ARMOR

Insights from the NTC's Opposing Force *See Page 8*

PB 17-99-3

May-June 1999

Saddle Up... Tonight We Ride

I confess, I'm old enough to have TC'ed an M60A1 dinosaur complete with searchlight and exterior telephone. My mud-caked telephone was inoperative, like most, but it was also a constant source of amusement. The first time an infantry soldier approached the tank and tried yelling over the engine to tell us something, my loader said, "Watch this sir," and pointed the infantryman toward the telephone. Diligently the infantryman worked his way through the mud on the outside of the long-ago broken phone to find yet more mud on the inside, eventually the determined grunt would find the phone and attempt to talk to us. We would laugh and occasionally my loader would nod his head as if he actually heard what the grunt had to say. It was great fun.

I'm willing to bet the articles we receive for publication are a good barometer for what's on the mind of the armored force. One trend that we here at *ARMOR* have observed is an increase in pieces that discuss working with light infantry (see March-April 1999 *ARMOR*, "Life After Operational Maneuver"). Gone are the days when we merely gave lip service to the task. From Panama to Haiti to Bosnia and the prospect of Kosovo looming, armored and cavalry units are working more and more with infantry and will no doubt continue to do so.

The increased emphasis on working heavy/light goes hand in hand with another trend observed — more pieces on MOUT. This issue's "Commander's Hatch" describes the Armor Center's approach to operations in urban terrain, and LTC Lamont, USMC, details the role of armor on two urban battlefields — Hue and Khorramshahr. Imagine, MOUT being more than finding and fixing the local bäckeri.

I doubt many tankers will ever be comfortable or confident inside an urban canyon wondering where an RPG-equipped hunter-killer team might be setting up an ambush. But the reality is that tankers and cavalrymen must be prepared to execute when called upon. A recent report by the Massachusetts Institute of Technology confirms the same — the U.S. will continue to deploy forces to urban locations. True it's easy enough to find those who will chant the old mantra "Tanks don't go into cities." One must only look as far as the 22 March issue of *Army Times* where the president of a consulting firm (do you ever wonder where reporters find these guys?), condemns the use of armor in urban terrain with these tired, short-sighted lines: "Tanks are cumbersome and make easy targets in cities," and "Everyone these days has an antitank weapon." The consultant may be correct with his blinding flashes of the obvious, but is anyone advocating armor operate solo in urban terrain? Rather we strive for a combined arms team that trains and prepares for MOUT on the same type of facility this consultant derides. Agreed few tankers or cavalrymen relish the prospect of taking tanks into an urban environment, but once again the refrain of Panama, Haiti, and Bosnia with the addition of Mogadishu (not to mention Chechnya, Lebanon, and Northern Ireland) point to the necessity of training and preparing for MOUT. Should tanks do cities? Read Mark Bowden's *Black Hawk Down*.

Since I seem to be in the habit of dropping the names of other publications, let me recommend Lester W. Grau's "The RPG-7 on the Battlefields of Today and Tomorrow" in *Infantry's* May-August 1998 issue. Grau provides a chilling account of the use of RPGs in Grozny and points out: "Whenever U.S. soldiers are deployed to a trouble spot in the future, the RPG-7 is likely to be a part of the local landscape..." Also see this issue's article on the Grozny disaster.

Not a positive note to close on, but as I bang away on the column, Kosovo unfolds and the debate over inviting ground forces to the fray rages. Where are we going? By the time you read this, we may be there. — D2

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

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

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Directory — Points of Contact

DSN - 464-XXXX
Commercial - (502) 624-XXXX

ARMOR Editorial Offices

Editor-in-Chief
MAJ Dave Daigle 2249
E-Mail: daigled@ftknox4-emh3.army.mil

Managing Editor
Jon T. Clemens 2249
E-Mail: clemensj@ftknox2-emh3.army.mil

Editorial Assistant
Vivian Oertle 2610
E-mail: oertlev@ftknox2-emh3.army.mil

Production Assistant
Mary Hager 2610
E-Mail: hagerm@ftknox2-emh3.army.mil

Staff Illustrator
Mr. Jody Harmon 2610
E-Mail: harmonj@ftknox2-emh3.army.mil

U.S. Army Armor School

Director, Armor School (ATSB-DAS)
COL Richard P. Geier 1050
E-Mail: geier@ftknox-dtdd-emh5.army.mil

Armor School Sergeant Major (ATSB-CSM)
CSM Carl E. Christian 7091
E-Mail: christianc@ftknox-dtdd-emh5.army.mil

NCO Academy (ATSB-NC)
CSM Kevin P. Garvey 5150
E-Mail: garveyk@ftknox-emh3.army.mil

16th Cavalry Regiment (ATSB-SBZ)
COL Michael D. Jones 7848
E-Mail: jones@ftknox16cav-emh12.army.mil

1st Armor Training Brigade (ATSB-BAZ)
COL Scott R. Feil 6843
E-Mail: feil@ftknox-emh3.army.mil

U.S. Army Armor Center

Commanding General (ATZK-CG)
MG George Harmeyer 2121
E-Mail: harmeyer@ftknox-emh7.army.mil

Deputy Commanding General (ATZK-DCG)
BG R. Steven Whitcomb 7555
E-Mail: whitcomb@ftknox-emh5.army.mil

Chief of Staff (ATZK-CS)
COL Frank J. Gehrki III 1101
E-Mail: gehrki@ftknox-emh7.army.mil

Command Sergeant Major (ATZK-CSM)
CSM David L. Lady 4952
E-Mail: ladyd@ftknox-emh7.army.mil

Directorate of Force Development (ATZK-FD)
COL John F. Kalb 5050
E-Mail: kalb@ftknoxdfd-emh13.army.mil

Directorate of Training and Doctrine Development (ATZK-TD)
COL William J. Blankmeyer 8247
E-Mail: blankmeyer@ftknox-dtdd-emh5.army.mil

TRADOC System Manager for Force XXI (ATZK-XXI)
COL Brett H. Weaver 4009
E-Mail: tsmfxxi@ftknox-xxi-emh1.army.mil

TRADOC System Manager for Abrams (ATZK-TS)
COL James H. Nunn 7955
E-Mail: nunnj@ftknoxdfd-emh13.army.mil

Mounted Maneuver Battlespace Battle Lab (ATZK-MW)
COL Karl J. Gunzelman 7809
E-Mail: gunzelman@ftknox-mbbl-lan.army.mil

Office, Chief of Armor (ATZK-AR)
COL Patrick F. Webb 1272
E-Mail: webbp@ftknoxdfd-emh13.army.mil
FAX 7585

Special Assistant to the CG (ARNG) (ATZK-SA)
TBA 1315
E-Mail:

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armormag@ftknox2-emh3.army.mil

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LETTERS

Bradley Weaknesses Rooted In Cold War Compromises

Dear Sir:

Since I have been in or associated with Bradley-equipped mechanized infantry units 11 of my 12 years in the Army, I read with great interest the article, "Chariots of Fire: Building the Bradley Fighting Vehicle" by MG Stan R. Sheridan (Ret.). I am disappointed, however, that some beliefs about the Bradley's abilities and doctrinal roles are still misunderstood by even the very senior officers that helped bring about its creation. While I do agree that the M2A2 Bradley Fighting Vehicle is superior to its contemporaries (the British Warrior, German Marder, and Russian BMP 2/3), I do not believe that its basic design and doctrinal employment will prove able to withstand the rigors of 21st century high-intensity armored combat.

Several points MG Sheridan made in his article I believe are well worth discussing and will support my beliefs. In the order they were written they are:

1. "Was the replacement to be another APC that brought fighting men to the battle in a protected 'battlefield taxi' and then placed them in harm's way to fight on foot; or was it to be a true fighting vehicle, giving the soldier a protected place from which to assault, fight, and kill the enemy?" While it has long been a goal of designers to decrease the risk a soldier faces in combat, it has been proven by actual combat and during training simulations that attempting to fight through an objective while keeping your dismounted infantry mounted is pure folly. The end result of this is usually a substantially higher number of friendly casualties without any increase of effectiveness. Desert Storm is the worst example to use if one wants to validate the fighting vehicle concept. Our Iraqi opponents had so little will to fight that I'd dare say we actually did not fully exercise our doctrine or the capabilities and vulnerabilities of our equipment. A better example would be to look at the lack of success the Syrian army experienced during the 1973 Yom Kippur War with its BMP-equipped mechanized infantry accompanying T54/55 and T62 tanks in Soviet style mass formation "cavalry charges" against Israeli prepared and hasty defenses protected by simple and complex obstacles.

While most would say the reason for the lack of Syrian success was their faulty Soviet-style tactics, coupled with the fact that we in the West may consider them a third-rate military, I disagree. Nearly the same tactical style can be seen monthly being practiced by U.S. Army units at the National Training Center (NTC) with most often the same results. Thin-skinned BFVs accompanying M1A1/2 tanks into head-on direct fire fights with an OPFOR equipped with large caliber tank main guns and heavy antitank missiles. These are the weapon systems that MG Sheridan specifically points out as the highest threat to the Bradley and the dismounted infantry contained within: "...We also knew from the beginning that, if the vehicle was hit by large mines, large antitank missiles, or tank rounds of any size, there would be major penetrations and serious damage. These risks, as a trade-off between mobility, protection, and weight, were accepted by the Army from program inception..."

2. "The addition of a two TOW antitank missile launcher gave the mechanized infantry battalion a long-range, front-line, tank-killing capability without increasing the Army's force structure." This desirable capability of providing the infantryman a means to both offensively (long-range antiarmor ambush) and defensively (battle position) engage and destroy enemy tanks has more than anything else made the Bradley a "high-payoff target" for opposing tankers. One of the first lessons an infantryman or tanker learns is of the importance of combined arms. It is a widely held belief that the majority of attacks or defenses will fail if all pieces of the combined arms team do not work together effectively. Separate the infantry from the armor, or vice versa, and the attack or defense will fail; and since we have equipped our primary infantry carrying vehicle with a heavy antiarmor weapon, its use in this role makes it such a threat to the enemy that it is often more profitable to destroy the Bradleys, because they are vulnerable to tank main guns and heavy AT missiles, than it is to engage the harder-to-destroy M1s. During World War II, the greatest crisis the Allies faced on the Western Front was not a shortage of Sherman tanks but the shortage of trained, quality dismounted infantry that could operate as part of that combined arms team.

3. "It is not an APC nor a battlefield taxi, but it does take soldiers to the battle and lets them fight while mounted and protected. It is not a boat, but it does have a swimming capability. It is not a tank, nor is it heavily armored, but it does have a long-range tank killing capability..." [This is] a pretty fair description of what the Bradley is and was designed to do during the peaceful confrontation of the Cold War conventional arms race between the former Soviet Union and the United States. The Bradley's limitations stand out; it was a compromise of several different factions within the infantry and armor communities. The infantry community wanted a vehicle that was more capable than the M113-series armored personnel carrier in terms of mobility, firepower, and protection. The armor community wanted a vehicle with both a light and heavy antiarmor capability that could replace the ill-fated M551-series light tank in its divisional and regimental armored reconnaissance units. The result was the current Bradley, too light to stand toe-to-toe in the direct fire fight, too large to provide a stealthy recon platform, too small to carry sufficient dismounted infantry to the fight, and too much of a threat to the enemy with its TOW missile to be considered a low payoff target. Although this sounds overly critical of the BFV, it's not meant to be. The United States during the Cold War could not afford to build and purchase several different specialized vehicles for all of the above roles. The U.S. Army in Europe needed a vehicle that could offset the Soviet superiority in numbers of tanks and their own infantry fighting vehicle, the BMP. Unfortunately, it has been decided that the Bradley will be improved and upgraded at the expense of a newer, more capable vehicle. The most unfortunate result of this compromise will be the continuation of the doctrinal disconnects we now see at the NTC. Whereas the Bradley has potential as a lightweight complement to the M1 heavy tank in its antiarmor role (both 25mm and TOW), it does not meet the requirements of a vehicle whose primary mission is to get sufficient infantry (less than a full 9-man rifle squad per vehicle) to the critical place on the battlefield.

As for swimming, the U.S. Army placed a moratorium on swimming the Bradley in 1994. The original requirement stemmed from the fact that Western Europe has significant water obstacles in the form of rivers and canals approximately every 10 to 25 kilometers and the ability to rapidly shift forces in any direction was considered critical to reacting to a Soviet thrust into West Germany. Simple calculations will show that having a Bradley with its swim capability would in theory significantly decrease the amount of time an M1/M2-equipped heavy force would take to cross a major water obstacle. The time spent, however, in vehicle and swim site preparation reduced the time savings to the point of negative returns.

4. "...in view of the recent HBO movie about the Bradley, which said just the opposite, described the vehicle and the program as a flaming disaster..." The HBO comic satire, "The Pentagon Wars," was just that....a comic satire. Hollywood has a proven reputation of being able to turn anything into a complete farce and, for that reason, their creations should not be taken seriously by professionals who make hard decisions. Although the Bradley Fighting Vehicle program was, and is, the result of several compromises, it is still a capable vehicle that partially meets a need. I believe that the Army's decision to continue development of the BFV in order to fulfill the needs of the 21st century mounted/dismounted combined arms team are incorrect. What the future combined arms team needs is a vehicle capable of carrying a full-sized infantry squad (9-11 soldiers plus vehicle crew), a weapon system optimized for support of dismounted infantry, and sufficient armor protection (as much as the current M1) that will allow it to operate in close proximity to the main battle tank it will accompany. Mr. Simon Tan (*ARMOR*, January-February 1999, "Is the Bradley Heavy Enough to Replace the M113 in Combat Engineer Units?") proposed a similar M1-based vehicle in his article about a possible replacement for combat engineer M113s. The inclusion of a heavy antiarmor missile system should be considered as long as it does not reduce the carrying capacity for dismounted infantry and the warfighters understand the vehicle's doctrinal role. A current example of this is the Israeli Achzarit heavy infantry carrier. The greatest lesson learned, I

believe, from the Bradley IFV/CFV program was that combining a reconnaissance vehicle and infantry vehicle does not give you a system that truly meets the needs of either requirement.

MARK D WINSTEAD
MAJ, IN
via e-mail

Army History of VII Corps Was Not Intended As Combat Account

Dear Sir:

The January-February issue of *ARMOR* included a review of *From the Fulda Gap to Kuwait, U.S. Army, Europe and the Gulf War*. The reviewer acknowledged that this report, written by USAREUR command historian Steve Gehring, contained a great deal of information based on extensive research. But he found it to be uncritical, even biased, and of little use to anyone not serving on a corps or division staff. He concludes that the book glosses or ignores mistakes made during the deployment of USAREUR units to the Gulf and does not recommend it.

I'd like to comment on this assessment. As the Army's former Chief of Military History, I was determined to get this study by a MACOM published. We found the funds necessary to do so. In publishing what had initially been a classified After Action Report, we committed to providing the Army and the history community in general with a base document dealing with a massive undertaking by a field army. It seemed to me that we badly needed to chronicle the efforts of all those participants in Operations Desert Shield, Desert Storm, and Provide Comfort who had been launched into CENTCOM's AO from a forward-deployed location in Europe.

Those people who served in USAREUR in the late 1980s are aware of how well our soldiers met the Army's goal of being "Trained and Ready." We were just that. Not perfect, but very, very good. With over 200,000 personnel serving in Europe, the United States Army was able to deploy a fully capable corps, numerous support and special operations units, and still maintain stability in the Central Region. It seems to me that we need to make readers aware of the power, the flexibility, and the talent that existed ten years ago. By comparison, while still composed of superb soldiers and talented leaders engaged in a host of different operations, today's USAREUR is only a shadow of the mighty force that is the subject of this book. That is something that seems to have escaped the attention of far too many people in the United States. In showing what it took to deploy a sizable force to a combat zone, this volume will raise questions (in fact, has already done so) about our capacity to support our current National Military Strategy.

So, if you want to read something while pulling staff duty, should you take your unit's copy of *From the Fulda Gap to Kuwait* over to battalion headquarters with you? I'd probably say yes. You don't have to read the whole thing, but you can get a sense of the enormity of the undertaking from just parts of it. Oh, and if you are looking for info on the kinds of challenges that popped up in executing the USAREUR and Corps plans, skim Chapter 5 on "Deploying VII Corps." Glitches encountered by family support groups? Look at pages 204-211. (The discussion of "burn-out" among officers' and NCOs' wives is enlightening.)

In his review, CPT Sobchak states correctly that the book touches only briefly on the ground war. Anyone looking for accounts of combat in the Gulf can find a number of book-length sources. There are hundreds of articles. In fact, if you are going on staff duty soon, save the Jan-Feb '99 issue of *ARMOR* so you can take it on duty with you to read Steve Borque's fascinating piece entitled "Incident at Safwan." Former Armor officer Borque is in the final stages of a superb history of the VII Corps in combat that will be published by the Center of Military History. Hopefully, there will be more work done soon to flesh out the history of this critical period in the history of our Army. Hey, XVIII Airborne Corps; are you listening?

In closing, let me point out that while automation has assisted us in countless ways, it is not without its pitfalls. When we were given the mission of collecting, reviewing, and cataloging the Army's operational records from the Persian Gulf War, those of us at the Center of Military History responsible for this massive undertaking were dismayed to find out just how few of the original (paper) operational records of Gulf War units had been saved. Commanders were, in nearly all cases, ignorant of their requirement to save their TOC logs, orders, and SITREPs. They lost, misfiled, or disposed of them. We are left today with great holes in our history. The publication of studies like this one will help us retain the history of this great undertaking and provide a real service to historians and commanders for years to come. As the great author and historian Steve Ambrose told me a few years ago, if the Army doesn't continue to tell its own story, to publish histories, and to investigate what happened and why, future generations of writers like him will find it nearly impossible to write a book like *Citizen Soldiers*. I am inclined to think he's right.

JOHN W. MOUNTCASTLE
BG, USA (Retired)
via e-mail

FSCS Program Will Resurrect Problem-Prone Gun Technology

Dear Sir:

"Casual readers of *ARMOR* may get the impression from Sharoni and Bacon's article that the 35mm Bushmaster III is the chosen weapon for the Future Scout and Cavalry System (FSCS). It is not. The Bushmaster III is the choice of the article's authors, not that of the Project. Cased Telescoped Ammunition and Gun Technology (CTAGT, aka: CTA) is clearly the Project's favorite, made clear at the May 1998 Armor Conference. The FSCS presentation, under Relevant Technologies - 2, Lethality, mentioned only CTA, no other weapon approach. You may be certain that the bidders will understand so unsubtle a 'hint.'

So, after 45 years of failure (and approximately $213 million spent in then-year dollars), the arsenals' 'pet rock' gets another lease on life. Within the DOD, political considerations usually override the laws of physics, with disasters for readiness, the users, and the taxpayers, who are all of us."

DON LOUGHLIN
via e-mail

Editor's Note: The letter writer, a former Marine tanker (1953 Armor School graduate) with a long second career in ordnance development, complained to Congress about the Cased Telescoped Ammunition and Gun Technology program, calling it a waste of money on a system that has never proved itself despite years of research. Unsuccessful in getting action from Congress, he took the case to the Department of Defense Inspector General. That staff studied the complaint for six months and, in June 1996, issued a report confirming Loughlin's claims that there were serious problems with the technology, although the IG's staff did not conclude that the money was wasted. The IG report said, "...The DoD expenditure of $213 million over 41 years has not resulted in a viable weapon system because several major problems have not been resolved." These problems included higher life-cycle costs, "ballistically inefficient" ammunition, significantly reduced barrel life (200 rounds vs. 10,000-15,000 rounds), and greater recoil forces requiring heavier mounts. According to *Jane's Armor and Artillery Upgrades*, the current proponent for this gun system is a British-French joint venture.

Expanding the Discussion Of Light Cavalry Issues

Dear Sir:

I very much enjoyed reading CPT Stephens' article ("Airborne Ground Cavalry") in the Nov-Dec '98 issue of *ARMOR*. Because it's such a strange beast in comparison to armor/mech and there are so few light cav units, few things tend to be said about light cavalry in general, and light division cavalry in particular. I would like to expand upon a few points CPT Stephens made in his article, specifically relating to light div cav ground troop TO&E. Briefly, my points are as follows:

1. Unit distribution: in addition to the four Regular Army light div cav squadrons (for the 82nd, 10th, 25th, and 101st Divs respectively)

Continued on Page 48

COMMANDER'S HATCH

Armor and MOUT

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

When one imagines armored operations in urban terrain, one may envision World War II Metz, the Cold War Berlin Brigade or, in a more recent time, Mogadishu. Should the modern mounted warrior be concerned with fighting in an urban environment? All evidence suggests a resounding yes!

For years, the generally held attitude has been to avoid urban areas. The Armor Force that grew up in the Cold War with a focus on the European theater disdained the very notion of urban combat. That may well have been the correct attitude for that era and that place. Now, as the world and threats change, built-up areas are something we can no longer avoid or outright ignore. Operations in Panama, Somalia, and the Balkans show us that, rather than being a liability, armor provides an overwhelming capability to any force. The presence of Abrams tanks and Bradleys has made potential enemies think twice about their actions. When called for, armored forces were able to provide the necessary firepower and shock effect to defeat whatever force they were up against. All indications are that we will continue to operate in urban environments well into the future.

With one eye to our own heritage and history, the Armor Center is examining anew the role of armor in operations in urban terrain. We need to apply the benefits of Force XXI technologies to a study of this history and, in coordination with the Infantry School, refresh the Armor Force on operations in urban terrain.

I consider this a critical effort on everyone's part. Within our branch, many have been to the places named above. Dealing with confined areas, rules of engagement, and the physical movement of our units caused us to pause and think. With stability operations like Task Force Eagle expected to be the norm, I want to review how armored forces will participate in them and the added benefit their presence brings. I also want to address how the Armor Center envisions training for such missions.

The presence of tanks and IFVs is a physical and psychological deterrent to anyone. Our Army has proved the value of the Abrams and Bradley in high intensity operations; thanks to a pervasive and real-time media presence, the rest of the world knows it as well. Our presence in a troubled area instantly overmatches any threatening force. The psychological impact of our armored vehicles is a significant deterrent to any threat, no matter what capabilities it may have. The acquisition and detection capabilities associated with armored platforms are unique. The distances and clarity are incomparably greater than other ground-based, protected systems. Firepower, and the ability to put a round on a pinpoint from a great distance, is an armored hallmark. All of these things in combination provide any force with tremendous capabilities.

There are drawbacks. Weight, blind spots, and overall size naturally require an armored commander to think through an operation very carefully. He must gauge where and how he will traverse the built-up area. He must consider ambush and the ability to react. He must consider maneuverability in confined areas and the radius of a turning turret. These considerations are very similar to those for a defile drill that many of us have practiced in Korea and Europe. Lastly, employment is never an isolated action. It takes place in combination with dismounted soldiers to cover the blind spots and to provide close-in protection, just as the armored platform provides distant protection.

There have been few places in our Army where leaders could train in urban terrain conditions. We are changing that at Fort Knox. The Mounted Urban Combat Training Site (MUCTS), near completion on the north side of post, will provide the Total Army armored force the means to practice techniques and procedures between heavy and light forces in a built-up area. It is built specifically to withstand the pounding, maneuvering, and weight of armored vehicles.

