Kosovo.

CPT DOUG HUBER
Fort Knox, Ky.

Type 98

Chinese Main Battle Tank



ZM-87-type Laser Weapon

Characteristics

Crew Size	3	Max Road Speed	60km/h
Combat Weight	50-54 tonnes	Armament (main gun)	125mm
Height	2.0m	Armament (coaxial)	w/ auto loader
Length	10.0m	Armament (anti-aircraft)	12.7mm
Width	3.4m	Armament (laser)	ZM-87-type
Engine	1,500hp diesel		

Using countries: China

A color version of this poster appears on the Threat Branch website at: www.knox.army.mil/center/threat/intel.htm.

An article on this new tank appeared in the May-June 2001 issue of *ARMOR*. — Ed.

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