The MUCTS will have 21 buildings and enough road network to support a maneuver force. The site will have the necessary fiber-optic and other digital links to allow for world-class after-action reviews and ties to the virtual and constructive world. It is built with some of the best special effects available to the Army today. Effects include burning buildings, destroyed bridges, and enough pyrotechnics to make you feel the pressure of urban combat. There is sufficient height to the buildings and underground construction to make any force concerned about the enemy from all directions.

Training will feature a dedicated OPFOR and observer-controller package designed to give a visiting unit a true workout. Prior to the unit's arrival, extensive coordination will take place to ensure that the unit arrives ready to train. Training Support Packages are being developed for the typical missions a unit will perform. For the near term, units training on the MUCTS will go through a reception and onward movement phase and then break into crew and squad training and leader and staff training. Leaders and staffs will develop courses of action using the MUCTS mock-up while squads

and crews draw equipment and train their respective missions in urban terrain. Once the courses of action have been determined and the leader and staff training completed, the unit will come together and exercise at the platoon level, followed by CO/TM exercises. In the far term, when upgrades to the CCTT database are complete, we will give units the opportunity to work through courses of action in a virtual model of the MUCTS. Additionally, the goal is for the unit to conduct BN/TF operations in a virtual, constructive and live environment simultaneously. With the planned improvements, units can practice several different types of operations and execute specified missions in the live environment at the MUCTS. Further, as the Wilcox Multi-Purpose Digital Range Complex and Small Arms Qualification Training Ranges are renovated, units can live fire before they deploy and train at the MUCTS. Our goal is to prepare, train and execute mounted missions in the urban environment. In order to battle-focus the units, we will provide the terrain a unit may be required to fight on in the constructive and virtual environments and, with the capability of the MUCTS, we will tailor the scenarios the units must master to be successful and win.

In the future, as the Fort Benning MOUT study is completed, we will revamp some of our doctrine to include the technological benefits projected in the next few years. Expect to see Combined Arms and Cavalry manuals include sections on traversing built-up areas and tactics and procedures for negotiating urban terrain. Also expect to see a greater emphasis on the combined arms nature of future deployments; every branch has a piece of Urban Operations.

There is no doubt that armor and mechanized units today face challenges in conducting operations in built-up areas. We are working very closely with the Infantry Center and the rest of the Army to revitalize the institutional look at MOUT. We must prepare soldiers to operate in this environment. As a force, we must orient our thinking to include urban terrain as an operational area. As a branch, we must lose the mindset that "Tankers don't do MOUT."

Forge the Thunderbolt!

Patton Museum Turns Fifty

As World War II ended, the United States Army began the occupation of Germany. The surrender of the German armies had left war equipment all across Germany, and in the U.S. sector, roughly Bavaria, the Army began to collect weapons and armed vehicles to feed American steel mills after the war. But looking over the last battlefield, General George S. Patton, Jr. saw not just enemy equipment, but an opportunity to study the German equipment and learn from it. At his inspiration, selected equipment was reserved for shipment to Fort Knox. One of Patton's last diary entries recorded a visit to the Skoda factory, a major arms producer in Czechoslovakia, where Patton noted that U.S. designers needed to look at a suspension system developed there.

General Patton died before the equipment could be shipped to Fort Knox, but in 1946 and in the years that followed, Fort Knox became a collection point for many of these samples of German engineering. The equipment was stored in a large frame building that had once been used as a sub-caliber range, where soldiers fired .22-caliber rounds through 37mm tank guns at tin tank targets mounted on moving tracks.

While the Armor Center and School tried to figure how to exploit this material, veterans began to ask to see the equipment of their war. In 1947, the "Patton Collection" was opened to the public. Veterans would bring their families to see the captured equipment and the walls resounded with tales, both humorous and frightening, of the exploits of American units in World War II.

By 1949, the annual attendance had grown to 82,000. The Armor Center decided to form a museum around the collection. Monument tanks from the First World War were recovered from around post and added to the collection. On May 30, 1949, the museum was dedicated to General Patton.

As American armor was added to the collection, the focus of exhibits shifted toward the story of U.S. armor, with less emphasis on German armor. In 1963, an Armor School staff study attempted to define just what the Museum should be, and recommended the following major changes:

- The Museum would become the "official museum of Cavalry and Armor."
- The Museum and its collection would be incorporated into programs of instruction for officer and enlisted students of the U.S. Army Armor School.

- It would establish and operate a research library containing papers, articles, photographs and other material related to Cavalry and Armor.

To this day, these three goals form the core mission of the Patton Museum. The study also recommended the construction of a new facility and the creation of a private organization to raise funds for the new facility. In 1965, the Cavalry Armor Foundation was formed to build a new museum building. Funds were collected from the Armor community and initially rose to a sizable sum, yet it was far short of the funds necessary to build the Museum.

Officers returned from Vietnam and asked, "What happened to the money?" when MG William R. Desobry assumed command of the Armor Center and School. General Desobry challenged the Foundation to build what they could afford and renew their credibility with the Armor community. In 1972, General Desobry presided over the opening of the Patton Museum in a new building, the first phase of the current structure off U.S. 31W near the Chaffee Avenue main gate.

General Desobry's concept of building in phases became the pattern for the future. In 1975, just three years after the opening of the small building, the Foundation doubled the space, which now equaled the space available at the old sub-caliber range that had been the museum's previous home. Additional construction in 1982 and 1984 completed the original Foundation plan.

While the Foundation worked on a new museum building, the collection doubled and doubled again. Attendance increased, and visitors demanded more services. In 1983, as the Foundation closed in on its final goal to complete the building, the Armor Center asked the Foundation to add an auditorium. This was completed and dedicated to General Creighton W. Abrams in 1992.

DRIVER'S SEAT

Excellence in Armor:

First Sergeant's Program to Train and Retain Future Leaders

by CSM David L. Lady, Command Sergeant Major, U.S. Army Armor Center

In 1984, CSM John Stephens, former USAARMC CSM, developed and proposed the Excellence in Armor Program (EIA), which identifies outstanding soldiers in CMF 19 OSUT, armor/cavalry units, and infantry scout platoons. For 12 years, our leaders have used the program to develop the NCO corps of the future. We are now seeing the final products of this program: the FY98 Centralized Promotion Boards selected a large percentage of EIAs for additional responsibility (FY98 SGM, 10 EIA selectees (24.3%); MSG, 28 EIA selectees (30.4%); SFC, 296 selectees **(60.9%!)**.

Currently, 19 percent of the armor force is enrolled in the EIA program. The extremely high promotion rates for EIA soldiers clearly show that the program is identifying the best and brightest armor and cavalry soldiers whose level of performance is consistently outstanding. Can it do even better? Can it be a program to address the significant attrition of our first-term soldiers? Of course it can, but only if first sergeants and master gunners implement the program in our companies and troops. Too many armor leaders do not understand the program, do not know that it exists, and resent the program as an "OSUT Program" with little use to the field.

We will retain the best of our soldiers only if we can excite them about the role and skills of the Armor/Cavalry leader. Tough/realistic training and the promise of increased responsibility, combined with accelerated promotions, will help to keep our best young soldiers in commander's hatches and stations.

The soldier's first opportunity for selection to EIA is in 19D and 19K OSUT. In the tenth week of training, up to 20 percent of each class may be selected to compete to enter the program. These soldiers are recommended by their drill sergeants, based on performance, motivation, and leadership potential. A battalion-level board, chaired by the battalion/squadron CSM, confirms this recommendation and admits the soldier into the additional training program. The 19D EIA soldiers receive 60 additional hours training in communications, land navigation, vehicles, tactics and leadership, and scout skills. All 19K EIA soldiers receive 52 additional hours training in the same basic areas. They must pass the APFT with 230 or more points; qualify Sharpshooter or Expert with the 9mm pistol or the M16 rifle; receive all GOs on the Armor Crewman Test (ACT) or the Scout Skills Test (SST), all GOs on the Scout Gunnery Skills Test, and all GOs in the Armor or Cavalry Skills Test. They must have a high school diploma or equivalent and NO UCMJ actions.

At nomination (10th week), the soldier is promoted to PV2. At graduation, the soldier who has passed all tests to standard is formally enrolled in EIA. The unit should expect an OSUT EIA to have more leadership potential, to be motivated and disciplined, to be better trained in critical skills, and to be more mature, self confident, and responsible — and the unit should support him by providing him the opportunity to display these qualities.

As a first sergeant, I identified and tracked my newly assigned EIAs. I did not put them immediately into gunner seats but saw to it that they were utilized sensibly and given more training in gunnery tasks (one newly assigned EIA soldier walked into my office and demanded to be made a gunner. He had a short, blunt, one-sided interview with me and returned to his loader's station). In my battalion, such great Silver Lion first sergeants as CSM David Hartzell and SGM James Sands ran excellent programs which trained their Excellence in Armor soldiers to be ready when gunner positions opened up.

I ask that unit leaders identify newly assigned EIA soldiers. Track them and keep them on tanks or scout vehicles. Yes, they're good, but the Armor Center did not make the extra investment to create computer operators or drivers. Disenroll them if they fail to meet the higher unit enrollment standards within a year of assignment: APFT 260; CTT Pass; Sharpshooter or higher with individual weapon; Pass the Tank Commander or Scout Commander Competency Test (TCCT/SCCT Level I); Pass the commander's subjective evaluation of their proficiency, leadership, potential, and motivation.

The second opportunity for enrollment in EIA is in the unit. As Armor leaders, we are responsible for identifying and enrolling soldiers whose performance meets the criteria for EIA membership. OSUT enrollees showed that they could peak for a short period under strict super-

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Reaching Our Army's Full Combat Potential In the 21st Century

Insights from the National Training Center's Opposing Force

by Colonel John D. Rosenberger

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Introduction

Few in our Army would dispute the assertion that the 11th Armored Cavalry Regiment, the Opposing Force (OPFOR) at the National Training Center (NTC) is very good at what they do. The commanders and soldiers in the OPFOR are seldom defeated in battle. For years, this unit has been the anvil upon which we have hammered and forged the combat power of our Army. Have you ever wondered how they do it?

How does OPFOR develop and sustain its ability to fight and defeat its opponents in almost every battle at the National Training Center? How does the regiment, fighting with 1960s-1970s technology, routinely defeat brigade task forces equipped with the most modern weapon systems and technology our Army can provide? How can the regiment do it given the same soldiers, the same personnel turbulence (about 40 percent turnover each year), the same leader development challenges, and the oldest fighting equipment in the active Army?

It's my premise in this essay that these are not trivial questions, simply answered by the fact that the regiment has the opportunity to train and fight more frequently, or that the OPFOR knows the terrain. Just the opposite: I believe the answers to these questions are critically important to a force-projection Army that is growing ever smaller, and they are absolutely *key to achieving the full combat potential of Force XXI and the Army After Next*.

Realization of Combat Potential

Bottom line up front: It's my conclusion, after fighting against it, observing it for 12 years and now commanding the OPFOR, that the fundamental reason this remarkable military organization is able to dominate its opponents is because *the OPFOR has achieved the full combat potential residing in its doctrine, organization, training methods, leaders, soldiers and the capabilities of its equipment*. The brigade task forces they oppose have not. Moreover, they cannot achieve their full combat potential, given existing *conditions* within our Army today. Understanding this premise, and the disparity, must begin with a discussion of how the OPFOR is organized.

It Is How the OPFOR Is Organized?

Fundamentally, the warfighting ability of the OPFOR stems from how it is organized. It is organized as a combined-arms team. It lives together as a combined-arms team, it trains as a combined-arms team, and it fights as a combined-arms team — all the time. It is not a collection of units, thrown together on an *ad hoc* basis from various divisions and installations, who have never trained together, or a collection of units within a division which task organize and train infrequently as a brigade combat team.

On the battlefield, habitual fighting, training and support relationships matter. They matter a lot in combat, and historically, the most combat effective organizations our Army has ever put on a battlefield share this organizational characteristic. Our military history is replete with examples. This comes as no surprise to those who know and understand what it takes to win in combat — teamwork, mutual trust and absolute confidence in every member of the team. To achieve these essential feelings, combat, combat support and combat service support units have to train and fight together as *one team* for long periods of time. Habitual team relationships foster incomparable *teamwork*, a prerequisite to success on any modern battlefield, where multiple units, with multiple capabilities, must be artfully integrated and employed simultaneously. A football analogy works well to describe this critical dynamic.

In the great professional football teams, because they live together, train together and play together, every member of the team understands every other role and responsibility and every member knows the others' capabilities and limitations. In every play (battle), every player has a specific task and purpose to achieve; he knows when and where his task must be achieved in order to set conditions for success. Equally important, he also understands what every other member of the team will do, when he will do it, and where he will do it. This common understanding develops an incredible sense of unity and purpose, and the most powerful effect of all, *a common visualization of the play (battle) and how it will unfold*. Each player sees how he fits in the big picture, thereby giving him a sense of purpose. Having a sense of purpose, and knowing your team is counting on you to do your job, produces a powerful motivation to succeed. Moreover, the plays executed by a professional team are a display of artful synchronization, achieved through *constant, repetitive*

practice as a team — something completely unachievable by any other means. This same kind of teamwork is at the heart of the OPFOR's performance, and historically, the performance of our best combat units.

Habitual team organizations also foster mutual trust and confidence throughout the force. Nobody in combat is comfortable fighting with strangers, fighting with an *ad hoc* collection of units whose leadership and capabilities are not proven and known. Mutual trust and confidence are absolutely critical in combat. When a team lives together, trains together and fights together all the time, leaders and units get to know one another very well. They learn who they can count on, who can do the job. They learn who can pull their weight. They immediately recognize the others' voices on the radio; they are talking to friends and comrades. They learn to trust one another, and from this trust comes an unshakable confidence. Though confidence is intangible, that's what wins in combat, and that's what brigade task forces are up against in the OPFOR at the NTC. It is a tremendous advantage.

In contrast, the brigade task forces the OPFOR opposes each month are not, by Table of Organization and Equipment (TO&E), organized as combined-arms teams. Instead, they are a temporary or ad hoc collection of units from different divisions or installations, thrown together for training, who have not had the opportunity to train together or to train as one team at the frequency necessary to develop their full combat potential. They are strangers, trying to do their best but handicapped by a variety of conditions that do not foster or develop the kind of teamwork the OPFOR brings to the battlefield. Consequently, it's like a neighborhood pick-up team stepping on the field with the Denver Broncos.

In sum, the OPFOR provides us an important warfighting insight. Habitual combined-arms organizations (combined-arms teams that live together and train together permanently vs. temporarily) are fundamental to achieving the *full* combat potential of a force. But this is only a partial answer to the questions.

It Is How the OPFOR Trains

The training program and methods employed by the OPFOR to sustain proficiency in mission essential tasks are the catalysts for its success — the way you take potential and turn it into capability. Notably, these methods differ from the training methods employed by the brigade task forces they oppose.

The regiment trains and adheres to proven doctrine, tactics, techniques, and procedures honed through years of trial and experience. Only three bedrock training manuals are used: U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 350-16, *OPFOR Doctrine*, the *Regimental Tactical Standing Operating Procedures*, and the *Motorized Rifle Company Handbook*. These three manuals serve as the blueprint for success. They establish clear performance standards and expectations. They foster simplicity in training, a common understanding of how we fight as a team and, consequently, an incomparable unity of effort during performance of combat missions. Every trooper learns how to fight from the pages of these three manuals.

There is nothing fancy about how the OPFOR trains. Bottom line: The OPFOR stays focused on the fundamentals of warfighting at the tactical level of war. The entire training program is designed to *sustain mastery of a few fundamental tasks and battle drills at each level of command* — individual to regiment. For example, the *first* thing an OPFOR soldier or leader is taught is how to use terrain and all its features to accomplish the mission. Terrain walks are the bread and butter of the training program — low cost, but the most influential training tool in the kit bag. Learn how to see the terrain and how to use it, and you can't be whipped.

Motorized rifle, antitank, engineer, military intelligence, air defense and tank companies constantly practice only a handful of battle drills — those actions on the battlefield which assure dominance in the close, direct fire fight. Tank and mechanized infantry platoons continually practice set-move techniques, providing overwatch for on another as they bound from one intervisibility line to the next. Regimental battle staffs constantly practice a set of planning and wargaming drills which set near-perfect conditions for synchronization of the combined-arms teams. Blocking and tackling — the *fundamentals* — that's what the regiment trains to do. By staying focused on the fundamentals, units are able to achieve the full capabilities and effectiveness of their combat systems on the battlefield.

As to training methods, the OPFOR adheres *religiously* to the training doctrine and methods espoused in Army Field Manual (FM) 25-101, *Training the Force* — the entire process. Individuals and units are trained and measured against established performance standards at every level. After-action reviews are always conducted, and if an individual or unit fails to meet the standards, they retrain and execute the task until standards are met, plain and simple. Time is *always* allocated for retraining. The regiment trains until standards are met all the time. It's an ingrained habit. Moreover, and this is a critical point, the regiment trains to perform individual and mission-essential tasks at the *frequency* necessary to sustain performance standards. *Nothing is more important to developing full combat potential, in the kind of Army we have, than training soldiers, leaders and units at the frequency necessary to sustain performance standards.* Why is that?

Simple: Every unit in our Army faces two enemies every day, enemies which sap the combat potential of the force. First, as a result of how we man the Army, every year we turn over about 40 percent of the unit at every level. For the 11th Armored Cavalry Regiment, that's about 1,000 new noncommissioned officers (NCOs) and soldiers we have to train and prepare to fight as members of the team. We're continuously in the business of training new soldiers and leaders. Second, warfighting is an extremely complex business these days, with complex tasks to learn and master. And because we're human, we forget how to do things as time goes by. The more complex the task, the sooner we forget how to do it. It follows, then, that the more complex the task, the more frequently you need to train. For these two reasons — we're constantly training new soldiers and we forget how to do things — the *frequency of training* individual, leader and unit tasks is absolutely critical to developing and sustaining full combat potential. In other words, get the frequency right, and you can sustain high levels of performance. Within our Army today, for a host of reasons — lack of money to train at the right frequency, lack of time, shortages of leaders and soldiers, installation support, and peacekeeping missions — brigade task forces, unlike the OPFOR, do not have the opportunity to train under tough, realistic *field conditions* at the *frequency* required to develop, much less sustain, their full combat potential at every level within the organization. It shows on the battlefields at NTC.

Perhaps the most influential and discriminating difference between the OPFOR and the brigade task forces they fight is the *leader certification program.* Unlike the units they face, the OPFOR *confirms* that every soldier and every leader possesses the knowledge, skill and ability to perform his/her duties *before* they are permitted to fight with the regiment. Every soldier and leader is compelled to undergo a rigorous series of written ex-

ams, oral exams, terrain walks, apprenticeships and hands-on demonstrations of their knowledge, skill and ability *before* they are allowed to fight or lead. That's right — every soldier and leader, from section to regimental level, is *tested* and must prove they can execute their individual and leader tasks.

Platoon sergeants, platoon leaders and company commanders must demonstrate their ability to execute their platoon and company march formations and battle drills, and to orchestrate fire support. The regimental chief of reconnaissance must demonstrate an absolute mastery of intelligence preparation of the battlefield. The regimental chief of staff must demonstrate his ability to conduct deliberate wargaming and set conditions for synchronization of the combined-arms teams. The regimental commander must demonstrate his ability to see the terrain and how to use it, see the enemy, see himself, and visualize how to shape his battlefield and effectively employ every capability of the combined-arms team to defeat his opponent. Only when the commander is assured of a leader's tactical and technical competence, through testing and examination, is the subordinate leader permitted to serve in his position. This is a process foreign to the remainder of our Army, and in my opinion, at the root of the performance differential we continue to observe here at the NTC. It is a glaring disparity.

The point of all this? These training methods, and the opportunity to train repetitively, are the way the OPFOR is able to achieve and sustain its *full* combat potential. Unfortunately, the conditions necessary to implement this proved training strategy and methodology, the training resources, and opportunity for the remainder of our Army do not exist. Units at home station do not have the money, time and other resources necessary to train at the *frequency* required to develop and sustain proficiency in mission-essential tasks, platoon to brigade level. As an Army we do not train and confirm that battalion and brigade staff officers are competent to perform those duties before they assume their duties. For that matter, combined-arms battalion and brigade commanders are not required to prove and demonstrate a mastery of battle command skills and tactical competence before being placed in command. It is not, and has not been, a prerequisite for command selection. It shows at the NTC, year after year.

To sum up, the OPFOR provides us another important warfighting insight: How you train soldiers, leaders and units, and the frequency of training, are key to achieving the *full* combat potential of a force. But again, this is only a partial answer to the questions. There is another important reason.

It Is How Commanders Become Masters Of the Art and Science of Battle Command

The OPFOR regimental commander (alternately the 1st and 2d Squadron commanders), the regimental staff, and motorized rifle battalion commanders set conditions for effective employment of the regimental combined-arms team. Their ability to do it is a function of their mastery of the *art of battle command*, as we now call it. Indeed, the regiment can fight no better than the regimental commander's ability to see the terrain, see the enemy, see himself, and see the battle unfold in his mind. Granted, the ability to inspire and motivate soldiers, the ability to impose his will, tenacity, compassion, patience and so forth are also important. But these are elements of effective leadership, not tactical competence.

Commanders and battle staff in the OPFOR quickly develop the ability to *see the terrain* and its effects on combat operations. By that, I mean the map talks to them. They see more than the Go and No Go terrain, key terrain, or decisive terrain. They see and envision the effects of terrain on the enemy's ability and their own ability to move, generate momentum, disperse, mass, observe, deploy, shoot, or protect the force. They can envision, at a glance, where the enemy would be most vulnerable to the diverse capabilities of their force or where terrain provides them an opportunity to seize the initiative or control the tempo of the battle. Equally important, they can perceive where terrain would restrict or constrain the employment of their combined-arms team.

On a higher plane of thinking, they can see how to use the terrain to create conditions where the enemy would be vulnerable to the fires they can bring to bear. In other words, they can see, within their battlespace, where the enemy would be most vulnerable to destruction by close air support, delayed by artillery-delivered minefields, vulnerable to antitank fires, blocked, turned, disrupted or fixed by obstacles, disrupted by jamming, or where terrain would provide them a relative firepower advantage in the close fight. Armed with these skills, they can *shape the battlefield* to set conditions for success — the adept use of terrain to control the tempo of battle, create favorable force ratios, create vulnerabilities, optimize the effects of their own capabilities, control the enemy's direction of movement, and protect the force.

"...Combined-arms battalion and brigade commanders are not required to prove and demonstrate a mastery of battle command skills and tactical competence before being placed in command. It is not, and has not been, a prerequisite for command selection. It shows at the NTC, year after year."

Additionally, OPFOR commanders develop a masterful ability to *see the enemy*. They can envision with remarkable clarity how the enemy commander would employ his combined-arms team. They can envision the sequential and simultaneous actions and combat systems the enemy commander would use to shape his battlefield for success. They can perceive the critical tasks the enemy commander has to accomplish, how he will probably employ his combined-arms team to accomplish the tasks, or how the enemy commander will seize and retain the initiative. As the battle unfolds in their minds, they can immediately recognize the high-value and high-payoff targets and when those targets would be most vulnerable to attack by the capabilities of the OPFOR combined-arms team. They can easily visualize the rate of enemy movement, the organization and depth of his formations, and the location of high-payoff targets. Even more important, they can see which combat functions or capabilities have to be attacked to disrupt the synchronization of the enemy's combined-arms team — the first step to victory under combat conditions.

Commanders can also *see themselves*. By that, I mean they are expert in the capabilities and limitations of every system in their combined-arms team. They have mastered the science of warfighting. Moreover, they know how and when these capabilities can be used most effectively against the enemy. For example, they know the type and volume of artillery munitions required to achieve the effects they want, the range of various artillery munitions, and every gun's sustained rate of fire. Consequently, they know how many batteries are required, where they should be placed relative to the target, and the time required to shoot the munitions necessary to produce the desired effects. They also know the time required to shift a battalion of artillery from one target to the next, the actual occupation times of their artillery battalions, and an artillery battalion's rate of movement relative to the terrain. Consequently, they can create effective

sequential and simultaneous engagements throughout the depths of the battlefield and decide when to move to protect the force and when to move to sustain fire support through the depth of the operation.

The OPFOR commanders also know the capabilities and limitations of their collection and jamming teams, comprised of soldiers with an unparalleled ability to protect the force and change the outcome of battle. Consequently, they know how and where to establish a baseline to obtain accurate direction-finding, radio intercept, and effective jamming. More important, they master the ability to focus and use these capabilities to answer their priority intelligence requirements and to jam the enemy when he is most vulnerable to its effects.

Commanders are also expert in the employment of obstacles. They have a keen sense of what their engineers can realistically accomplish. For example, they know how long it takes their engineer company, given their manning and level of training, to install an effective blocking or turning obstacle, the quantity of material required, the man-hours required, the transportation involved, the number of fighting positions they can realistically dig in the time available, and so on. Armed with this mastery of the science of warfighting, they can easily envision how to effectively employ these engineer capabilities to shape the battlefield, protect the force, and establish conditions for success in the deep and close fights.

At the same time, commanders develop and possess the ability to see themselves from the enemy commander's perspective. They can almost read their opponent's mind. They have the cognitive ability to recognize where they are strong and where they are weak from the enemy commander's point of view. Moreover, they are adept at perceiving their own vulnerabilities and recognize their exposure. Coupled with real-time human intelligence (HUMINT), this ability lifts the curtain of uncertainty off the battlefield, exposes the enemy's most likely course of action, and illuminates weakness and vulnerabilities in their opponent's fighting posture.

Finally, OPFOR commanders learn to think in terms of *force protection*. By that, I mean they learn to fight the battle in their minds and immediately discern the active and passive measures necessary to protect the force. They do not think simply in terms of safety, radio listening silence, raising the air defense warning status, repositioning of reserves, and so forth. They take passive and active measures to protect their forces from observation by air and ground reconnaissance systems, electronic location, thermal detection systems, the effects of enemy indirect and direct fire systems, special munitions, fratricide, and the effects of weather, disease and injury.

When you are up against combined-arms commanders like these, it doesn't get any tougher. The point is that it takes these kinds of commanders and staffs to bring a unit to its *full* combat potential. They are simply indispensable. The problem is that conditions required to develop combined-arms commanders and staffs of this caliber do not exist within the remainder of our Army. These kinds of commanders and staffs are developed through constant study and application of the art and science of warfighting, terrain walks, situational training exercises, repetitive opportunities to fight and learn from their mistakes *in the field, not in simulations*, and most important of all, repetitive combat-like experiences which develop *battlefield intuition* — an immediate feel for the battlefield situation and what must be done to win. Unfortunately, these conditions don't exist for soldiers and leaders anywhere else in the Army today. This is an insightful lesson the OPFOR provides as we ponder how to maintain landpower dominance in the Army of the 21st century.

But again, this is only a partial answer to the questions. Here's another reason.

It Is How the OPFOR Plans Combat Operations

The truth be known, the OPFOR *wins its battles before it fights them.* Very few battles ever unfold in a way substantially different from what the OPFOR team envisioned or planned to accomplish. Moreover, the incomparable ability of the OPFOR to get every dog in the fight at the right time at the right place is legendary. The reason? The OPFOR has learned how to set conditions for synchronization of the combined-arms team in the planning process, and learned how to preserve it during execution of battle as the situation evolves. The conditions for victory are set by their planning process. It's safe to say that no leader in the OPFOR would agree with the old adage that plans change at the first contact with the enemy, or that planning is a rather useless endeavor and performance in execution is really what matters.

The regimental orders process is a disciplined, battle drill, characterized by strict time management. It follows the same military decision making process outlined in FM 101-5 *Staff Organization and Operations*. Complete METT-T (mission/enemy/terrain/troops/time available) analysis is the foundation, and no shortcuts are taken. The regimental staff, working as a team, prepares *detailed* enemy situational templates which graphically depict the enemy's most likely course of action, array and presentation of forces on the battlefield, and probable locations of high-payoff targets, such as fire direction radars, artillery units, command posts, aircraft rearming and refueling points, or reserves. Once this analysis is presented, the regimental commander conducts his own commander's estimate of the situation, visualizes the battle unfolding in his mind, sees it unfold on the terrain, then develops several courses of action for employment of his combined-arms team that will ensure defeat of his opponent.

From this analysis and visualization, the commander develops his commander's intent, and he spends a lot of time ensuring he gets this right. He issues his intent by first stating the task and purpose the regiment must achieve. Next, he describes in clear doctrinal language the few critical tasks which must be accomplished sequentially, some simultaneously, in order to win. He wraps this up by describing the end state he wants the force to achieve — what success looks like when the fight is over.

Next, he issues planning guidance to his staff — guidance which clearly describes how he wants the combined-arms team employed, his critical information requirements by phase, how he wants to shape the battlefield for success, the means he wants to use to control the tempo of battle, and the *effects* he expects at critical times and locations in the fight. After just a couple of months in the saddle, a regimental commander can do this in minutes. It becomes intuitive. As a minimum, he will direct his staff to deliberately wargame three courses of action, sometimes four.

With these things in hand, the chief of staff assembles the staff and conducts a detailed, deliberate wargame of each course of action — the most important step in the planning process. Why? The deliberate wargaming process sets conditions for employment and synchronization of the combined-arms team to produce the effects and outcome the commander expects. Moreover, the wargaming process produces the few critical products necessary to employ and control the force: the operations order, with specific task and purpose assigned to each unit; the reconnaissance and surveillance plan; a synchronization matrix for each course of action (the score for the

orchestra); movement and positioning plans for the artillery groups; and operational graphics. Interestingly, the targeting process is embedded in the wargame, so as another outcome, the staff produces the plan for simultaneous and sequential attack of enemy high-payoff targets through the depths of the battlefield.

A distinguishing feature of this planning process is the *control* imposed by the plan, and the synchronization which stems from it. At the regimental level, the plan tells every member of the combined-arms team *what* to do, *when* to do it, and *where* do it—but *never how*. As the OPFOR has learned, synchronization cannot be achieved any other way. Synergy of the combined-arms team cannot be created in other way.

The process used by the OPFOR is much like writing a score for an orchestra. In an orchestra, if the trumpets, the flutes and the violins play whatever notes they want, when they want, you get nothing but noise. The musical score (synchronization matrix) specifies which instruments will play *what* notes, *when* in relation to other instruments, and *where* in the sequence of time. If done properly, you get Beethoven's 5th Symphony.

The same goes for military operations. Consider motorized rifle battalions, artillery groups, close air support, and jamming systems as instruments of war. Firm control is required at regimental level to ensure all capabilities are employed at the right time and place for maximum effect. On the other hand, down at the maneuver company level, much less control is imposed and initiative is prized, once the unit makes direct fire contact. In short, this planning and synchronization process is how the OPFOR achieves its *full* combat potential during the execution of battle. But there are other significant factors that differ from most units they oppose.

Take the operations order: Only one written operations order is published for the regimental combined-arms team which addresses multiple courses of action. Tasks to subordinate units are always expressed in the form of task and purpose. Only one set of graphics is produced and every leader in the regiment, from top to bottom, uses this one set of graphics. Subordinate units do not develop their own, unique graphics. In other words, every member of the combined-arms team is looking at the same sheet of music. Subordinate commanders issue oral operations orders, based on a clear understanding of what they have to do, when they have to do it, and where they have to do it.

The graphics are a wonder of simplicity. Only a few graphic control measures are used: report lines, lines of maneuver, artillery/rocket fire boxes and targets, smoke lines, firing lines, and air battle positions. That's it. Fire boxes, or firing lines, are used as battlefield reference points to adjust direction of maneuver, identify current locations, or shoot artillery. This technique of controlling forces is the source of the impressive flexibility the regiment is able to achieve in every battle. It's the principle reason the regiment is able to quickly change direction and shift the main effort, sustain common situational awareness throughout its battlespace, and preclude fratricide. In sum, the regiment's planning process lies at the heart of its ability to achieve its *full* combat potential. Nonetheless, it is only a partial answer to the questions at hand. There is another good reason.

It Is How the OPFOR Prepares for Combat Operations

How a unit *prepares* to execute its mission directly effects the battle outcome. The OPFOR has learned this and devotes most of its available time preparing for battle, not planning.

Once the operations order is issued, the preparation phase for combat begins. The regimental commander gives everybody a ten minute break; then all commanders return and backbrief him, which assures the commander that all subordinate commanders clearly understand what he expects them do and achieve, when he expects them to do it, and where he expects them to do it. In short, he checks to ensure all subordinate commanders understand his intent.

Immediately after backbriefs, the regimental staff assembles and conducts staff rehearsals of each course of action. The chief of staff leads a mapboard exercise, placed flat with all staff officers surrounding, and they literally fight each battle from beginning to end, reviewing the employment and synchronization of every element of the combined-arms team, by phase of the operation. They rehearse every action each staff officer will take, and every action they must supervise for the commander during the battle given any course of action.

"Seven to eight hours after the regimental order is issued, the regiment conducts a regimental combined-arms rehearsal—a disciplined battle drill that affords the opportunity to conduct detailed rehearsals of at least two, usually three, courses of action in a two-hour period..."

For example, they rehearse when and where rockets and close air support will be employed against high-payoff targets during Phase I fires, what positions they must occupy to place the batteries within range, when they must move to occupy in sufficient time to accomplish their task, and the number of volleys required to achieve expected effects. They rehearse when and where scatterable minefields will be to employed to ensure reserves are interdicted prior to the enemy commander's decision to commit them. They rehearse where artillery batteries from the division artillery group must be positioned, and the trigger point for shooting nonpersistent chemicals against forces at the point of penetration, just prior to closure of the forward detachment. They rehearse when the jamming systems will begin jamming enemy fire support FM nets to achieve maximum disruption and force protection. Watch this process and it's easy to see why OPFOR staffs are considered an element of combat power whose performance is key to success. It is their hard work in the planning and preparation phases which sets conditions for synchronization of the combined-arms team, and ensures it is preserved during battle. While this is going on, subordinate commanders are back at their units issuing oral operations orders to their units, with every vehicle commander in attendance, always supported by hastily constructed terrain boards which facilitate quick visualization of what they are expected to do, and how they will do it.Seven to eight hours after the regimental order is issued, the regiment conducts a regimental combined-arms rehearsal — a disciplined battle drill that affords the opportunity

to conduct detailed rehearsals of at least two, usually three, courses of action in a two-hour period. Attendants are the regimental commander and staff, all commanders of subordinate units, and all team commanders in the regimental reconnaissance company. The chief of operations directs the rehearsal, the chief of staff adjudicates the outcome of engagements by phase, and the regimental commander observes intently to ensure synchronization is correct, his intent is clearly understood, and all units are doing exactly *what* he expects them to do, *when* and *where* he expects them to do it.

The rehearsal is conducted on a large-scale terrain board, configured to scale, with known and expected enemy forces indicated by markers, and all regimental graphic control measures. On the board are the chief of reconnaissance, chief of rockets and artillery, chief of air direction, chief of signal, and all subordinate commanders — *only* those leaders who command and direct forces in battle. The rehearsal always begins with a detailed depiction of how the reconnaissance company will conduct their tasks to achieve their purpose. Recon team leaders physically move along the infiltration routes they've chosen, describing their actions en route, the observation posts they will establish, what critical information they will acquire, and the fire support targets they are responsible for shooting. Once it is clear to all how observation of the regiment's entire battlespace will be established, the rest of the combined-arms team follows and briefs their actions in detail, beginning with their statement of task and purpose.

The value of this rehearsal method cannot be overemphasized. It is critical to successful accomplishment of the mission. While the operations order and graphics may be clear, the battle really doesn't come to life in the minds of subordinate leaders until they rehearse together as a team. In the rehearsal, they can visualize the employment of the entire combined-arms team, understand the key elements of synchronization that must be achieved, and clearly see how their unit fits into the operational concept, relative to their teammates. Everybody knows what everybody else is doing. This produces a powerful synergy, seldom matched by their opponents.

Finally, after the regimental rehearsal, subordinate commanders return to their units and conduct their own detailed rehearsals with every leader in their unit present, not just the officers. *All* vehicle/crew commanders participate in the unit rehearsal. This technique guarantees complete knowledge of the operation through the ranks of the unit, and ensures the execution of the mission is not affected by loss of the company commander, platoon leaders or platoon sergeants. In fact, it is not uncommon to find a junior sergeant or corporal commanding a platoon or a company at the end of a battle, organizing his remaining force on the objective.

Meanwhile, and equally important, as the officers work through the orders and rehearsal process, the NCOs across the regiment are conducting detailed inspections of their equipment and soldiers ensuring both are prepared for combat. Hundreds of things are checked and double-checked to ensure all is ready: fluid levels, track tension, radios, fire control systems, maps and graphics, night-vision devices, boresight, ammunition, weapons, the list goes on.

The point to this discussion is that extensive and detailed *preparation* for combat, conducted by the officers and NCOs of an organization, is also indispensable to achieving the *full* combat potential of unit. Incidentally, this preparatory process is seldom embedded with *discipline* throughout the brigade task forces the OPFOR oppose — another substantial advantage the OPFOR enjoys. Here's the final reason.

It Is How the OPFOR Executes and Controls Combat Operations

Although their planning and preparation techniques and procedures create the ability for the OPFOR to win their battles before they fight them, there are certain techniques employed during the execution of battle which also serve as means of achieving the full combat potential of the combined-arms team. First and foremost is the regiment's aggressive conduct of reconnaissance and surveillance operations.

The first condition any commander must set on the battlefield, if he wants to win, is the ability to see through the depths of the battlefield. If any reconnaissance team fails to reach its assigned observation post, a replacement team is immediately dispatched to replace it, or other teams are re-positioned to reestablish coverage of that portion of the battlefield. In contrast, the brigade task forces they oppose are inadequately equipped with reconnaissance capability and have been for years. Brigades have never been provided the reconnaissance forces and capabilities necessary to establish and maintain complete and continual observation of their battlespace. From the OPFOR's perspective, it's the most serious organizational flaw and warfighting deficiency in our brigade task forces today. The OPFOR knows, through hard experience, that effective reconnaissance and surveillance are the *key* to success during execution of the battle, and remain the most powerful of many advantages they enjoy over their opponents.

Equally as important as reconnaissance, the OPFOR establishes multiple FM radio retransmission teams on terrain which will ensure FM communications capability is provided through the depth and width of the battlespace. Immediate, responsive FM communications are absolutely required to sustain common situational awareness, prevent fratricide, preserve flexibility, control the tempo of operations, and preserve synchronization of the combined-arms team in the close fight. If you can't talk, you can't fight on the modern battlefield. It makes no difference if you can see the battlefield in perfect detail. Forces at the tactical level of war cannot be accurately employed without sustained, reliable, instantaneous real-time communications.

Another key to the remarkable synchronization the OPFOR is able to achieve, and consequently its overwhelming combat power, is the use of a small staff to control the combined-arms team, and preserve synchronization. Positioned forward, working out of a one-vehicle command post, off of one map, are the chief of staff, chief of reconnaissance, chief of rockets and artillery, and chief of air direction. This small team, the same team that planned and rehearsed the operation, orchestrates the entire battle, thereby freeing the regimental commander to move to a position where he can see the critical events unfold on the battlefield, see his decision points, and control the employment of his force as the situation develops. This technique of command and control — a small, mobile staff, armed with near-perfect situational awareness, empowered to direct the combined-arms team — virtually ensures the regimental commander can operate at a tempo of decision-making his opponent cannot match, and a level of synchronization his opponent cannot match or exceed.

Having said this, nothing is quite so influential to the outcome of a battle as the constant *cross-talk* between all commanders and the regimental staff. Listen to the regimental battle command net during a fight, and what you hear is a constant exchange of information between subordinate commanders. Occasionally, you will hear the regimental commander on the net, usually to seek clarification, or get specific information required to make his anticipated decisions, or issue the one or two deci-

sions he must make during the course of battle. Most of the time, you will hear adjacent and following commanders talking to one another describing the enemy and friendly situation as it unfolds on the battlefield. Often, you will hear regimental reconnaissance leaders passing them critical information about enemy actions. That's it. The regimental commander spends most of his time eavesdropping on his net, tracking the progress of the fight from the voices of his most trusted agents, his commanders on the ground. The chief of staff does the same thing, picking up his cues from commanders' descriptions, and directing employment of lethal and nonlethal fires at the time and place required to set conditions for their success.

This cross-talk between commanders and staff is the principal reason the OPFOR is able to sustain accurate, real-time situational awareness of what's happening on the battlefield. Nothing is more important during the execution of battle, amid the smoke, confusion and chaos. If a commander can see his battlefield, see the strength and disposition of his enemy, and see the strength and disposition of his own forces in near-real time, he can't be whipped, if he has a speck of tactical competence and the forces available to win. Moreover, cross-talk virtually eliminates fratricide within the combined-arms team. Through eavesdropping, everyone knows where everyone else is located on the battlefield.

And finally, when all else fails, when subordinate units lose communications, when the key leaders are killed or injured, all units continue to fight guided by the commander's intent — the overarching concept of what all must do to achieve success. Commander's intent is an indispensable means of imposing control on the battlefield. Many battles are won each year based solely on adherence to commander's intent, stated up front in the planning process, and reiterated to all leaders in the preparation phase. Leaders know what to do, what must be accomplished, and they do it, despite the fact they can't talk to their commander.

In sum, techniques for imposing control and maintaining common situational awareness during the execution of operations are also key to achieving the *full* combat potential of a combined-arms team. It is disturbing that few of these techniques are observed or routinely practiced by brigade combined-arms teams the OPFOR opposes. This takes lots of training as one team under actual field conditions. Our brigade task forces do not have the opportunity under the conditions we serve in today.

Implications for Our Army and Landpower in the 21st Century

How does the 11th Armored Cavalry Regiment (the OPFOR), develop and sustain its ability to fight and defeat its opponents in almost every battle at the National Training Center? How does the regiment, fighting with 1960s-1970s technology, routinely defeat brigade task forces equipped with the most modern weapons systems and technology our Army can provide? How can the regiment do it given the same soldiers, the same personnel turbulence (about 40 percent turnover each year), the same leader development challenges, and the oldest fighting equipment in the active Army? There are the answers. There are the insights. From my perspective, the implications for our Army today and into the 21st century are profound. Why? Because the conditions which have afforded the opportunity for the OPFOR at NTC to achieve its *full* combat potential do not exist in our active Army today.

As an Army, we don't organize the way we intend to fight. We have decided to bring the full weight and combat power of the combined-arms team to bear at brigade level, yet we don't organize the brigade as a combined-arms team. It doesn't matter that much for peacekeeping and humanitarian operations, but it matters in combat. It's the only way to achieve the full combat potential of the enormous investments we've made in combat systems and capabilities. Although nobody can match us on the current battlefield, we're far less effective than we can be.

We don't train anymore with the rigor and frequency *in the field* necessary to develop and sustain full combat potential. Shortage of money, shortage of time, shortage of leaders and soldiers, peacekeeping operations and other factors conspire against us and deny us the ability to train soldiers, leaders and units at the frequency necessary to develop and sustain proficiency in mission-essential tasks. For that matter, we don't measure our combat readiness in terms of our ability to accomplish our mission-essential tasks, which is a direct function of the frequency with which we train. We measure it in terms of the number of leaders and soldiers we have, the amount of equipment we have, the maintenance posture of equipment, and available training resources. Granted these are components of readiness, but it is training that turns these resources into combat capability, and it's the frequency of training that develops and sustains a unit's *full* combat potential.

We don't train and *certify* that combat-arms commanders and their staffs at battalion and brigade level have the knowledge, skill, ability and intuition to employ a combined-arms team in combat *before* we place them in those critical positions. None must prove their competence through objective examination of any kind. It's not a requirement for selection. Moreover, we have no training programs within our Army which will develop and provide our soldiers fully competent combined-arms commanders, S-2s (intelligence officers), S-3s (operations officers), S-4s (logistics officers), fire support officers, and other key members of combined-arms battalion and brigade staffs. It's ironic. We wouldn't let a surgeon touch us with a knife unless we were absolutely sure he or she had earned the credentials and was certified competent and skilled by tough, rigorous board certification. Yet we entrust the lives of our soldiers to officers who are not required to undergo equivalent competency evaluation. Consequently, we are far from being what we can be and need to be to achieve the *full* combat potential of the soldiers we lead.

We teach our officers to plan combat operations, but we don't teach commander and staff teams how to win our battles before we fight them, nor how to set conditions for effective synchronization of the combined-arms team during the planning process. At advance courses, Combined Arms and Services Staff School (CAS^3), and Command and General Staff College (CGSC) we teach officers how to conduct METT-T analysis and write a five-paragraph order, complete with a dozen annexes, but we don't teach them how to synchronize employment of the combined-arms team — the most critical outcome which must emerge from the planning process; the thing that brings the *full* combat potential of the force to bear on the battlefield. Nor do we train and teach the critical preparation and execution techniques the OPFOR has learned and continues to employ, which are really nothing more than our best warfighting units learned to do in combat throughout the last half of this century. We're good, but we can be better.

Also implied in this essay is the pressing need for our Army to develop new organizational, resource and training strategies which can restore or create the conditions we need to achieve

See INSIGHTS, Continued on Page 46

Exciting New "Tools" Available for Tankers, Infantrymen and Combat Engineers

Breaching Fortified Positions and Obstacles

by Major Roger Morin and Ty Cobb

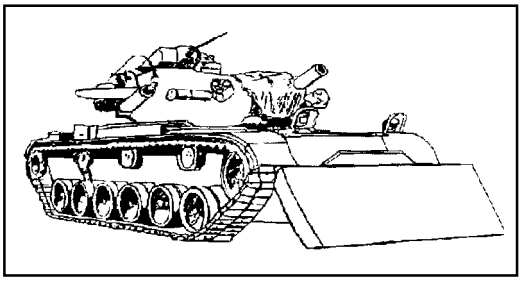
In November 1997, troops of the Iron Brigade (1st Brigade, 2ID) in Korea were the first to fire the XM908 120mm cartridge, the Army's newest tank round. This High Explosive, Obstacle Reducing-Tracer (HE-OR-T) round was fielded, via an urgent requirement, to U.S. Army Abrams tank units in the Republic of Korea (ROK). This "urgent requirement" from the field resulted from the Army's decision in 1996 to retire the venerable Combat Engineer Vehicle (CEV), a modified M60 tank.

Special Obstacle Problem in Korea

While there are areas of the Korean Peninsula that are flat and open, especially in the rice farming areas, much of the terrain is extremely rugged with many narrow defiles and passes. In the early 1970s, while laying out the defense of their nation, the ingenious South Koreans began building "dragon's teeth" or simply, "rock drops." Essentially, where "routes south" pinched into defiles or passes, they "pinched" them even tighter and placed huge reinforced concrete blocks (cubes and pyramids) just above the roads through the passes. Though found primarily in rural areas, dragon's teeth can also be seen in urban areas where bridges, tunnels and overpasses tend to canalize movement. In the event of hostilities, explosive charges would drop these rocks into place as the last friendly units withdrew through them. (The most common "teeth" are as large as 85 cubic feet and weigh upwards of 6 tons.) This action would effectively block, if covered by fires, the "routes south." Such obstacles are also known to exist in North Korea, whose terrain is even more rugged than that of the South.

Rock-drop obstacle in Korea

So, why an obstacle-reducing tank round? If the North Koreans were successful in pushing ROK and UN forces south of the DMZ, there would come a time (hopefully sooner than later) that these forces would want to push the invading force north to the DMZ. Now the dragon's teeth that were not removed by the invading force are obstacles to friendly forces moving north.



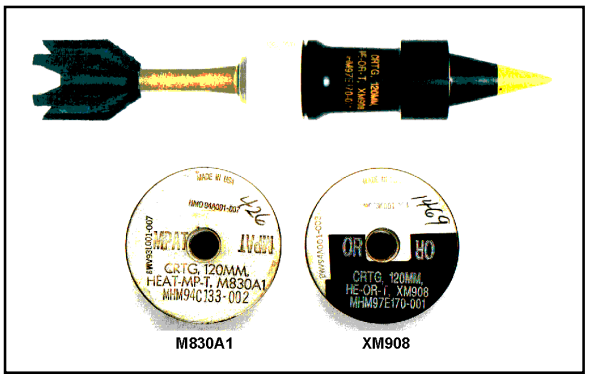
CEVs in Korea: Retirement Bound

Prior to the summer of 1998, the CEV mounting a 165mm anti-obstacle gun with an effective range of 1000m would have been used to rubble these obstacles and others as well. The gun fired a 32 pound HEP (High Explosive Plastic) round that rubbles obstacles by overpowering explosive shock. During the summer of 1998, U.S. Forces in the ROK retired their CEVs, and an urgent call went out for an alternate solution to rubbling by tank-mechanized teams.

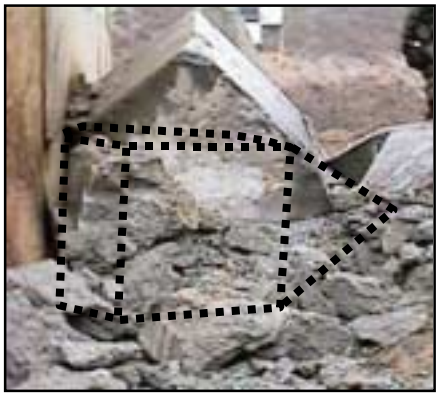
The engineers at Picatinny Arsenal test fired every possible tank round, from high velocity Kinetic Energy (KE) to anti-tank shaped charged rounds, for their ability to rubble dragon's teeth. Some of these rounds were quickly assembled prototypes conceived by ARDEC[1] engineers. One of these concepts became the XM908.

The XM908 is essentially a modified M830A1 Multi-Purpose Anti-Tank (MPAT) round that carries a 2.2 pound high explosive shaped charge. The MPAT's highly sensitive nose switch, a part of the fuzing system, was replaced with a simple steel nose that delays detonation. The steel nose's hardness and the projectile's high velocity (1408 meters per second at the muzzle) allow the round to "burrow" into the obstacle. The few inches of burrowing and delay cause the XM908 to detonate the shaped charge inside the obstacle instead of on the surface for increased effectiveness.

The XM908 is easily distinguishable from the MPAT. The XM908's steel nose has been painted yellow, and "XM908" is inscribed in the metal itself. The cartridge's base end has been stenciled with XM908 markings. It uses the same ballistic (fire control) solution as the M830A1 MPAT round.



XM908, and comparison of MPAT and XM908 case bases



Before and after pictures of the XM908's rubbling effectiveness in Korea, Nov '97

Operational Employment of the XM908

The XM908 is only a tool, but a new one whose obstacle-breaching capability should be examined by platoon, team, and task force officers and NCOs. The 2nd Infantry Division's Iron Brigade leads the effort to fully exploit the XM908's operational capabilities. They developed battle drills and refined tactics, techniques and procedures (TTPs) to breach the dragon's teeth. Their TTPs employed basic breaching tactics, but they found that the XM908's capability allowed for a quick breach while enhancing survivability due to the ability to rubble the obstacles from stand-off by a well protected Abrams.

The Iron Brigade's live-fire training against simulated dragon's teeth obstacles proved the round's devastating effectiveness. The accuracy of the tank main gun easily placed a round in the middle of a block from several hundred meters away, and the rubbling capacity of the round rubbled an entire block. Rounds were fired at each block in a defile, and the obstacle was systematically reduced. A few chunks of rubble were as wide as two feet, but most were 3 to 6 inches in size. Because resultant rubble will pile-up in front of the blocks, the Iron Brigade learned that tank units involved in anti-dragon's teeth missions should plan on firing two rounds per block.

A typical tactical scenario might be: Smoke and artillery fire "isolate" the obstacle; tanks rubble the dragon's teeth; tanks travel over the rubble while still using smoke and/or artillery fires to protect their advance; other maneuver units cross the rubble under armor as possible; if the follow-on combat vehicles cannot cross the rubble, the combat engineer's Armored Combat Excavator (ACE) or a tank with a dozer blade can be used to clear enough rubble to permit passage. The rubble would have to be cleared for wheeled vehicle traffic. The keys to success are planning and full team training prior to hostilities. As with any military operation, analysis of situations and training for such situations speeds operations and minimizes casualties.

New Tools for Infantrymen and Combat Engineers

Okay — so the XM908 is a breaching tool for the tankers. What new tools are available for the Infantry and Engineers?"

The Bunker Defeat Munition (BDM) was recently fielded to fill a long-standing void in the assault "tool kit" of infantrymen and combat engineers. The BDM or XM141[2] is an 83mm "disposable" munition designed primarily to defeat threat field bunkers (3 feet of tamped earth around 6" x 6" timbers). ARDEC design engineers developed the BDM around the Marine Corps' Shoulder-launched, Multi-purpose Assault Weapon (SMAW). Based on a FORSCOM urgent requirement supported by TRADOC's Infantry and Engineer Schools, ARDEC engineers designed the BDM to be lightweight and disposable, thus one has the SMAW-Disposable or SMAW-D. The munition weighs 15.7 pounds, has an effective range of 15 to 500 meters, and mounts a variety of night sights. (In contrast, the Marines' SMAW with a round loaded and ready to fire weighs 29 pounds and requires a dedicated gunner.) Operationally, the BDM is a "take me along, if you need me" weapon system, so any unit could use it, though most of its use will be by infantry and combat engineer units.

Firing the new Bunker Defeat Munition

The Bunker Defeat Munition is highly effective against threat bunkers due to its sensitive fuzing and its warhead's 2.4 pounds of high explosive. The BDM is also highly effective against triple brick and concrete block walls, as well as light armor up to and including the BMP2. The Bunker Defeat Munition gets its versatile effectiveness due to its sensitive fuzing which "senses" warhead relative deceleration. Slow deceleration in "soft" targets (such as tamped earth) results in delayed detonation of the explosive causing threat bunkers to be blown up from the inside. Rapid deceleration against hard targets (armor and concrete block) results in super-quick detonation and a strong surface punch.

BDM effects on a bunker

Another new device, the M150 Penetration Augmented Munition (PAM), developed under the direction of the Office of the Project Manager for Mines, Countermines, and Demolitions, was built in response to a Special Operations Forces' (SOF) requirement to defeat heavy reinforced concrete structures. One PAM reduces the loading-bearing capability of the PAM target by 75%. The PAM target is a concrete structure that measures 5 feet wide by 6 feet deep by 15 feet tall with 1-3/8 inch diameter rebar spaced 5.5 inches apart. Weighing only 35 lbs, one soldier can hand-emplace the munition in two minutes. Each PAM replaces 225 lbs of high explosive in destructive force. It was Type Classified Standard for Army SOF Use Only in June 1998. (If engineer commanders need this type of munition, they should identify their requirements to the engineer school, who could then work with DCSOPS to obtain the needed PAMs.)

The PAM is a technical "masterpiece." It contains three separate, precisely-timed warheads. The forward warhead is an Explosively Formed Penetrator (EFP), an ARDEC innovation, and cuts any existing near-surface rebar. The second warhead is also an EFP that "drills" a hole one-meter deep into the target. The third warhead is the Follow Through Charge carrying 5 lbs of explosive. It enters the target and does massive damage upon detonation.

The PAM uses breakthrough technology that should lead to follow-on development of other multi-warhead munitions for a wide range of applications. PAM can be scaled into larger or smaller munitions with further development.

MOUT Operations

"Could these tools be used in urban environments — where future warfare will likely be commonplace?"

After witnessing the overwhelming destructive capability that was brought to bear against the Iraqis during Operation Desert Storm, few military forces will opt to face allied coalition forces. Due to the incredible pace of urbanization of the world's population, the days of the "urban guerrilla" are upon us. As in the jungles of Vietnam or the rugged mountains of Afghanistan, the guerrilla can gain a degree of equality with traditional modern forces. Close terrain is the guerrilla's domain. Urban areas are the "jungles" of the future.

Actually, Military Operations in Urban Terrain (MOUT) present a far worse scenario for military operations than those presented by jungles or mountains. Urban areas present political, cultural, humanitarian and other phenomena that must be considered when planning and conducting MOUT. Witness the WWII orders not to destroy the historic monastery at Monte Cassino during operations in Italy. Eventually, those orders were reversed, but how many lives were lost while obeying those orders? Witness the difficulties encountered in Somalia, Northern Ireland, and Panama.

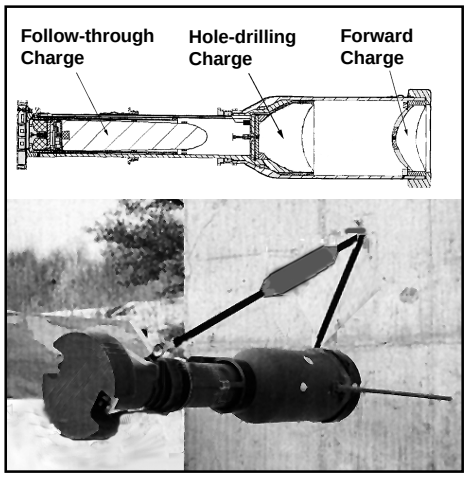
The XM908, BDM and PAM are three new tools that should aid in the conduct of MOUT. Leaders must carefully analyze these tools, then adjust MOUT tactics and techniques for their employment. Orders may restrict rubbling or use of certain munitions or weapons, or permit their use in narrow or broad applications.

Urban warfare demands accurate intelligence and, most of all, intense, prehostility training and teamwork. It is hoped that the result will be more rapid success and reduced casualties.

Notes

[1]ARDEC is a major element of the U.S. Army Tank-automotive and Armaments Command and normally referred to as "TACOM-ARDEC"; herein shortened to "ARDEC."

[2]The "XM" versus the "M" designation for both the XM908 and the XM141 is due to DA's decision to produce only a limited number of rounds.



An M150 PAM charge set in place

Effects of the BDM against concrete block wall (left), and BMP armored personnel carrier (right)

MAJ Roger Morin is the Assistant Project Manager for Tank and Medium Caliber Armament Systems (PM-TMAS) located at Picatinny Arsenal, N.J. He is an Acquisition Corps officer responsible for developing, testing, and fielding tank and medium caliber ammunition, and is the fielding officer for the XM908 to Korea. He is a graduate of the U.S. Military Academy, the Engineer Basic and Advanced Courses, and holds a masters degree in Environmental Health Engineering from the University of Texas.

Tyrus R. Cobb Jr. graduated from the U.S. Military Academy in 1962 with a BS in engineering. An infantry officer, he served as a platoon leader, company commander, and battalion operations officer; as operations officer, 197th Infantry Brigade; as an instructor at USMA; as a battalion advisor to Vietnamese paratroopers in 1968; and as the chief of Requirements Analysis Division of TACOM-ARDEC's predecessor, ARRADCOM. Since retiring from the Army, he's been a civilian with ARDEC, currently serving as Chief of TACOM-ARDEC's Requirements Analysis and Concept Definition Team. He holds an MA in geography/earth sciences from the University of Texas at Austin and an MBA from Florida Institute of Technology.

Yugoslavian Armor Fleet Is a Mix of New and (Some Very) Old

by David M. Phipps, Threat Branch, DFD, Fort Knox

Following the break-up of the Former Yugoslavia, the Yugoslavian Army reorganized in 1992 to reflect the territorial changes and loss of equipment that had taken place.

The active force is now 85,000-90,000. Half of these troops are conscripts doing their 15-month national service. In addition, the trained reserves and paramilitary forces increase the size of the army to 550,000.

The basic doctrine of the army is combined arms, multiple company/battalion groupings of light infantry and tanks supported by artillery. Their former doctrine stressed attacking lines of communication and support facilities. Yugoslavian forces seek to concentrate quickly for offensive operations, attack, and quickly disperse. Their standard doctrinal plan is to use the terrain in a defensive war of attrition. This doctrine is from a tradition of planning for a partisan war.

Yugoslavia is unique in that it is an arms producer/supplier. In the past, they have sold arms, ammunition, equipment, and sub-systems around the world, most notably the sale of M-84s to Kuwait. Some of the first M-84s delivered prior to Saddam's invasion in 1990 ended up in the Iraqi inventory. The remaining tanks ordered arrived in time for the Kuwait Army to use in Desert Storm. Other known M-84 sales were to the Yugoslavian Army and possibly to Libya and Syria.

On paper, the Yugoslavian armor corps is very impressive, with some 41 tank battalions, each with 31 tanks. They are currently 10 battalion sets short of this goal. Of their tank fleet of 983 tanks, only 283 are modern tanks (i.e. M-84, T-72), with the majority being T-55s.

Unique is the reserve forces' use of ancient T-34s and M-18s (Hellcats) from the antitank units as tank support.

The most modern tank in the inventory is the Yugoslavian-made M-84. It is modeled after the T-72, and the exterior resembles the T-72, but with the addition of a wind sensor and an improved gunner's sight housing.

The fire control system has been described as like an M60A3 minus a thermal sight. The system consists of a gunner's control handle, ballistic computer, cross wind sensor, gunner's day sight, gunner's night sight, and two-plane stabilization. The night sight used by the M-84 is a second-generation passive system.

Exterior of the Yugoslavian T-84 appears similar to the T-72, on which it was based, but many internal changes were developed by the Yugoslavians when they adopted the design.

Sales flyers claim a first-round probability of hit higher than 60 percent for their 125mm gun system. This system was originally designed for their T-55 fleet. Like the T-72, the M-84 fires HEAT, HE-FRAG and HVAPDS-FS. The on-board load is 22 rounds in the carousel and 23 rounds stored around the inside.

The M-84 has a crew of three, with an autoloader that feeds the 125mm main gun at a maximum rate of six to eight rounds per minute. The gun, which is stabilized, can also be loaded manually at two rounds per minute. There are 2,000 rounds of 7.62mm ammunition on board for the coax machine gun and 300 rounds of 12.7mm ammunition for the tank commander's weapon.

The M-84 sales brochure describes the tank's armor protection as "achieved by low profile of optimum shaping and a multi-layer 'sandwich' armor with equivalent penetration resistance exceeding 600mm."

A 12-cylinder, V-12 supercharged diesel powers the M-84.

The M-84's rangefinder is a Nd YAG laser integrated into the day/night sight. The night sight channel is a second-generation image intensifier, not a thermal viewer.

Sales brochures claim that the T-84 can shoot on the move, with built-in target tracking features and a capability for TC to gunner target hand-off.

The brochure also claims NBC protection with a system that automatically makes the fighting compartment airtight. The fire extinguishers are also automatic.

The M-84 weighs 42 metric tons.

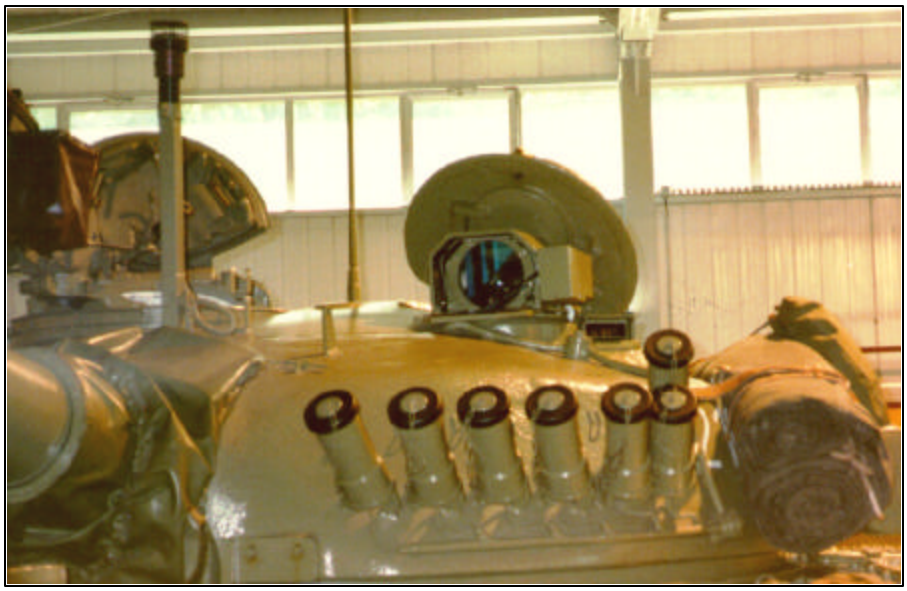
An ironic aspect of the T-84's production history is that the major parts of the vehicle were manufactured in different locations in the former Yugoslavia. With the break-up of the federation, and the loss of Bosnia-Herzegovina, Croatia, Slovenia, and Macedonia, the factories under the control of the remaining Serbs and Montinegrins manufactured only 23 percent of the tank's parts. *Janes* notes that this problem may have been overcome and has received reports that production is underway again.

The bulk of the Yugoslavian armor force is about 600 T-55s. Some 50 T-72s were purchased from the Soviet Union after the decision was made to make the T-84 in Yugoslavia, but these tanks were purchased to train tankers until the T-84 began to emerge from the factories.

Armored infantry fighting vehicles include over 500 M80s, a locally produced APC, and six YPR-765s which were siezed from Dutch UN peacekeeping troops at Srebenitza in 1995. *Janes* points out that these captured vehicles have appeared in Kosovo. In addition, there are 66 BRDM2 armored reconnaissance vehicles.

Some World War II-era equipment has been seen in film clips on the evening news They include U.S.-supplied M-18 Hellcat tank destroyers, the fastest armored vehicle of WWII, speeding down a road in Kosovo, and also about 100 Soviet-supplied T-34-85s.

Sources: *Janes Armor and Artillery, 1998-99; Janes World Armies, 1999;* The Yugoslavian Federal Directorate of Supply's 1991 brochure on the T-84, and the DoD Fomer Yugoslavia Handbook, 1993.



Although similar to a T-72, close-up of T-84 turret roof shows two differences: the wind sensor tube at center, above gun mantlet, and the sighting head of the fire control system seen directly above the smoke grenade launchers.

Museum Pieces, Still in Service

The Serbs seem to have preserved every armored vehicle that has ever been in their inventory. Following World War II, the Yugoslavians received surplus Western equipment, some of it still in service. An M-18 tank destroyer like the one at upper left, seen fighting in France in 1944, was spotted rolling through Kosovo on the evening news late in March.

There are still 100 Soviet T-34-85s in their inventory like the one above

Most of the fleet, however, is composed of T-55s, some modified with add-on armor packages, like the suite mounted on the East German T-55 at left.

The Battle of Grozny

Lessons for Military Operations on Urbanized Terrain

by Captain Chad A. Rupe

Strategic Overview

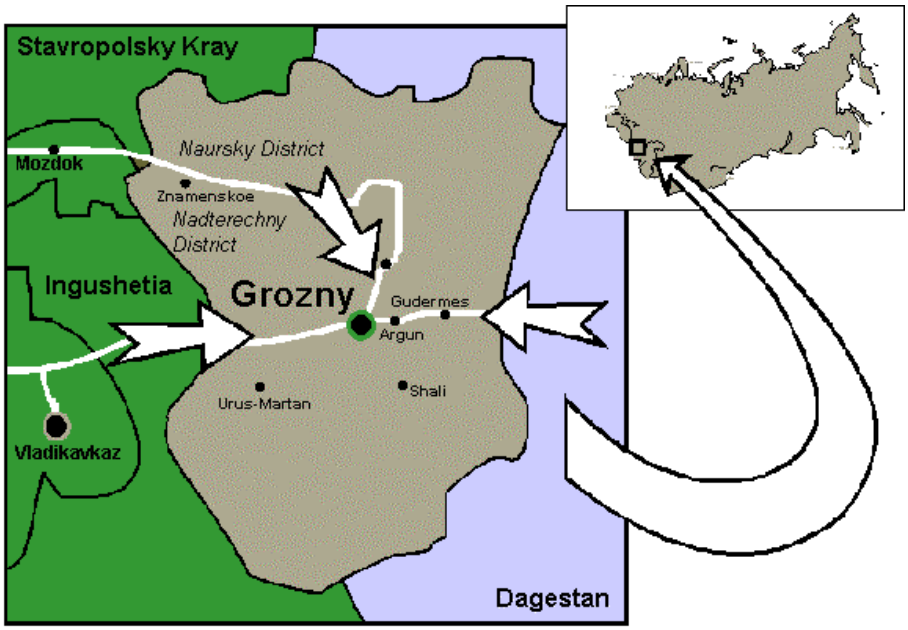
In a civil war on the southern border of Russia, three nationalities — the Chechens, Russians, and the Ingush — fought from 1991 to 1996 throughout the region of Chechnya. The conflict remains unresolved. The key battle of the war, the battle of Grozny, provides insight into the reasons for the prolonged conflict and offers lessons to apply to future warfare in an urban environment.

After the Soviet Union collapsed and the Baltic States broke off, the Chechens demanded autonomy for their homeland. Dzhokhar Dudayev, a former Soviet Air Force general and ethnic Chechen, rose to lead the Chechen Popular Congress in 1991. Most of his support came from the rural population in the south of Chechnya and the areas surrounding the capital city of Grozny, and it included units of the National Guard.[4]

The Ingush, the second most populous nationality in Chechnya, formed a party to oppose Dudayev. Allied with the Russians, the Ingush wanted more autonomy within the Russian federation, rather than independence. Although the Ingush maintained support from Boris Yeltsin, the opposition party lost influence in Chechnya. From October 1991 to November 1994, Dudayev consolidated his power against the opposition and limited their area of control to the northern regions of the republic, far away from the capital.[5]

Supported by Russian advisors and air power, the Ingush retaliated with an advance on Grozny in November 1994. Meeting fierce resistance from armed Chechens and National Guard troops, the opposition party failed to dislodge Dudayev from the capital. The opposition party's only recourse was to ask Yeltsin for a full-scale intervention.[6]

In fact, Yeltsin had declared his support of the Ingush prior to the offensive, and had demanded the disarmament of illegal formations and assemblies in Chechnya.[7] Since the attack was unsuccessful in enforcing his order, he had to act to regain Russian authority in the region, ordering the Russian Army to invade Chechnya with a final objective of the Presidential Palace in Grozny. By seizing the palace, Yeltsin planned to remove Dudayev from power.[8]



Map shows the initial Russian invasion plan for Chechnya,[1] a tiny republic in the southwest corner of the former Soviet Union. The Chechen demand for autonomy was opposed by another minority, the Ingush, who sought Russian help to quell the uprising.

In December 1994, the Russian Army assembled three army groups consisting of 23,800 soldiers and special police units equipped with 80 tanks (T-72s, T-80s[9]), 208 IFVs and APCs (BMP-2s, BMDs, BTR-70s[10]), and 182 guns and mortars. (These numbers vary depending on the report.)[11] Planning to attack the city from the march, the main effort advanced from the north border of Chechnya with the 81st MRR, the 131st MIBR (SPT), and the 20th MRR. Supporting efforts advanced from the east with three airborne divisions and from the west with a marine regiment, an MRR, and an airborne brigade.[12] Each were supported by air and special operations.

The Chechens faced this advance with a total of 15,000 personnel. The population armed itself with 60 guns and mortars, 30 Grad multiple rocket launchers, 50 tanks (most were non-operational), 100 IFVs, and 150 anti-aircraft guns. Within Grozny, two battalions, Abkhazian and Muslim, defended the city along with a special brigade.[13] The Chechen command created three defensive lines concentrically around the Presidential Palace. The inner defense was at a radius of 1.5 km, the middle defense from 2 to 5 km from the palace, and the outermost defense extended to the city's outskirts. The outer and middle defenses depended on strong points. The inner defense used prepared positions for tank and artillery fire.[14]

The Battle of Grozny

On December 31, 1994, the Russians surrounded the city and seized high ground to the south to ensure lines of communication. Without waiting for the supporting efforts from the east and west, the commander of the northern force advanced alone into the center of the city to seize the Presidential Palace with the 131st Motorized Rifle Brigade, the 81st Motorized Rifle Regiment, and the 20th Motorized Rifle Regiment.[15] From the east, the airborne divisions entered the city on 1 January and seized the suburbs

The Presidential Palace in Grozny, objective of the Russian invasion, before the invasion,[2] at top, and after weeks of street fighting.[3]

containing hazardous ecological material and railroad stations to relieve the main force.[16] Impeded by civilian blockades in the approach to Grozny, the western forces failed to advance to the city.[17] When the Russian columns advanced into the center of Grozny, the men expected to disband poorly trained civilian mobs through a show of force by the Russian Army.

Ordered not to fire unless fired upon, the vehicle commanders did not bother to load their machine guns. Infantrymen slept in the back of their personnel carriers. Vehicle commanders had the audacity and confidence to navigate through the city without large scale maps or guides.[18] But as they ended up on dead-end streets and in gardens, the columns quickly lost their confidence and their lives.[19]

Hunter-killer teams of Chechens brought the columns to an explosive halt. They operated in groups of 15 to 20 personnel, broken down into five or six teams consisting of three to four men each. Each team had an antitank gunner, equipped with an RPG-7 or RPG-18, a machine gunner, an ammunition carrier, and a sniper. As the Russians advanced, the rebels moved in behind and parallel to the columns. Using hand-held radios, rebel scouts, "hunters," coordinated with infantry, "killers," to establish ambushes. A group of 15 to 20 personnel moved to overlook each armored column from multi-story buildings.[20] Initiating ambushes with RPG fire on the lead and trail vehicles, the rebels quickly destroyed all personnel and vehicles.[21]

Lacking air cover and all support, the main effort was annihilated short of its final objective. Only 18 of the 120 vehicles in the 131st MRB escaped destruction. Almost all of its officers died.[22] The Russian Army took until 7 January to recover from this initial disaster. Learning quickly, the Russians formed combined arms teams, using infantry to clear buildings,[23] supported by teams of two fighting vehicles and a tank.[24] Additionally, each battalion received supporting indirect fires at a range of 150m to 200m from a battery of artillery, two batteries of mortars, and an attachment of a battery from division artillery.[25] Yet, even with these rejuvenated efforts, the Russian Army still took until 22 February to seal off the city from the rest of the republic.[26] Despite losing their capital and leader (Dudayev had been assassinated with an exploding cell phone), the Chechens continued the fight for their homeland.

Retreat without Peace

After the Battle of Grozny, the rebels continued a guerrilla war against an army of occupation for the next two years.[27] As the Russian Army advanced through regions to complete the destruction of the Chechen revolt, the rebels blended in with the villagers. Special police followed directly behind the lead Russian units to identify and kill the rebels. Rather than showing any discretion or idea of law and order, the police raped, murdered, and molested the villagers, to include children.[28] Then the Russians arrayed a series of outposts to supervise the "cleared" villages.

These tactics fueled the Chechens' desire for justice, and subsequently, many Russian army soldiers would die because of the actions of the police thugs. Once the majority of the Russian force moved on, the rebels ambushed the outposts and destroyed the isolated units. Then Chechens infiltrated back into "cleared" areas to continue the fighting.[29] Facing a war of attrition that had no visible end, Yeltsin declared victory in November 1996 and told his Army to pull out of Chechnya.[30]

Casualties/Aftermath

During the first 10 months of the conflict, the Russians lost over 300 armored vehicles, 2,000 men KIA, 600 men MIA, and 6,000 men WIA. In the Battle of Grozny, it is estimated that 25,000 residents, rebels, and Russian solders died.[31] When the Russians finally withdrew from Chechnya, they had still not gained control of the republic. To this day, Chechnya remains a semi-autonomous state, and a thorn in Yeltsin's side. Some members of the international community conduct business with the republic, but no one has recognized the state as truly independent. Thus, the conflict remains unresolved and a new chapter is waiting to be written in blood.

Lessons for Military Operations On Urbanized Terrain

INTELLIGENCE

Issues from the battle:

Intelligence played a decisive role. The Russians ignored this battlefield operating system and paid the price. Their arrogance led them into a false sense of security. They did not see a need to prepare for a fight. Their intelligence overlooked the rebels' will to fight, and ignored the information about rebel tactics, disposition, and composition from November's battles. They miscalculated the center of gravity of the Chechen revolution to be the leaders in the Presidential Palace rather than the true focal point, the perspective of the Chechen farmers as being oppressed. The Russians chose the Presidential Palace as the final objective, thereby hoping to stop the revolution, but the Chechens continued the fight without their original leadership structure so that they could gain freedom. The Russians never made any attempt to convince the farmers that the rebels were the reason for the oppression. Finally, the actions of the special police, who raped, molested, and murdered villagers, gave the rebels a valuable propaganda initiative. The Chechens used this information to solidify support for their movement. Conversely, the Chechens capitalized on their information about the Russian columns to maneuver and destroy their foe. Chechen intelligence focused on the immediate fight around the corner in order to provide valuable information to the platoons that fought in the severely restricted terrain.

Lessons for the application of intelligence:

Prior to entering the theater of operations, battalions should conduct threat briefs to ensure soldiers understand the task organization, equipment, and tactics of the threat from recent battles that gave rise to the deployment. Once in the theater, all squads should receive street maps and large-scale maps to accurately depict the buildings and streets where they will fight. Additionally, dismounted infantry platoons should receive floor plans on buildings that will be critical to the fight. If possible, scout sections should use friendly locals as guides and human intelligence assets. Using these guides, scouts conduct route reconnaissance along the city streets in preparation for the attack in order to confirm enemy locations. Maintaining very close contact with the main force, the scouts are then able to conduct battle hand-over quickly or are able to break contact without suffering large numbers of casualties.

MANEUVER

Issues in Task Organization from the Battle:

In severely restricted city streets, the ability to achieve mass is maximized through task organization of the mechanized or motorized infantry platoon. The Russians relearned this lesson after their initial catastrophe in the streets of Grozny. They organized armor, infantry, and fire support assets at the lowest level so that they could destroy enemy resistance as they advanced. Yet, they could have improved their capabilities by clarifying tactics and adding additional assets.

Technique for Maneuvering in Urban Terrain:

A tank section, light infantry platoon, mortar section, combat engineer vehicle, and sapper platoon attaches to the mechanized infantry or armor company team. The company team commander or company executive officer coordinates these additional assets to support the lead platoons.

The company then controls a battlespace of one to two adjacent streets with a depth of 1 to 2 kilometers. Two scout sections from the task force conduct route reconnaissance along two streets at a distance of 500m to 2km in front of the company team. They locate the enemy and conduct battle hand-over to the company team. The company team advances along the two streets and travels with less than 50m between vehicles, using column or staggered column formation. Vehicles alternate gun tubes to scan for enemy at different levels. Dismounts and infantry vehicles observe the top floors of buildings, tanks and dismounts scan the ground level, and dismounts scan below ground level.

The company team uses the following order of march along each route: a tank, dismounted infantry platoon or mechanized infantry squad, mechanized or motorized infantry platoon vehicles, and a CEV or sapper platoon. A mortar section and a reserve consisting of a tank and dismounted infantry platoon follow the main effort.

Infantry are used to clear buildings adjacent to vehicles. Tanks immediately suppress or destroy targets at the maximum range (at least 90m) and are used as a base of fire for the maneuver of infantry. Infantry vehicles and tanks use HEAT and HE rounds due to the proximity of friendly troops, and maintain at least 35m from the point of impact (allows the detonator to arm). The dismounted infantry and reserve commit along the flanks (buildings or adjacent streets) to seize the objective and clear surrounding areas. The CEV reduces obstacles along paved streets and the sapper platoon breaches obstacles in areas out of reach of mechanical assets.

Technological Issues:

The Russians lost numerous tanks in the city streets to RPG fire from above. Tanks need to be equipped to withstand this high angle fire. Open hatches are also a problem. Crews open their hatches to see better in the city's streets and to maneuver in narrow spaces between buildings, but this exposes the crew. Neither Russian nor American tanks can acquire targets at high angles with their main guns or coaxial machine guns. Only the commander's and loader's machine guns can be brought to bear, leaving the tank at a firepower disadvantage. The Russians overcame the firepower imbalance by using their ZSU 23-4s in the direct suppression mode against the top floors of buildings. They also used wire mesh on the sides of the tank to disrupt the impact of RPGs. The U.S. Army needs to address this issue through additional research.

Mobility/Countermobility/Survivability:

The Chechens had a marked advantage in countermobility because of narrow streets and high rise buildings. City streets were easily blocked and then used as ambush sites. The Russians needed more engineers to breach buildings and create routes out of a line of fire. Additionally, the concrete buildings and underground structures provided the Chechens with great survivability positions to withstand machine-gun fire. Better task organization with their engineers may have helped the Russians in these street battles.

BATTLE COMMAND

Issues from the Battle:

By emplacing retrans sites on the high ground outside of the city, the Russians made a vain attempt to control their advance. Yet they lost control of the fight

by not supporting the main effort with an advance from the east or the west. Additionally, the Russians did not master their control of the close fight. The infantry, when used, could not use radios to coordinate with the vehicles. When threatened, the soldiers did not have rules of engagement that allowed for a graduated response. Finally, leaders at all levels failed to enforce discipline. Unloaded machine guns and sleeping soldiers during an attack are unforgivable mistakes.

TTP for MOUT:

At the platoon level, the tanks and infantry fighting vehicles must be able to talk to the infantry for close coordination in the attack. The use of radios for short distances is crucial. However, the capability quickly decreases and a plan for relay stations and retrans on dominant terrain must be executed and verified in order for the company team and the task force to maintain coordination of adjacent elements. Additionally, the rules of engagement must be clear, simple, and trained to the squad level. Every soldier must be able to memorize approved responses so that when they are faced with unforeseeable incidents, they protect their own lives and act within the command's intent. Finally, fratricide must be a key consideration in battle handover of targets. The platoons must maintain a weapons-tight posture and ensure positive identity before engaging.

Air Defense:

The Russians had no air threat, and the Chechens were ineffective against the Russian air. Anti-air missiles and machine-gun fire are the most effective weapons in this environment. The Chechens could have easily observed air avenues of approach by simply designating one vehicle or fire team to observe the air corridor running above the major streets. By failing to position observers, the Chechens lost lives unnecessarily.

Logistics:

The Chechens relied on captured equipment to maintain their fleet. Most of their tanks were not operational throughout the fight due to a lack of spare parts. They never recovered from a failure to maintain an industrial base to support mechanized warfare. The Russians also did not support their forces to the level needed. They failed to provide the maintenance and logistical support to the vehicles and the soldiers. However, the most profound effect was poor training and planning for casualty evacuation. This had a tremendous effect on their morale.[32]

FIRE SUPPORT

Issue from the Battle:

Both the Chechens and the Russians used massive artillery barrages and supported their forward maneuver forces with direct fire artillery. These tactics were very effective at destroying armed resistance in the city streets. However, without any regard for precision strikes, it also killed many civilians.

TTP for MOUT:

Mortars firing WP and HE rounds equipped with VT fuzes are the most responsive weapon for support of the infantry due to the high angle of trajectory. Train mortar sections to focus on immediate suppression and immediate smoke to support the attack and breaching operations. Mortar rounds tend to have a smaller impact on the surrounding civilian population than other types of fire support.

Civil Affairs:

The Russians failed miserably at civil affairs, and lost the war as a result. Although this is not one of the battlefield operating systems, this aspect of the battle brought the attack from conventional warfare against a limited target to the realm of total warfare against a people. The special police reinforced the Chechen will to fight by raping, murdering, and molesting the Chechen population. A basic respect for life was never a part of the rules of engagement, and was never enforced. When the Russian Army left Grozny, they faced a war of attrition instead of a defeated population.

In conclusion, the Russians lost the initial fight for Grozny and the prolonged war in Chechnya by failing in almost every aspect of the Battlefield Operating Systems. Most notably they failed with intelligence and battle command. Additionally, an active disregard for civil affairs caused the war to drag on indefinitely. As an army, we can learn many lessons from this fight and apply them to improve our doctrine in Military Operations on Urbanized Terrain.

Notes

[1]Celestan, Major Gregory J. "Wounded Bear: The Ongoing Russian Military Operation in Chechnya," Fort Leavenworth, Kansas: Foreign Military Studies Office, August 1996, p. 3.

[2]Chechen Republic Online.

[3]Ibid.

[4]Smeets, Rieks H.J. and Egbert G.Ch. Wesselink. "CHECHNYA, ONE YEAR OF WAR: A Pax Christi International Report." 11 December 1995. Chapter 5, Paragraph 5.1, Prelude.

[5]Smeets, Chapter 5, Paragraphs 5.3-5.5.

[6]Smeets, Chapter 6. War. Subparagraph 12 of Paragraph 6.1.

[7]Smeets, Chapter 6. Paragraph 6.2. First Phase of the War, December 1994 - July 1995.

[8]Thomas, Timothy L., "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya," Fort Leavenworth, Kansas: Foreign Military Studies Office, 1996, p. 5.

[9]Geibel, Adam, "Red Dawn in Chechnya," Caucasus Nightmare / A Campaign Chronicle, Armored Warfare Planning Conference: Chechen Republic Online - Articles, 1999, p. 3.

[10]Ibid, p. 4.

[11]Thomas, Table Two: Russian and Chechen Force Structure, p. 34.

[12]Ibid, p. 35.

[13]Ibid, p. 36.

[14]Ibid, p. 6.

[15]Ibid, p. 3, 35.

[16]Ibid, p. 35.

[17]Geibel, p. 5.

[18]Thomas, p. 5.

[19]Ibid, p. 6.

[20]Grau, p. 1.

[21]Thomas,p. 6.

[22]Celestan, p. 4.

[23]Geibel, p. 9.

[24]Celestan, p. 9.

[25]Ibid.

[26]Ibid, p. 5.

[27]Thomas, p. 24.

[28]Ibid, p. 8.

[29]Smeets, Chapter 6.

[30]Finch, p. 1.

[31]Smeets, Chapter 6.

[32]Thomas, Page 26.

Bibliography

Celestan, Major Gregory J., "Wounded Bear: The Ongoing Russian Military Operation in Chechnya," Fort Leavenworth, Kansas: Foreign Military Studies Office, August 1996.

"Chechnya," *The Perry-Castañeda Library Map Collection*, The University of Texas at Austin: Central Intelligence Agency, 1995.

Field Manual 71-1: Tank and Mechanized Infantry Company Team, Washington, D.C.: Headquarters, Department of the Army, 26 November 1998.

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Armor Evens the Odds in Two Urban Battles

A Tale of Two Cities — Hue and Khorramshahr

by Lieutenant Colonel R. W. Lamont, USMC

In top photo, a Marine officer directs the crew of an Ontos vehicle to support infantry fighting in Hue. The Ontos was a lightly armored carrier for six 106mm recoilless rifles capable of defeating bunkers and tanks. Directly above, the 90mm gun of a Marine M48 covers advancing infantry moving down a Hue street.

This article reviews the role of armor in the urban battlespace with an eye toward how history can assist in charting the way ahead. In looking at areas around the globe, beyond the confines of the former Warsaw Pact, 75 percent of politically significant urban areas are located within 150 miles of the sea.[1] These key factors, proximity to the littoral battlespace and frequency of conflict, coupled with continued economic growing pains of a global marketplace, make the Third World urban setting a dangerous place well into the next century.

Recent discussion on the use of armor in the urban setting highlights the numerous operational challenges faced by vehicles fighting in this arena. While the number of vehicles needed in city fighting is reduced, their ability to contribute to the combined arms team is increased. History provides many examples of the combat potential of mounted forces on urban terrain. This article discusses two.

The Battle for Hue – Vietnam War

The Battle of Hue is well known within Marine Corps circles as a tough, street-to-street fight against a determined foe. The city of Hue had a population of 140,000 at the time of the attack in January 1968. The city was divided into two zones. The outer area was suburban in nature and located south of the Perfume River. The Citadel dominated the north bank of the river and was traditional built-up, closed terrain. The city dominated north-south communications by both rail and road along the littoral strip of South Vietnam. The 1st Infantry Division (ARVN) and the Military Assistance Command Vietnam (MACV) each had command posts within the city.[2]

Following the opening moves by the North Vietnam Army (NVA), Marine forces were ordered to counterattack and relieve the compounds within the city. This effort was spearheaded by Captain Batcheller's Company A, 1st Battalion, 1st Marines. This marked the first phase of the battle. To get into Hue and support the MACV compound, the relief column had to cross enemy-controlled country that varied from open rice paddies to closed, built-up areas. Captain Batcheller's company linked up with a platoon of tanks and moved his Marines from trucks to the tanks as he closed on Hue. This shift provided his column with the mobility and firepower needed to successfully run the gauntlet of enemy troops and link-up with the MACV compound[3] and demonstrated that bold maneuver by mounted units can penetrate through urban areas before the enemy reacts.

The second phase of the battle began after Marine combat power strengthened to a point where offensive operations could begin. This effort was highlighted by a counterattack along Le Loi Street adjacent to the Perfume River. To clear an area of 11 blocks wide and nine blocks deep, the Marines, now designated Task Force X-Ray, mustered a battalion-plus of infantry, reinforced with a tank platoon and Ontos antitank vehicles, which were armed with six 106mm recoilless rifles each.[4]

Tanks provided key support to the infantry during their advance down the Le Loi. The 90mm main guns of the M-48s dominated the wide street with direct fire and responded to requests for support from pinned-down infantry numerous times. Further, tanks opened a "new" route to the forward fighting areas by knocking down walls and obstacles, enabling casualty evacuation under cover. This battle witnessed classic tank-infantry combined arms cooperation. Tanks led dismounted elements down the street while the infantry covered the rear of the vehicles, preventing surprise attacks. While the NVA fielded a full array of

weapons to defend the southern bank of the Perfume River, they lacked tanks.[5]

The final phase of the Battle for Hue was the taking of the Citadel. For this phase of the operation, Task Force X-Ray had grown to an infantry regiment reinforced with both a tank and anti-tank company. The weather changed to a cold drizzle with low cloud ceiling,[6] and poor visibility hampered the Marines' traditional firepower enhancement of close air support, and the burden for this firepower requirement shifted squarely back to the tank and Ontos units.

During this final phase, M-48 tanks and Ontos antitank vehicles were paired together. This tactic provided an effective combination for dominating the close-in fighting along the tight streets of the Citadel. The tank was used for pinpoint fire and to draw-out the enemy. The Ontos provided an area fire capability as all six tubes unleashed canister shot at close range. This method forced defenders to ground and negated any resistance prior to Marine assaults across streets or open areas. This technique proved so effective that when tank ammunition was exhausted on 17 February, there was a pause in the fighting. Mounted firepower was critical in sustaining the dismounted assault.[7]

The intensity of the Battle of Hue is reflected in the battle losses and ammunition usage during the fight. In the 22 days of combat for Hue, Marine casualties, KIA + WIA, totaled 1,004. Combined with the 2,184 ARVN casualties, the attacker suffered 3,188 to secure the city. On the NVA side, actual body count plus POWs was 5,202.[8] During this period, each tank averaged 200 rounds fired.[9] This translates to a 30 percent higher ammunition consumption rate when contrasted with those listed for "heavy-intensity" combat in current planning manuals.

Khorramshahr — the Iran-Iraq War

The Battle for Khorramshahr was fought between Iraqi and Iranian forces in 1980. This town is somewhat larger than Hue, with a population of 175,000 at the start of the battle.[10] Khorramshahr was the gateway to the oil terminal at Abadan and the whole of the Shatt Al-Arab waterway. Control of this city would unlock the approaches to the southern end of the front.

The lay-down of the town is very similar to Hue, with one key difference. Both cities have clearly defined suburban areas and a hard inner-city core. The difference is that in Khorramshahr the city core and suburban areas are on the same side of the Shatt Al-Arab waterway and not separated as in Hue. Maneuver in the city core of Khorramshahr is more constricted than in Hue. Otherwise, the two urban areas are very similar.

As the opposing forces closed on the city, the Iraqi forces enjoyed an advantage in numbers. This advantage ranged from 3-4 to 1 in infantry strength and 2.5 to 1 in tanks.[11] This last point is the most noticeable in contrasting the two line-ups in the battles for Hue and Khorramshahr — both sides could call on armor strength to contest the urban area. It would influence the conduct and cost of the battle at hand.

The Iraqi forces made quick strikes for key areas within the city and penetrated through the suburbs, but stalled when they encountered Iranian Chieftain tanks. Local counterattacks by tank-infantry teams turned back the Iraqi forces at several points. The sheer weight of the Iraqi tank force settled the issue in their favor, but when Iranian armor was encountered on the defense, it stopped attacks cold. Only repeated combined arms assaults broke the ability of the Chieftains to dominate the open areas within the suburban battlespace.[12]

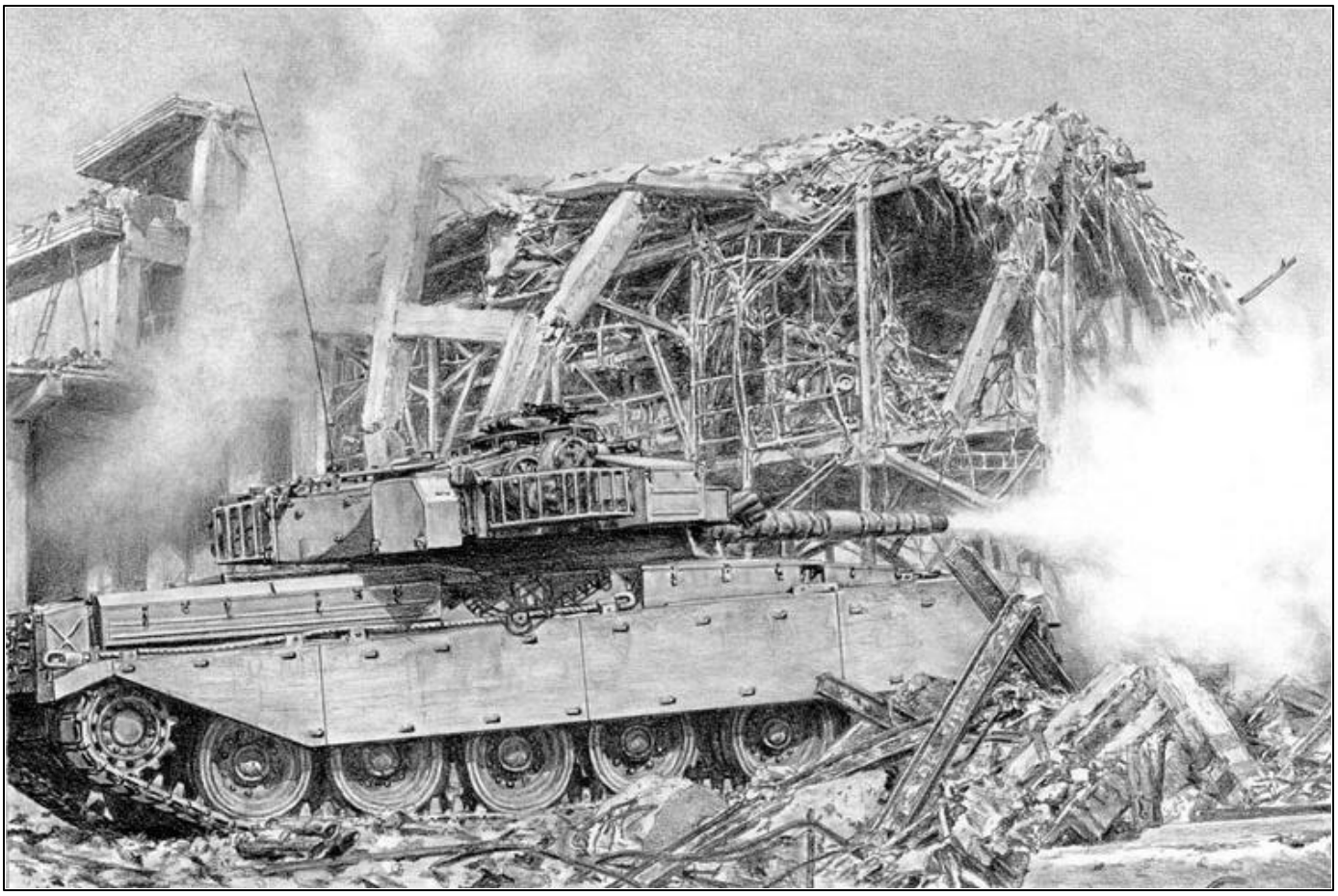
As the fighting moved toward the city core, armor operations were reduced to a supporting role. Tanks were unable to maneuver in the tight streets of this older section of town. Support by fire down long streets was still possible, and tended to control the blocks along the fringe of the city core. Given the fanaticism of the defending Iranian Basij Militias, infantry were required to clear the final pockets of resistance within the city.[13]

The most striking difference between this battle and that for Hue is the back and forth nature of the contest in the suburban zone. Since the defender had armor in his formation, he was consistently able to generate local tactical threats that could only be countered with close combined arms attacks. The ability of the Iraqi leadership to coordinate such attacks proved beyond their capacity at the start of the battle. By the end of the fighting, through sheer force of numbers and firepower, they were able to contest the Iranian defenders and secure the city.

The duration of the Battle for Khorramshahr was 25 days, three days longer than the fight for Hue. The attacking Iraqi forces lost from three to nine thousand in the process of taking the city. The defending Iranians, on the other hand, lost from two to three thousand attempting to hold the city and disrupt the Iraqi attack.[14]

Conclusions

When contrasting these battles two lessons emerge. First, armor can operate in urban terrain and dominate the action in the suburban environment. This was demonstrated by the operational patterns of the two engagements. In Hue, the Marines were able to control the tempo of operations and apply continuous pressure on the defenders. In Khorramshahr, the Iranian defenders were able to launch successful counterattacks disrupting the Iraqi attack.



"The sheer weight of the Iraqi tank force settled the issue in their favor, but when Iranian armor was encountered on the defense, it stopped attacks cold. Only repeated combined arms assaults broke the ability of the Chieftains to dominate the open areas within the suburban battlespace."

Second, when armor dominance is achieved on the urban battlefield, it significantly improves the battlefield performance of the side that wields this sword. This is evident in reviewing the battle losses for the attacker and defender in each battle. During the Battle of Hue, the Marines kept their exchange ratio, attacker to defender, less than one. In short, a ratio of .61 ensured the Marines were killing more than the stubborn NVA defenders. Even when the slightly longer duration of the Battle of Khorramshahr is accounted for, the attacking Iraqi forces exchange ratio ran between 1.32 and 2.64. They were never able to dominate their opponent while the defenders held armor on the field of battle.

This outcome is even more striking when one considers the numbers from the Battle of Hue do not include estimates for NVA wounded but only confirmed casualty results. If these are modeled along the lines of the battle of Khorramshahr, armor dominance in the urban setting translates to a four to sevenfold increase in the application of combat power in the close fight.

We must break out of current molds of thinking and look for new ways to employ armor within the combined arms team on the urban battlefield. Achieving armor dominance in this demanding environment ensures significant improvements in combat performance and provides the ability to control operational tempo. Harnessing the creative energies of our Marines guarantees success on the uncharted urban battlefields of the next century.

Notes

[1]FMFM 7-15, Military Operations in Urban Terrain (Draft), Quantico, Va., Dec 1993, p. 1-1.

[2]Battle for Hue — TET 1968, K. W. Nolan, Presidio Press, Novato, Calif., 1983. p. XII.

[3]Ibid., pp. 10-12.

[4]Ibid., p. 42.

[5]Ibid., p. 144.

[6]Ibid., p. 141.

[7]Ibid.

[8]Ibid., pp. 184-5.

[9]Ibid., p. 185.

[10]"Military Operations in the Gulf War: the Battle of Khorramshahr," R. D. McLaurin, Aberdeen, Md. 1982. p. 21.

[11]Ibid., p. 24.

[12]Ibid., p. 29.

[13]Ibid., p. 24.

[14]Ibid., p. 32.

LTC R. W. Lamont is currently assigned as the operations officer for the AC/S Manpower and Military Human Resources Directorate, MCB Camp Pendleton, Calif. His operational assignments include numerous company-level tank billets, service afloat as the MARDET executive officer aboard *USS Constellation* (CV-64) and the combat cargo officer aboard the *USS Cleveland* (LPD-7), and an Exercise Action Officer for Cobra Gold in Thailand and Tandem Thrust in Australia. He taught both the AOB and AOAC as a small group instructor. He is a graduate of the Naval Postgraduate School in Operations Research. While assigned to Studies and Analysis Division, MCCDC, Quantico, Va., he conducted the Anti-Armor Force Structure Analysis and was the lead Marine Analyst for the Joint Air Defense Operations/Joint Engagement Zone test.

An Independent Tank Battalion in World War II: How It Was Used.....And Sometimes Misused

by Marvin G. Jensen

Most Americans think of World War II tank warfare in terms of long thrusts by armored divisions, probably led by Patton. To his credit, he did lead such thrusts, just as planners had envisioned when they created the 1st and 2d Armored Divisions as the principal components of the Armored Force of the United States in July, 1940. Modeled after German blitzkreig forces, armored divisions had enormous power and mobility. Tanks set the pace for their own motorized infantry.

However, for tanks to use their maneuverability and speed, terrain and conditions had to be right. When they were not, such as in the hedgerows of Normandy, or in the forests of Germany, regular infantry with close tank support had to slug it out with the enemy at close quarters.

To provide this support, the 70th Tank Battalion was included in the original Armored Force as the first of the independent tank battalions. Called independent because they were not part of a division, these battalions were available to be attached to an infantry division when the need arose. It is believed that General Adna R. Chaffee, the first commander of the Armored Force, insisted upon the creation of independent tank battalions so infantry divisions wouldn't constantly be breaking up armored divisions by borrowing tank battalions from them every time tank support was needed.

As always in the Army command structure, a division controlled all attached units, including an independent tank battalion. This, at times, presented difficulties for tankers. It was a wise infantry commander who used tankers' advice on how best to use tanks. Most of them did so, but not all.

During the course of their combat, most independent tank battalions were attached to a number of infantry divisions. In its eight campaigns (the most for an independent tank battalion), the 70th was attached to the U.S. 1st Infantry Division (twice), the 9th, the 4th, the 63rd, C Company to the 45th in Sicily, and A Company to the French in Tunisia.

Because it was not always possible to foresee needs, an infantry division and its attached tank battalion often had little or no prior joint training. This could lead to a lack of coordination. Combat is a poor

place for one unit to get to know the ways, styles, and idiosyncracies of the other.

In preparation for invasions, however, the infantry that would lead an assault and their tank support usually trained together. As the first independent tank battalion, the 70th was selected to be the first to undergo amphibious training with an infantry division, the 1st. Training was still in progress when Pearl Harbor was bombed on December 7, 1941.

As the only only tank battalion and infantry division with joint amphibious training, the 70th, the 1st, along with the 1st Marine Raider Battalion, were sent on a mission to Martinique on January 9, 1942. Control of this Caribbean island in our own backyard by pro-Nazi, Vichy France was intolerable. Seeing the force against him, the Vichy governor capitulated without a shot being fired.

In early March, the 70th and the 9th Infantry Division began training for "Operation Torch," the invasion of French North Africa. On November 8, 1942, B Company and the 47th Infantry Regiment landed at Safi, French Morocco, C Company and the 60th at Port Lyautey, French Morocco, and A Company and the 39th at Algiers, Algeria. Combat was over in a day except at Port Lyautey where it lasted three days.

The 70th was soon detached from the 9th, which meant A Company was alone and available in Algiers. It was sent to Tunisia in late December, 1942. The rest of the battalion set up a training school in Tlemcen, Algeria, to teach "Free French" cadres the use of M5 light tanks.

In Tunisia, A Company was attached to the "Free French" XIX Corps. Not only was there no prior training, but the company found itself providing tank support for French, Senegalese, and Ghoumier infantry, all speaking a different language and with different military traditions. Even worse, French commanders at first deployed A Company tanks as sentinels and mobile pillboxes, out ahead of infantry in exposed positions and ineffective for an assault. On another occasion, the light tanks were used as bait, parading in front of heavier German tanks to draw them within range of French big guns and the 75s of U.S. 601st T.D.s and British Churchill tanks. Such misuse of tanks ended only when the A Company commander, Atlee Wampler, insisted that he be involved in all planning when company tanks were employed. In time, the French and A Company developed a good, solid relationship which lasted until the end of hostilities on May 13th.

In Sicily, the 70th again supported the 1st Infantry Division. For the first time in combat, the entire battalion was together. Now, Lt. Col. John Welborn, battalion commander, was involved in all planning. He was highly regarded and a good friend of Brig. Gen. Theodore Roosevelt, Jr., 1st Division Assistant Commander. Relations and coordination between the 1st and the 70th were excellent throughout the campaign.

Light tanks had proved to have limited value. Sent to England to train for the invasion of France, the 70th became a "standard tank battalion" with three companies of 17 Sherman medium battle tanks, and one company of 17 lights, used primarily for screening, roadblocks or reconnaissance. Mediums had crews of five, lights of four.

Roosevelt, now in the 4th Infantry Division, was reputed to have said that for the invasion, the untried 4th would need the battle-tested 70th more than would the experienced 1st. Roosevelt prevailed, and the 70th was assigned to the 4th just prior to the invasion maneuvers, code-named "Exercise Tiger." Joint infantry-tank training was only for the landings, and only for a few days.

Yet on Utah Beach, the 4th immediately showed that tankers would be involved in planning tank-infantry operations. The 4th assigned Franklin Anderson and two radio men to land with engineers at H-Hour minus three minutes. As a 70th tank officer, Anderson designated for engineers places to blow holes in the seawall where tanks could best operate.

Four DDs (amphibious tanks) sank when their LCT hit a mine, but the other 28 DDs landed in time to support infantry across causeways over land inundated by Germans. C Company Commander John Ahearn and his regular Shermans protected both infantry flanks. D Company light tanks helped link scattered 101st Airborne troops on D+1.

Inland, the first of the hedgerows which dominated the Norman landscape were encountered. These were earthen banks perhaps six or seven feet high encrusted with bushes and trees bringing the total height to 10 or 12 feet. Each was a natural defense line protecting a farm field. Movement was from field to field, and infantry with tank support had to do it. It was a badly chosen place to conduct warfare, and high command had not told front line troops about hedgerows nor prepared anyone to fight in them.

It took individual iniative to find a way. As early as D-day, dozer tank commander Owen Gavigan and his temporarily assigned engineer tank driver learned to use the bulldozer type blade to push through hedgerows, making an opening for assault tanks to get into a field.

Once, Gavigan recalls, his dozer tank was the only tank in a field with a platoon or more of infantry. A good deal of small arms fire was coming in, so Gavigan used the dozer blade to build mounds of earth, enabling infantry to hold their ground until more help arrived.

It was in these conditions that the 4th and the 70th learned to work together. Tanks needed infantry protection or warning of anti-tank guns, panzerfaust (German bazookas), and heavier German tanks. The German Tiger and Panther exceeded the Sherman in both the power of the main gun and in armor thickness. One on one, the Sherman didn't stand a chance, and that is what happened as German tanks simply waited behind hedgerows for American tanks to come to them. Infantrymen needed the protection tanks offered, and especially the firepower of two machine guns (or sometimes a third firing out of the turret) and a 75mm cannon. Tanker Clarence McNamee believes the 4th and the 70th "were a perfect fit. Infantry would say what they wanted, but control was really between our platoon leader or company commander and an infantry officer. It was crucial that tanks work alongside infantry, in conjunction, not out in front and not behind."

Often, as in Normandy, a single tank battalion was insufficient to meet infantry tank needs. Then all or parts of a second independent tank battalion would be attached to an infantry division. When a single tank battalion sustained losses on the line day after day for prolonged periods, it was almost always understrength. The ratio of tanks to infantry did not allow tank companies or platoons to be alternated as frequently on the line and in reserve as was the case with infantry units.

Medium tank companies seldom saw one another during a campaign. Each was assigned to an infantry regiment. Even the three platoons of a company normally fought in different actions with a battalion or company. When a platoon was split, they were likely supporting a company or less. Single tank missions were conducted at the request of an infantry officer or noncom who would direct the tank to the target.

If the enemy was behind a hedgerow in unknown strength, Ed Gossler remembers, "We would spray it like hell with machine-gun and 75mm fire to keep the Germans down. I guess they were just as scared as we were and we had a lot of firepower!"

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Task Force Battle Drills

by Lieutenant Colonel Tim Reese, Major Matt Waring, and Major Curt Lapham

Most tankers associate battle drills with platoon level operations. They are a method for executing tactical tasks with a minimum amount of planning and reaction time. Upon contact with an enemy, a platoon leader or platoon sergeant immediately determines what must be done and makes a decision, and the platoon rapidly executes. The decision-making process at this level takes only as long as is needed to issue the order, "Action Right!" Becoming expert at executing battle drills requires time and repetitive practice on the part of the platoon, but can make the difference between victory and defeat on the battlefield.

Battalion task forces also face time constraints and must rapidly execute certain tactical tasks. Though planning time is greater than at the platoon level, it is never enough. Task forces routinely use too much of the available time in the decision-making process (DMP). The task force OPORD is often a collection of good ideas cobbled together by the staff to satisfy an O/C checklist. It is too long and disjointed to serve as a unifying and synchronizing device for the commander and his subordinate units. It is often based on a situational template of the enemy and not upon confirmed intelligence. Even when time is well used by the task force planners, units often fail because they haltingly execute the plan differently every time, never gaining the skill that comes with repetition.

"Action Right!" will not work as the DMP for a task force, but the process can be abbreviated and focused by the commander so the unit can rapidly plan, rehearse and execute its actions. Task force missions are more complex than those of platoons, but they can also be narrowed down to a small number that can be repetitively practiced. This article proposes a way to adopt the concept of battle drills to task force level operations to correct some of the failures frequently seen at the CTCs.

In the fall of 1998, the Steel Tigers of Task Force 1-77 AR, (2nd Bde, 1st ID, the Big Red One), were highly susceptible to the risks all battalions face at the CTCs. All five company commanders, the XO, and the commander were newly assigned to their positions and had neither planned an operation nor maneuvered together before. Only the S3 had been in position during the previous Combat Maneuver Training Center (CMTC) rotation. With less than three months before "going into the box" against the CMTC's OPFOR, 1-4 INF, we looked for a way to overcome some of our disadvantages. Task force level battle drills made the difference for 1-77 Armor.[1]

We foresaw three potential advantages to TF battle drills. First, they would save the commander and staff valuable time in the DDMP. Less time would be required to issue commander's guidance, to develop and issue warning orders, to develop the TF execution matrix and to synchronize the operations order (OPORD). Second, battle drills would also save the task force planning time and allow subordinate units to begin preparing for the mission before the OPORD was issued. Subordinate leaders could then begin their own planning; units could begin moving and rehearsing their own battle drills; CSS assets could begin their actions, etc. Finally, we expected battle drills to pay off during mission execution as key leaders of the task force, familiar with the battle drill, could quickly execute their part of the mission while staying within the commander's intent.

The process of developing these battle drills was as important as the drills themselves. We developed them over a period of two months during weekly "skull sessions." Task force leaders, from platoon sergeant on up, spent one afternoon each week developing each drill. The S2 began these weekly sessions by presenting his terrain analysis, enemy composition, and enemy courses of action for that mission. His analysis was based upon a thorough analysis of the terrain at the CMTC in Hohenfels, Germany. The S2 shop also spent significant time analyzing CMTC OPFOR doctrine and trends. The S3 followed with a possible TF organization and short discussion of key tenets of each mission.

At this point, either the commander, S3, or XO presented a possible tactical solution to the mission to start the discussion. Noncommissioned and commissioned officers then conducted a free-flowing discussion or debate about the merits of proposed solutions. Various solutions were developed on butcher paper as the discussion went on. The XO facilitated the discussion while the S3-Air recorded ideas and sketches for all to see. It took some finesse to focus the discussion without stifling the free flow of ideas from all ranks.

A key aspect of the process was including all of the TF attachments and not just the TF leadership. Not only did they get used to working with the battalion before showing up "in the box" to join us, but we got the advantage of their BOS-specific expertise in developing the battle drills. The commander and S3 kept the discussion from wandering too far from their concepts of warfighting. That concept included three major tenets: battle drills, decision point tactics, and recon pull tactics.

The enemy always has a "vote" in combat, a factor that many units ignore at their peril. Using the concept of decision point tactics,[2] we also built flexibility into each of our battle drills. Task forces must routinely begin the DMP with little or no knowledge of the enemy, save a situation template (SITEMP). Just prior to or during execution, units discover that the enemy isn't fighting according to the template and hence the task force plan is worthless. Task forces often fight the plan instead of the enemy, and lose, because they have planned no alternatives and/or could not coherently execute a poorly synchronized FRAGO.

Each of our drills had at least one branch that allowed the task force to react to an enemy that did not fight as expected. The base task force plan dealt with the most likely enemy COA, but

Task Force Battle Drill: Sample Execution Matrix for Movement to Contact

UNIT & BOS / PHASE	Initial Set Across LD	FP/FSE Battle			Advance Guard Battle		
ENEMY COA	1 CRP (1/2 mix) on 3 AAs	FP/FSE on AA North	FP/FSE on AA Center	FP/FSE on AA South	AGMB on AA North	AGMB on AA Center	AGMB on AA South
DECISION PT & CRITERIA	None	#1 - > 3 tanks on AA N	#1 - > 3 tanks on AA C	#1 - > 3 tanks on AA S	#2 - > 9 BMPs on AA N	#2 - > 9 BMPs on AA C	#2 - > 9 BMPs on AA S
FRIENDLY COA	"Tiger Prowl"	"Hold North"	"Hold Center"	"Hold South"	"Tiger North"	"Tiger Center"	"Tiger South"
Recon	Move with lead CO/TMs on each axis	Recon forward on Axis Sherman & Buford to find AGMB	Recon forward on Axis Grant & Buford to find AGMB	Recon forward on Axis Grant & Sherman to find AGMB	Lead D CO to AGMB; keep eyes on AGMB & locate MOD/AT PLT	Lead C CO to AGMB; keep eyes on AGMB & locate MOD/AT PLT	Lead D CO to AGMB; keep eyes on AGMB & locate MOD/AT PLT
TMA	Attack along Axis Grant from LD to PL Rhine; destroy CRP	Hasty D vic CP 1 to defeat FP/FSE	NC	NC	Continue hasty def to defeat AGMB fwd of PL Meuse	ABF vic CP 2 to assist TM B & defeat AGMB	Attack behind D CO from CP 44 – 47 – 50 to destroy AGMB
TM B	Attack along Axis Sherman from LD to PL Rhine; destroy CRP	NC	Hasty D vic CP 11 to defeat FP/FSE	NC	ABF vic CP 2 to assist TM A & defeat AGMB	Continue hasty def to defeat AGMB fwd of PL Meuse	ABF vic CP 31 to assist C CO & defeat AGMB
C CO	Attack along Axis Buford from LD to PL Rhine; destroy CRP	NC	NC	Hasty D vic CP 21 to defeat FP/FSE	Attack behind D CO from CP 3 – 6 – 9 to destroy AGMB	Attack from CP 4 – 7 – 10 to destroy AGMB	Continue hasty def to defeat AGMB fwd of PL Meuse
D CO	Follow on Axis Sherman as TF Reserve	NC	LOA is PL Thomas	NC	Attack from CP 4 – 7 – 10 to destroy AGMB	Attack behindC CO from CP 3 – 6 – 9 to destroy AGMB	Attack from CP 44 – 47 – 50 to destroy AGMB
FIRES	POF to TM B	Suppress FSE POF to TM A	Suppress FSE POF to TM B	Suppress FSE POF to C CO	Suppress AGMB POF to TM A	Suppress AGMB POF to TM B	Suppress AGMB POF to C CO
M/CM/S	Volcano move w/ Res. AVLM move w/ D CO	NC	NC	NC	Volcano to TM A AVLM to D CO	Volcano to TM B AVLM to C CO	Volcano to C CO AVLM to D CO
NBC	Smk move with Reserve	NC	NC	NC	NC	NC	NC
	Decon move with CTCP	Move to CP 25	Move to CP 35	Move to CP 45	BPT est. hasty decon site vic CP 25	BPT est. hasty decon site vic CP 35	BPT est. hasty decon site vic CP 45
CSS	CTCP& III/V Pkg. follow Res. on Axis Sherman	NC	NC	NC	NC	Move to Axis Buford vic CP 43	NC
	UMCP move on Axis Grant to CP 24	Vic CP 24	Vic CP 24	Vic CP 24	Vic CP 24 BPT move fwd to CP 44	Vic CP 24 BPT move fwd to CP 44	Vic CP 24 BPT move fwd to CP 44
C3	CDR w/ D CO	NC	NC	NC	CDR w/ D CO	CDR to C CO	CDR w/ D CO
	S3 w/ TM B	S3 to TM A	S3 w/ TM B	S3 to C CO	S3 w/ TM A	S3 w/ TM B	S3 w/ C CO
	TOC vic 123456	NC	NC	NC	TOC move to 234567	TOC move to 234567	TOC move to 234667

NOTE: This matrix demonstrates how a Task Force battle drill which uses Decision Point and Recon Pull tactics can be portrayed on a simple matrix as part of an OPORD. It does not represent a "tactical solution" to a specific situation nor does it fully cover all units and BOSs.

branches were developed to deal with less likely courses of action. The commander, S2, S3, and XO developed decision points (DP) and their associated criteria and tied them to each branch. During rehearsals the TF paid particular attention to these DPs and branches. We gave each branch of a plan a name or title that would be easy to transmit and understand on a crowded command net during the battle. Every leader knew that the branch to be executed would not be determined until the enemy disposition or actions were confirmed. Task force reconnaissance assets were directed to find the intelligence needed to execute one or the other branch.

The concept of recon pull tactics is the necessary complement to decision point tactics and was the other integral part of our task force battle drills.[3] Current MDMP doctrine locates most of the process before the OPORD is written and before the operation begins. Units spend too long in MDMP before the LD, plan no branches or sequels, and thus have no flexibility once the operation begins.

Recon pull tactics extend MDMP throughout the planning and execution of an operation. Recon pull uses knowledge gained by the reconnaissance fight to

literally "pull" the task force along favorable routes towards the enemy, a weak point, and/or the objective. The commander must focus reconnaissance assets, in space and in time, on those critical things he must know to make those decisions required by his plan. It ensures the unit fights the enemy as he really is, not the SITEMP the S2 developed 48 hours prior to LD.

The conduct of a battle is thus a product of multiple decisions made by the commander who selects branches of a base plan using actual knowledge of the enemy's actions gained by reconnaissance. The commander is assisted in making these decisions by the staff as it synchronizes the plan's branches during the DMP and tracks the battle during execution. The execution matrix in the TF OPORD then incorporates the decision support matrix into one product.[4] All this requires flexibility by leaders of the task force, timely and tightly focused reconnaissance efforts, and thorough knowledge of the task force battle drills.[5]

In separate sessions, the commander and staff met to form their own "battle drills" for the DMP. The purpose of these sessions was to develop an abbreviated decision-making process to support each of the battle drills. The commander's marching orders for the staff was to minimize planning time and maximize rehearsal and subordinate unit preparation time. Our process was commander driven, not staff driven. This limited time for the staff to present "good ideas" to the commander or to develop the "perfect" plan, but it significantly reduced time spent in the DMP. In these sessions we consciously modified and abbreviated the DMP and came to a clear understanding of the responsibilities of the TF commander and the staff.

We reaped some unexpected benefits from these two processes. First, they forced us to break from the day-to-day routine of running a battalion and focus on warfighting (something for which there never seems to be enough time). Secondly, the staff and subordinate commanders learned the "heart" of their commander regarding warfighting and the commander better understood his staff's capabilities. That mutual understanding proved beneficial when one or the other was temporarily unavailable during the rotation. Thirdly, the executors of any plan, from platoon sergeants to unit commanders and attached platoons, became familiar with the commander's ideas about warfighting. Finally, since the development of the battle drills was a group process, the need to teach or learn the drills was minimal; they were already embedded in key leaders' minds.

TF 1-77 developed five TF battle drills to prepare for our rotation to the CMTC, two for the deliberate attack, one for the movement to contact, and two for the deliberate defense. Each drill included a task organization, a mission statement, a commander's intent, a scheme of maneuver, a concept of logistics and an abbreviated DMP. We used a concept sketch with each battle drill to help visualize the plan. The battle drills gave us about a 60 percent to 75 percent "solution" to the plan. In effect, each was a mini-OPORD that we could quickly tailor, using METT-T, to a particular tactical situation that we expected to face during our rotation.

Some leaders were concerned that the battle drills were focused too narrowly on the specifics of a CMTC rotation and that they would not be useful at other times and places. The CMTC battlefield is much different from the NTC battlefield, to say nothing of Bosnia, Korea, or Iraq. Though our focus was indeed narrow, we decided that our only known "war" was going to be at the CMTC, against the 1-4 INF OPFOR, and in fall weather. To that end, we focused our training on a specific enemy, in a specific area of operations, at a specific time of year. We would do the same if notified to deploy for a real-world mission; to not do so seems foolhardy. Additionally, many principles and the development process are applicable no matter where we might fight.[6]

We rejected tasking specific companies and platoons to train on specific tasks in our battle drills. For example, A Company could have been specified as the breach unit in the deliberate breach with B Company as the support by fire unit and C Company as the assault unit, etc. This might have generated a higher level of proficiency among subordinate units of the TF on certain tasks. A unit that knows it will always be the breach company in the attack and the counterattack company in the defense can narrow its METL and training plan. The risk, however, is loss of flexibility at the company and TF levels. We did not do this prior to the rotation due to uncertainty about our task organization and to maintain flexibility. It might, however, be well suited to other times and places.

We tested and refined the drills during multiple computer simulation exercises prior to beginning our rotation. Of course, no simulation can tell you if a plan will succeed or fail, but they did give us the opportunity to practice, refine, and become more familiar with our drills. Luckily the CMTC process puts a unit through two different, 2-4 day simulation exercises 1-2 months prior to a unit's rotation.[7] Once we were satisfied with each drill, it became part of our TACSOP. The TF TACSOP was not new reading or a BDU pocket weight; it was truly a combat multiplier.

In the limited time we had available, the TF focused its training to suit the battle drills. Scouts could focus their training on the kinds of reconnaissance missions they would be called upon to execute. The Fire Support Officer knew the commander's intent for fires in each type of mission and could develop his plan accordingly. The attached engineer company commander knew his role in the deliberate breach. Tank and infantry companies and their platoons could practice their own battle drills knowing which ones would most likely be used.

These battle drills proved to be very successful during our CMTC rotation. Naturally, none of our plans looked exactly like the battle drill from which it was derived. To those of us in the TF, however, each plan's heritage was evident. The DMP gave subordinate units time to prepare for each mission. More than once, key leaders were killed, yet the battle drills worked as subordinate leaders took charge and operated within the commander's intent. Attached units were smoothly integrated into the TF and performed their tasks well. The commander was able to make sound decisions based on actual knowledge of the enemy and see the task force quickly execute well synchronized branches of the base plan.

Upon receipt of the initial warning orders from brigade, we determined which of our battle drills would be appropriate to the follow mission. Our WARNO #1 was then issued. Once the brigade OPORD was received, the TF S2, S3 and commander would huddle together, select a battle drill, and begin planning. The commander's initial guidance, usually issued over FM radio, went something like this: "We are conducting a defense in

sector, use the Tiger Strike battle drill against the enemy's most likely COA. Develop one friendly COA, but develop two branches to deal with two less likely enemy COAs. Task organize per the battle drill with A Company in the north in an economy of force, B TM as the counter recon force, D TM defending the BP in center sector, and C Company as the CATK force from the south."[8] I'm enroute to the TOC, ETA 30 minutes. Brief me on mission analysis 30 minutes after my arrival."

After the mission analysis briefing, the commander would issue his commander's intent and planning guidance by BOS, to further define his concept for the next mission. Warning order #2 was issued 30 minutes after synchronizing the plan. It would specify the task force battle drill to use for the upcoming mission and set the task organization. Each element of the TF then had a pretty solid idea of the tasks it would be called upon to execute and could begin to prepare for the upcoming battle. OPORDs were easier and faster to produce. They were also easier to understand as commanders were already familiar with the concepts underlying the plan. The battle drill concept also helped focus TF rehearsals on critical events instead of every detail of the operation.

The concepts of Recon-Pull and Decision Point Tactics, embedded in our battle drills, facilitated rapid and accurate decision making by the commander in a plan with multiple branches. Occasionally, a branch of the OPORD was eliminated, or confirmed, prior to the task force rehearsal if the results of the recon fight had already come in. Other times, those decision points were not reached until after the rehearsal but before we crossed the LD. In the movement to contact, branches were not decided upon until we gained knowledge of the enemy actions during the battle. In the later two cases, a simple and brief call over the command net by the commander such as "Scouts confirm Axis Blue is lightly defended, decision point three has been reached, execute branch Tiger North," was enough to redirect the TF towards success.

While battle drills are normally associated with tank platoons, the Steel Tigers of 1-77 AR adopted the idea to the battalion level operations with success. TF battle drills are very much commander, not staff, driven. They are suited to a particular enemy and battlefield. The process of developing battle drills also engages the leadership of the task force and aids in perfecting their execution. The modified DMP allows the TF XO to focus the staff in support of the commander's intent and give subordinate units the time they need to plan and prepare.

With unlimited time, perfect intelligence, an expert staff, and units trained to a razor's edge, better solutions to tactical missions can usually be found and executed. When the enemy SITEMP can be confirmed before the battle begins and the enemy sits passively by as we execute our plan, the more traditional DDMP with a single "best" COA might work. On a time-constrained battlefield, and against a thinking enemy, this doctrine needs some revision. Task force battle drills, based upon recon pull and decision point tactics, are such a revision.

Notes

[1]The stimulus for TF battle drills originated in the fertile mind of COL Patrick J. Flynn, then commander of 5-77 AR, 3rd Bde, 1st AD, Mannheim, Germany (later 1-32 AR, 3rd Bde, 2nd ID, Ft. Lewis, Wash.), from 1993 to 1995.

[2]CPT Jim Crider and LTC Pete Palmer, "Decision Point Tactics: Fighting the Enemy, Not the Plan," *CTC Quarterly Bulletin*, No. 97-4, Jan 97, Ft. Leavenworth, Kan.: Center for Army Lessons Learned, 1997, pp. I-1 to IV-24.

[3]COL William Betson, Doctrine Division, DTDD, USAARMC, "Reconnaissance Pull." Seminar taught at the Armor Pre-Command Course in March 1998, Ft. Knox, Ky.

[4]Crider and Palmer, "Decision Point Tactics," p. IV-15.

[5]BLUEFOR units at the CTC units are usually defeated by the OPFOR using the principles of recon pull and decision point tactics. It seems that 15+ years of being soundly beaten at the hands of the OPFOR ought to tell us something besides the fact that we need more training!

[6]When this article was submitted to *ARMOR* for publication, 1-77 AR was again developing battle drills as it prepared for deployment to Kuwait for Exercise Intrinsic Action 99-02 this spring.

[7]This process should preferably be done earlier, to allow more time for refinement, but we did not have that option.

[8]The "Tiger Strike" battle drill included one company defending in sector, one company defending a BP, one company as a CATK force, and one company conducting the counter-recon mission, then joining the CATK force.

MAJ Matt Waring graduated from VMI in 1983 with an Armor commission. He served with 2-33 Armor in 3AD as an armor and mortar platoon leader and as a staff officer and with 3-32 Armor in 1CD as a company XO, assistant S3 and company commander. He has also served as a company commander for the Radcliff Recruiting Company, as a senior armor trainer to the 155th Bde of the Mississippi National Guard, as an armor evaluator for the Operational Evaluation Command, as the chief of operations and plans, G1, 1st ID and chief of operations, G3, 1st ID. A graduate of AOB, AOAC, and CGSC, he is currently the S3, 1-77 Armor in Schweinfurt, Germany.

MAJ Curt Lapham was commissioned in Armor in 1983 from Michigan State. He served as a platoon leader and company XO with 3-64 Armor in Schweinfurt, Germany; as commander, C Trp, 1/12 Cavalry and squadron XO, 2/12 Cav at Ft. Knox, Ky.; as commander, A Co, 2-35 Armor at Ft. Carson, Colo.; and as G3 planner for 1st ID and battalion XO of 1-77 Armor in Schweinfurt. Currently, he is the S3, 2nd Brigade, 1st ID.

LTC Tim Reese currently is the commander of 1-77 Armor "Steel Tigers," 2nd Bde, Ist ID in Schweinfurt, Germany. Previous assignments include company XO, 1-8 Cav, 1st CD at Ft. Hood, Texas; commander, D Company and HHC, 4-67 AR, 3AD in Friedberg, Germany; S3 and XO of the 1-32 AR, 2nd ID, Ft. Lewis, Wash.; and operations officer in the Operations Directorate of the U.S. European Command in Stuttgart, Germany. The 1-77 AR Steel Tigers are currently deployed to Kuwait for Operation Intrinsic Action 99-02.

Soviet and German Advisors Put Doctrine to the Test:

Tanks in the Siege of Madrid

SECOND OF TWO PARTS

by Dr. John Daley

Initial Operations

Despite the merits of Mikhail N. Tukhachevsky's doctrinal guidance, as embodied in the Soviet Temporary Field Service Regulations *P[olevoi]U[stav]-36*, and the technological lead held by the Soviets in tank design, the Krivoshein Detachment's deployment to Republican Spain in the autumn of 1936 was to prove premature: Arriving at Cartagena on 16 October, Lieutenant Colonel Semyon M. Krivoshein and his badly understrength advisory team had only ten days to produce an operational tank unit. Unlike the Nationalists, who received instruction from German Army volunteers — Wilhelm Ritter von Thoma's *Imker Drohne* group — the Republic's poorly trained Popular Militia was on the strategic defensive around Madrid and giving ground daily. On 26 October, the senior Soviet advisor ordered Krivoshein to send at least some of his tanks forward.[1] Because less than 40 Spanish trainees were ready, only 15 tanks went; Krivoshein would serve as their liaison with the supported Republican infantry brigade while a subordinate, Captain Paul Arman, commanded. The arrival of Arman's company in the Madrid sector two days later provided a badly needed boost to Republican morale. The Republic's Premier announced it over the radio:

> *The time has come to deliver a death blow... Our power of taking the offensive is growing. We have at our disposal a formidable mechanized armament. We have tanks and powerful airplanes. Listen, comrades! At dawn, our artillery and armored trains will open fire. Immediately, our aircraft will attack. Tanks will advance on the enemy at his most vulnerable point.*[2]

Fortunately for the tank crews, no more specific warning followed. In the estimation of General Jose Miaja, who commanded the Republic's Central Front, the most vulnerable point was the village of Torrejon de Velasco, which lay 16 miles south of the capital astride the Toledo-Madrid highway — and rebel general Jose Enrique Varela's axis of advance. Unfortunately, because of poor communications between sector headquarters and the assault element's assembly area, effective coordination was impossible. An artillery preparation commencing at 0630 was to be followed immediately by the advance of Captain Arman's tanks. Infantrymen of Colonel Enrique Lister's brigade were to follow 200 yards behind the tanks, and plentiful air support was expected. Lister's Chief of Staff, Captain Ramon Sender, later recalled, "Everything seemed to us easy and brilliant, and the thirst for victory infected all of us."[3]

Then, at zero hour, all remained silent. Fifteen minutes later the barrage began, but by then it was too late to worry about what had gone wrong. The tanks were passing by the brigade command post a few at a time en route to the fighting, and Sender could only "[deduce] from the noises in the field how the operation was proceeding." During the next few hours, his telephone conversations with an even more confused sector commander provided a few clues, all of them ominous. Although higher headquarters was expecting an attack on Torrejon, reports from the front indicated that Lister's brigade and its tanks were now moving on Sesena, a full eight miles to the southeast of the intended objective, in accordance with an earlier, now superseded, plan. If the reports were true, the air and artillery support, so sorely lacking in previous Republican operations, would likely materialize in the wrong place.[4]

Meanwhile, Arman and his T-26s crossed the line of departure, leading the infantry southwest toward Sesena. As in most World War I tank-infantry actions, the tanks left the walking riflemen far behind well before either had reached the objective. Arman, realizing that his company had escaped enemy detection, continued to advance, leading his company down a narrow winding street and into the village square. There, a company of Nationalist infantry was assembling and, fortunately for the tank crewmen, it was equally surprised.

Mistaking the Soviets for Italian allies, the rebels held their fire and the correct assessment came too late. Hatches slammed, machine guns stuttered, and high velocity 45mm cannons fired point blank into the mass of stunned victims. Many of those not shot were crushed while attempting to escape.[5]

So began the war's first tank battle, a tactical and operational miscue in which the attackers were initially spared by equally glaring errors on the other side. Arman pressed his advantage. Moving westward, the advancing tanks shot up a Nationalist convoy and then charged into the village of Esquivias, where a cavalry screen of the Moorish Legion finally intercepted them. As armor and horseflesh squared off in a network of dusty village lanes, Lister's infantry was still fighting its way toward Sesena, several miles to the rear. One company attacked the wrong objective, sustaining additional casualties from friendly artillery fire in the process. Even those headed in the proper direction were too far behind Arman's tanks to gain any advantage, and Krivoshein's attempts to re-form them were futile.[6]

By late morning, the unsupported armored column had become scattered as

well. Two tanks continued the advance to Torrejon, but these were easily destroyed by a field expedient as effective as it was simple — wine bottles filled with gasoline. Also lacking infantry support, the other T-26s turned back at Esquivias but returned via the same road through Sesena, now reoccupied by Nationalist infantryman. From the windows and rooftops came a flurry of hand grenades as the single column passed by. Even the Russian "tortoises" were fallible.

The tactical shortcomings of the abortive Sesena-Esquivias-Torrejon operation were recognized by few save those who had made the attack. For the embattled population of Madrid, even a temporary success was noteworthy, and Republican newspapers circulated inflated accounts on 30 October — the day Canaris delivered his ultimatum to Franco.[7] Krivoshein's assessment of the tanks' debut was more balanced:

> *The main failure was in the area of tactical coordination between tanks and infantry. Neither the soldiers nor commanders of the Republican army mastered the use of tanks, staying with them and developing their success. The tankers, for their part, forgot the infantry because they had been overcome by their desire to smash the enemy; the tank units often failed to orient properly on the terrain.*[8]

Unfortunately, identifying the problems was easier than solving them. Prior to the next attempt to penetrate the Sesena-Torrejon line, scheduled for 3 November, participating infantry battalion commanders received a briefing on tank-infantry coordination at Krivoshein's "request." They too were aware of the lack of cooperation which had plagued the 29 October attack and assured him that there would be no recurrence. But concerns remained: Infantry commanders had no proof that the T-26s would remain within supporting distance of their troops once the shooting started, and the tankers worried that they themselves would be "sacrificed too freely" in the event of stiff resistance.[9] Krivoshein now commanded four tank companies and directed all to "act only in strict cooperation with the infantry." That meant staying no more than 300 to 500 meters ahead of it, no matter how light the resistance appeared at any given moment. In this way, the tanks would be able to double back on enemy machine guns that had escaped detection. The tanks were also to stay out of villages, where they had recently proven most vulnerable to grenades and other makeshift antitank measures. Instead, they would surround built-up areas and reconnoiter by fire from ranges of 300 to 500 meters while the infantry advanced.[10]

Despite Krivoshein's efforts, strict control measures proved much easier to issue in the briefing tent than to obey on the battlefield. As Captain Fauri's 1st Tank Company led a battalion of Republican infantry toward Torrejon on the third, Nationalist field artillery opened fire. The first few rounds were short, but as the fire grew more accurate, infantrymen scattered and tank drivers accelerated, quickly exceeding the 500 meter maximum interval. Without friendly counter-battery fire or supporting infantry to storm the enemy's forward positions, Fauri's tanks could advance no farther. Nor could he communicate with them, as only command tanks carried radios.[11]

That afternoon, the Republican infantry finally caught up and the objective fell, but subsequent preparations for the inevitable counterattack proved inadequate. Neither Fauri nor the infantry battalion to which he was attached had placed sentinels and, under cover of an overcast night, a *tabor* of Moorish infantry approached. Undetected until the first of their hand grenades exploded among Torrejon's defenders, the Moors precipitated a sudden and disorganized retreat. The commander of the accompanying infantry battalion ordered a withdrawal without notifying Fauri. Meanwhile, Fauri's 3rd Section was still guarding the village's western approaches, isolated from the remainder of the company by a mile of fog-shrouded enemy territory. Early on the morning of 4 November, when Fauri elected to follow the infantry in retreat, his lost section was left to face another onslaught of Moorish Legion grenadiers. Only one vehicle escaped.

With the failure of the second Sesena-Torrejon operation, other Republican units on Madrid's southern outskirts retreated northward as well. During 5 and 6 November, forward elements of Krivoshein's group underwent badly needed maintenance, only to be thrust back into the line wherever the hastily trained *Milicia Popular* was faring most poorly. However sound theoretically, the Soviet doctrine of mass and offensive was of little use to a tiny cadre of mechanization specialists struggling with incompetent supporting arms against an unbreakable siege.

Fortunately for the Republicans, their disadvantages were at least partially offset by geography. Not only did Miaja's command enjoy interior lines of communication but, as it collapsed inward toward the Spanish capital, its frontage shrank. While the gaps between front-line strongpoints grew smaller, the militiamen gained badly needed experience and, when fighting from improved positions, they suffered fewer casualties. By 7 November, Krivoshein noticed a change: whenever tanks were present, morale improved. Moreover, even when counterattacks failed to meet the High Command's expectations, tank-infantry coordination at the tactical level was better.[12] Meanwhile, Miaja's Central Front force was growing daily with the piecemeal arrival of units from the east and, by mid-month, it was no longer delaying but defending.

During the remainder of November, Krivoshein's tank companies continued to shore up Madrid's defenses. Each usually supported an infantry battalion of the all-Communist 5th Regiment in operations fought on poor tank terrain for minor tactical gains. Although this was far from the deep battle that Triandafillov and Tukhachevsky had envisioned, the T-26s were nevertheless serving in the role assigned them by Soviet field regulations — the support of non-mechanized infantry. Furthermore, despite numerous post-war commentaries to the contrary, important lessons were learned. On the 13th, the tanks attempted unsuccessfully to spearhead an assault against a Nationalist-held monastery atop Cerro de Los Angeles, eight miles south of Madrid. Confined to a single road by steep hillsides, the T-26s lost their freedom of maneuver and two were easily destroyed by 37mm antitank guns emplaced near the summit. Those crews lucky enough to close with the objective found that their 45mm guns were not powerful enough to penetrate the monastery's thick stone walls, and a subsequent barrage by supporting artillery failed also. There was no success to exploit, and the tankers remained subordinate to infantry commanders, engaging enemy machine guns whenever Republican storming parties became pinned down. After several attempts, each no more successful than the last, the attackers gave up.[13]

For tanks supporting infantry assaults by direct fire, a more powerful main armament was needed, yet many Republican soldiers were still living at day's end because the 45mm guns had been more than a match for machine gun emplacements in front of the objective. The wear and tear of combat on the equipment was also problematic. By 17 November, less than three weeks after arriving at the front, Arman's company had lost half of its original tanks to breakdowns and enemy action. Krivoshein not only ordered its

withdrawal for a complete refitting, but arranged for a new maintenance facility to be established over three hundred kilometers closer to the front.[14]

The two replacement companies, manned primarily by Spaniards, also found themselves in less than ideal tactical circumstances of General Miaja's making. From the 18th to the 22nd, they fought in the narrow streets of University City, on Madrid's northwestern outskirts. Serving again in the short range infantry support role, the T-26s proved unusually easy targets for 37mm antitank and direct fire field artillery. In an attempt to reduce his losses, Krivoshein prepared — without authorization — to reposition the tanks on more open ground.[15] Meanwhile, however, Miaja planned a limited counteroffensive to straighten the Republican lines. The tanks would thus fight on unfavorable terrain yet again. The new setting was Casa de Campo, a hilly heavily wooded park on Madrid's western perimeter. When the operation commenced on 1 December, Krivoshein was determined that this time his tanks would not get too far ahead of the supported infantry brigade. At zero hour, he held all 32 in reserve, and did not plan to release them until the first objective had fallen. But when the infantry failed, Krivoshein committed them anyway. His plan had seemed sound before zero hour, but desperate requests for support could not be ignored once that plan had failed. As at Cerro de Los Angeles and University City, the T-26s were road-bound and their gains, temporary.[16] On the 6th, when General Pavlov took direct control of Republican tank operations, the character of those operations had already been decided; despite the theoretical promise of deep battle, the NPP, or short range infantry support mission, was now far more urgent.

Early German combat experiences in Spain were even more frustrating. Although the Nationalists held the initiative in late 1936, their Mark Is, often under Spanish command, never exploited it. Nor would German leadership have made a strategically significant difference with only four 15-tank companies in service. Like the enemy's T-26s, the *panzers* were employed in close conjunction with non-mechanized infantry formations whose training in combined arms operations had been brief.

Franco's loss of the strategic initiative was not due entirely to Miaja's effective leadership; Canaris's 30 October ultimatum had indeed been warranted. Not only was the Nationalist advance on Madrid uncoordinated, but the Generalissimo had ignored indications of Republican intent throughout the summer. German consuls stationed in Republican-controlled Mediterranean ports had informed the Nationalists that their enemies were unloading tanks and airplanes under cover of darkness.[17] Even when Republican authorities had failed utterly to conceal their plans, no advantage was taken; the premier's radio broadcast on the 28th was only the most recent in a string of missed opportunities. Franco's subsequent willingness to meet German demands was thus doubly important in preventing another near disaster like Sesena.

Luckily for the Republicans, Canaris's admonitions to Franco had not yielded complete results by mid-November. When the *panzers* fell upon Madrid's southern defenses at Getafe on the fourth, one observer noted that they appeared to fire without aiming. Although their objective — Madrid's principal airfield — was eventually taken, the tanks continued to fare poorly. On the 7th — the day that Krivoshein would later identify as the turning point for Miaja's defenders — Republican militia *dinamiteros* destroyed the battalion commander's tank. Searching the wreckage, the tank killers found a set of orders outlining the rebels' upcoming push into the Casa de Campo. This soon ended up on Miaja's desk and, unlike Franco, Miaja heeded the warning. By the following morning, the threatened sector had been reinforced and, despite concentrated artillery support, successive waves of Moroccan and Spanish infantry were handily neutralized by well-placed machine guns.[18]

Frustrated by defenses which he had expected to crack by 8 November, General Varela agreed with Franco that the main effort should be shifted to Madrid's supposedly more vulnerable western and northern approaches. At dawn on 3 January, the rebels attacked from the southwest with four brigades totaling 17,000 infantry and cavalry. Driving north, the force severed a Republican supply line to Madrid the following day but, on Varela's right, the advance was held up at Pozuelo de Alarcon, only seven miles from the capital. There, attacking brigades of Colonels Francisco Garcia Escamez and Eduardo Saenz de Burruaga encountered the first Republican reinforcements to arrive from Madrid and a sharp meeting engagement ensued.

Bypassed and cut off, Pozuelo's defenders went to ground and held out. On the 5th, Varela again struck with his right wing. This time, in keeping with Canaris' 30 October ultimatum, Thoma — not a Spanish trainee — commanded the tanks.[19]

The operation began as planned. Once tactical air superiority had been gained, the first echelon of Mark Is advanced under the supporting fire of self-propelled artillery followed by infantry formed in line of company columns, a second wave of armored vehicles, and more infantry. But the defenders had cover; the hills of this sector were dotted with numerous summer villas and their walled gardens.

Furthermore, Miaja had seven miles of this terrain between Pozuelo and Madrid, and was willing to trade space for time. The *Commune de Paris* battalion delayed grudgingly from one stone wall to the next, and the situation was further complicated by the surprise appearance of a squadron of Soviet BA-10 armored cars. Equipped with short recoil 37mm cannons, the 5.2-ton vehicles could easily destroy Mark Is at ranges of under 500 meters and, in the course of the fighting around Pozuelo, Thoma lost over a dozen tanks to them. However, the armored cars ultimately proved incapable of spearheading an effective counterattack and, when Pavlov's T-26s led the XII International Brigade forward on 11 January, they, too, were unable to gain much ground. By the 15th, when both sides again dug in, their positions had changed little.[20]

Far more important from Thoma's perspective were the results of tank-versus-tank and armored car-versus-tank engagements around Pozuelo, both of which favored Soviet vehicles. Nor were these confrontations anomalous. When the Nationalists again shifted their main effort to the south of Madrid in early February, the Mark Is met a similar fate. Operating against initially disorganized defenses in the Jarama sector, they proved effective enough in the close support of infantry, but only until Pavlov's T-26s arrived.

The German response to these setbacks exposes the fallacy inherent in Miksche's "Spanish Laboratory" thesis: Thoma directed *Imker Drohne* personnel to avoid engagements with Soviet tanks whenever possible, and increasingly limited them to instructional duties.[21] Spaniards commanded the tanks in battle as they had before Thoma's arrival and not until the war's closing months would those tanks participate in a strategically decisive offensive. By that time, Republican foreign assistance — and hope — had fallen to fatal levels. Tank-versus-tank engagements, where they did occur, continued to favor the Soviet tanks but, of seven hun-

"Despite the personnel turnover rate and small numbers, however, the tank's great potential as a close support weapon for non-mechanized infantry assaults became apparent, and the yet unfulfilled promise of independent operations did not make this less so."

dred sent to Spain, few remained operational in 1939.

Lessons Learned but Forgotten

Like their better known successors, Arman and Krivoshein survived the Spring 1937 Purge to command tank formations in the next war. Arman died in August, 1943, while commanding a tank division on the Volkhov Front and was posthumously designated a Hero of the Soviet Union.[22] Krivoshein eventually rose to the rank of lieutenant general, a noteworthy accomplishment when one considers his close associations with both Tukhachevsky and the formulation of *PU-36*. In September, 1939, when he represented the Soviet Union in negotiations over the partition and occupation of Poland, his German counterpart was none other than Heinz Guderian. Thoma went on to succeed Erwin Rommel at the head of the *Afrika Korps* and was captured at El Alamein.

During the Spanish Civil War, none of these men managed to reconcile completely the theory of armored warfare with its practice. Moreover, when Pavlov succeeded Krivoshein in December, 1936, that fundamental disparity had already been amply demonstrated. Tukhachevsky had argued that no modern army could destroy a modern enemy force without massive armored concentrations, but far too few of his 7,000 tanks were on hand in Spain to verify that hypothesis. Less fixated on sheer numbers than was Tukhachevsky, Guderian nevertheless emphasized the importance of concentration, a requirement that Thoma's little force could never have met with the number of tanks available.

Miksche's argument to the contrary notwithstanding, tank operations in the Spanish Civil War and World War II were qualitatively as well as quantitatively different, and the differences affected both sides adversely. The turnover rate among cadre members mattered as well. Shortly after Pavlov assumed command in December, 1936, a number of his combat veterans, including Krivoshein and Arman, were sent home rather than retained long enough to impart their hard-earned knowledge to inexperienced replacements. As a consequence, newly arriving battalion commanders, including Konev, Rokossovsky, and Malinovsky, repeated the tactical errors of October. Meanwhile, Thoma remained with the *Imker Drohne* group, but served increasingly as a chief instructor and advisor.

Despite the personnel turnover rate and small numbers, however, the tank's great potential as a close support weapon for non-mechanized infantry assaults became apparent, and the yet unfulfilled promise of independent operations did not make this less so. The Soviet experience also indicates that tanks, although purpose-built offensive weapons, were often a front commander's most effective stopgap, particularly in the absence of reliable artillery and air support; they were mobile enough to appear at any threatened point and well enough armed to make a crucial difference once there. The positive psychological impact of even a single T-26 company on the embattled defenders of Madrid was understood by both sides. It mattered little that neither Tukhachevsky nor Guderian had intended tanks to serve as crutches for a collapsing army.

Forced by a strategic *fait accompli* to support the infantry, both Thoma and Krivoshein quickly learned that intensive tank-infantry training was even more important than previously recognized. Of the senior Nationalist commanders, only Varela showed any willingness to cooperate in such a scheme, and that cooperation was limited by Franco's overall influence. Similar preconceptions held sway among Republican generals and, had they not, another more basic problem would have remained: the strategic initiative was rarely theirs. After mid-1937, the Republic faced an ever-deteriorating situation. Battleworthy infantry formations could rarely be taken out of the line for special training and, as those formations grew smaller, the employment of T-26 and BT-5 battalions as defensive fire brigades became more frequent. Under these circumstances, full preparation rapidly became an unaffordable luxury.

Intensified combined arms training proved equally crucial later in the war, when armored breakthroughs and exploitations were attempted on narrow fronts. In March, 1937, road-bound Italian tankettes outran their accompanying infantry north of Guadalajara and fell easily to Republican countermeasures. The most noteworthy Republican effort, at Fuentes de Ebro in October, also failed in large measure because the accompanying nonmechanized infantry had not practiced with the tanks beforehand.[23] This deficiency, when exacerbated by poor coordination of artillery and air support, loomed large no matter what the tanks' mission.

Unfortunately for both German and Soviet forces, the above lessons had to be relearned during World War II. Although *panzer* divisions and tank armies were devoted to independent, strategically decisive mechanized operations, both sides used fully armored and tracked assault guns in the more conventional support role. These technological makeshifts — the *sturmgeschutz* and *SU* — did not appear until 1940 and 1942 respectively, even though the need for such large caliber direct fire weapons had been amply demonstrated at Cerro de Los Angeles in 1936.[24] The tank's need for infantry protection — even in independent mechanized actions — was proven with equal clarity. Arman's attack on Sesena, although hardly independent by design, failed because that protection was lacking. At Guadalajara and Fuentes, the riflemen who rode into combat still fought on foot, but even this lesson was apparently forgotten. Had it been remembered, no reconfiguration of the *panzer* division would have been necessary after September, 1939. Indeed, several such reorganizations took place and, each time, the ratio of tanks to *panzergrenadier*s decreased.[25]

When considered in their true perspective, rather than in hindsight-aided assessments of later German successes against France and the Soviet Union, the opening tank actions of the Spanish Civil War appear neither as flawless manifestations of later *blitzkrieg* doctrine nor as unqualified indications that *PU-36*'s long range independent operations had been a bad idea. They remind us instead that the most successful tactical solutions often begin as local responses to local conditions, and that theories developed during peacetime in the higher echelons have ultimately to be tested in battle at the lowest. Some successors to Thoma and Krivoshein struggled to discover the

Two BT-5 tanks destroyed in the battles near the Ebro River in 1938.

same solutions anew while others mistakenly applied them on the wrong scale. Nevertheless, the solutions themselves remained valid.

Notes

[1]Krivoshein, "Tanquistas Voluntarios Sovieticos en la Defensa de la Madrid," in N.N. Voronov, *Bajo de la Bandera de la Espana Republicana: recuerdan los voluntarios sovieticos participantes en la guerra nacional revolucionaria en Espana* (Moscow: Editorial Progreso, 1971) p. 325. Originally published as "Tankisty Dobrovoltsy," in Voronov, *Pod Znamenem Ispanikoi Respubliki: 1936-1939* (Moscow: Nauka, 1965).

[2]Premier Francisco Largo Caballero, text reprinted in *Solidaridad Obero*, 30 Oct 1936, quoted in Manuel Aznar, *Historia Militar de la Guerra de Espana*, vol 2 (Madrid: Editora Nacional, 1958), pp. 455-6.

[3]Ramon Sender, *Counterattack in Spain* (Boston: Houghton Mifflin, 1937), pp. 217-220; quote, p. 218. General accounts of the 29 October operation are found in Juan Modesto, *Soy del Quinto Regimento: notas de la guerra de Espana* (Paris: Librairie du Globe, 1974), pp. 113-114; Enrique Lister, *Nuestra Guerra* (Paris: Coleccion Ebro, 1966), pp. 80-83; I. Batov, in Voronov, ed. *Bajo de la Bandera*, pp. 281-284. A more detailed account, which notes the role played by mistaken identity in the initial engagement is found in Mikhail Koltsov, *Diario de la Guerra de Espana* (Paris: Ediciones Ruedo Iberico, 1963), pp. 161-164.

[4]Sender, p. 219. Compare this account with Lister's less agitated version in *Nuestra Guerra*, pp. 81-83.

[5]Koltsov, pp. 162-3.

[6]Ibid.; Lister, pp. 80-83; Modesto, pp. 113-114; Krivoshein, pp. 326-7.

[7]Canaris, quoted in Peter Elstob, *The Condor Legion* (New York: Ballantine, 1973), p. 107.

[8]Krivoshein, pp. 326-327.

[9]Ibid., pp. 328-329.

[10]Ibid., pp. 329-330.

[11]Ibid., pp. 330-332.

[12]Ibid., p. 333. General accounts of the Republicans' retrograde from the Sesena-Esquivias-Torrejon line are found in Lister, pp. 81-7; Sender, pp. 234-250.

[13]Krivoshein, pp. 334-5.

[14]Ibid., pp. 336.

[15]Ibid., pp. 336-7.

[16]Ibid., pp. 337-8.

[17]See, for example, telegram nos. 399 (29 Sept.), 407 (30 Sept.), and 690/259758-61 (16 Oct.) from Charge d'Affaires Hans Voelckers, in Alicante, to *Deutsches Auswartigesamt*, reprinted in United States. Department of State. Documents on German Foreign Policy, 1918-1945: from the archives of the *Deutsches Auswartigesamt*, series D vol. 3, *Germany and the Spanish Civil War, 1936-1939*, pp. 100-102.

[18]The compromise of Nationalist operational plans is noted in Voronov, p. 89.

[19]Krivoshein, pp. 338-339.

[20]Kenneth Macksey, *A History of Armored Fighting Vehicles* (New York: Scribners, 1977), p. 91.

[21]Manfred Merkes, *Die Deutsche Politik im Spanischen Burgekrieg, 1936-1939* (Bonn: Ludwig Rohrscheid, 1969), pp. 67-68; Werner Beumelburg, *Kampf um Spanien: die geschichte der Legion Condor* (Oldenburg: Gerhard Stalling, 1942), p. 36.

[22]Rodion I. Malinovsky *"Torbellinos de ira en Espana,"* in Voronov, pp. 11-12; Nikolas G. Kuznetsov, *"Con los marinos espanoles en su querra nacional-revolucionaria,"* in Voronov, pp. 179-193.

[23]Tom Wintringham, *English Captain* (London: Faber and Faber, 1939), pp.304-307; John Gates, *Diary of an American Communist* (New York,: Thomas Nelson and Sons), p. 51.; Al Amery, "Fuentes de Ebro," in Alvah Bessie and Albert Prago, *Our Fight: Writings by Veterans of the Abraham Lincoln Brigade — Spain, 1936-1939* (New York: Monthly Review Press, 1969), pp. 181-191 passim.

[24]Christopher Ellis, *Tanks of World War II* (London: Octopus, 1981), p. 183, 193.

[25]Matthew Cooper, *The German Army, 1933-45: Its Political and Military Failure* (New York: Stein and Day, 1978; reprinted, Lanham, Md.: Scarborough House, 1985), pp. 210, 272-278.

John L. S. Daley, currently an instructor at Pittsburg State University, has previously taught at Kent State University. A former Armor officer, his military experience includes assignment as a platoon leader, A Company, 2-37 Armor; XO, C Company, 2-37 Armor; and Assistant Deputy Sub-Community Commander, 2d Bde, 1st AD. He holds a Ph.D from Kent State University.

DRIVER'S SEAT

(Continued from Page 7)

vision; unit enrollees must show excellence over a longer period without such close supervision. I have always considered unit enrollees to be the more credible group. Implement and reinforce the EIA program by executing extra training with these tankers and scouts (excellent example: 1SG Sands conducting special EIA training every Thursday from 1300-1500; training planned 90 days in advance, conducted by the unit master gunner; focused on gunnery and maintenance; including training in the UCOFT). Administer the (TCCT/SCCT I) annually in the unit. Encourage your EIA sergeants to take the TCCT/SCCT — Level II examination.

I owe you a quick review of the TCCT and SCCT. TCCT-I (19K) is the Tank Crew Gunnery Skills Test (TCGST) in accordance with FM 17-12-1/2; SCCT-I (19D) is the Gunnery Skills Test for the unit equipment; CFV in accordance with FM 23-1 and HMMWV-equipped in accordance with FM 17-12-8 (Light Cavalry Gunnery). TCCT/SCCT II is for sergeants (E5P) who have graduated BNCOC. It is a difficult written exam based solely on SL 3 and 4 tasks. It can only be taken once in a soldier's career. It is administered by the local TSO. NCOs who pass the exam will be awarded 50 promotion points under Military Education. The Armor Force is the only branch that has such a program to accelerate promotion to SSG!

The Office of the Chief of Armor administers the program. You can find out much more about the program through the Armor Web Page, or by calling COMM 502-624-1368/1439/3188 (DSN 464-1368/1439/3188).

Excellence in Armor is the Chief of Armor's program, designed to assist the unit in developing the best soldiers into leaders. It is a valuable program if unit leaders use the program to train soldiers for service as gunners, vehicle commanders, and section leaders. It is a valuable program if the best soldiers are enrolled, and if those who cannot maintain the standard are disenrolled. It is a valuable program if it assists unit leaders in identifying those soldiers who are ready for accelerated promotion and additional responsibility. First Sergeant, it is your program.

"FIRST SERGEANT, TAKE THE LEAD"

A New Cavalry Research Facility

U.S. Cavalry Memorial Research Library Opens at Fort Riley

by Brigadier General Philip L. Bolté, USA, Ret.

On April 30, a long-time aim of the United States Cavalry Association became reality with a symbolic ribbon-cutting at the entrance of the United States Cavalry Memorial Research Library, which is appropriately housed in a historic converted stable building at Fort Riley, Kansas. After playing a significant role in the settling of the West, Fort Riley was the home of the Army's Cavalry School until the school finally closed following World War II. What more appropriate location could there be for the Army's U.S. Cavalry Museum and the U.S. Cavalry Association's new Library?

The U.S. Horse Cavalry Association was formed in 1976 by a group of former cavalrymen who were concerned that the demise of the horse cavalry and the modern emphasis on other means of cavalry transportation might lead to the loss of much of the cavalry tradition, heritage, and history. Many of these Association founders had themselves made the transition from horse to vehicle during World War II and they recognized the importance of maintaining the spirit and élan of the pre-war horse cavalry. To meet their major aims, they considered establishing a museum and library, but subsequently opted to support the Army's U.S. Cavalry Museum, which had been established at Fort Riley in 1957. The desire for a library remained strong, though, and the Association began early in its existence to collect books, papers, maps, and photographs from its horse cavalry veteran members.

In 1981, an agreement was signed by Association representatives, the Commanding General of Fort Riley, and the Chief of Military History which formalized Association sponsorship of the Cavalry Museum. By 1984, the Association had provided not only significant financial support to the Cavalry Museum, but had also been able to collect and provide to the museum a number of cavalry artifacts. Originally established at Fort Bliss, Texas, the Association moved its headquarters to Fort Riley in 1991, allowing closer coordination between the Association and the Cavalry Museum. A modest building was provided for Association use as a headquarters. Storage space was also provided for the Association's growing collection of artifacts, some of which were usable by the Cavalry Museum, but many more of historic value.

Although the Association continued to build its library collection, the formal establishment of a library remained an elusive goal, as a quality facility would require both a suitable building and significant funding. The Association's collection shared tight quarters in the headquarters building, with the full-time executive director, providing research services on an *ad hoc* basis. Over the years, the Association has become well-known for its ability to answer a broad range of cavalry-related questions.

Through the 1980s and into the 1990s, the Association was maturing, growing to well over 2,000 members across the country and in a few other countries. In order to attract a wider range of members, "Horse" was dropped out of the Association title in 1993. That year the Association also established the United States Cavalry Memorial Foundation as the administrator of an endowment fund, seen as required to support regular operations, as well as to grow funds for a library. Both the Association and the Foundation are tax-exempt organizations under the Internal Revenue Code.

By 1997, the endowment fund had become adequate to support most normal Association operations and finally establishing a library appeared to be feasible. In response to an Association request for a suitable facility to house a library, as well as the Association headquarters and its artifact collection, the Commanding General of Fort Riley offered the Association use of a former stable building. Used as a stable until the closing of the Cavalry School, the building had been converted to other uses in the 1950s. Its last use had been as a prisoner work shop before simply being used for storage.

In late 1997, the Association launched an all-out effort to establish the U.S. Cavalry Memorial Research Library, recognizing that the opportunity to overcome the challenge of finding a suitable facility might not come again. The 11,300 square foot building would provide adequate space to house the Library in one end and the headquarters and artifact collection in the other.

A plan was developed, to include the expenditure of about $200,000, and submitted to various foundations and trusts with requests for support. By mid-1998, though, with the exception of a significant grant from the Robert R. McCormick Tribune Foundation, most contributions had come from members of the Association, many small ones and several larger ones. At its fall meeting last year, the Association board of directors, knowing that the approximately $100,000 on hand would not be sufficient to complete the project, nevertheless decided to proceed with the necessary building renovation. It was hoped that being able to show major progress would make the effort more attractive to potential donor foundations and trusts.

The initial effort required the removal of a few existing walls, major reconstruction of latrines into suitable rest rooms, changes to heating/air conditioning ducts and in lighting, and wall repair and painting. New walls were then constructed and painted. Shelf facilities for books, donated by Kansas State University, were installed. By January 1999, the building, albeit austere, was ready for occupancy and moving days were at hand. By the end of the month, the new building was operational. A formal opening of the Library was scheduled for April 30.

The solicitation of funds continues, with major work still to be done to complete the project. Major building efforts to be accomplished include installing a suitable covering on the concrete floor and the purchase and installation of external air conditioning condensers. These major tasks and other less costly ones require about $56,500. Equipping the Library with proper audio-video equipment and furnishings will require an additional

The limestone stable building above, constructed in 1905, was once the stable for staff officers of the Cavalry School. The U.S. Cavalry Memorial Research Library now occupies one end of the building and the U.S. Cavalry Association headquarters and artifact collection the other.

After extensive remodeling of the building interior, seen at right, the U.S. Cavalry Memorial Research Library moved into its new quarters in early 1999.

$25,000. Finally, the headquarters and artifact end of the building requires about $15,000 to furnish. Fortunately, most of this work can be done as funds become available.

One of the requirements still unmet, though, is to build the endowment fund of the U.S. Cavalry Memorial Foundation from its current amount to approximately $1,000,000, which requires an increase of about $400,000. This addition will allow hiring a full-time librarian and provide funds for library operations. The Association is working hard to raise the money.

Meanwhile, with its formal opening, the U.S. Cavalry Memorial Research Library, established in its new Fort Riley facility, is available for researchers, members of memorial cavalry units, reenactors, and the general public to capitalize on its unique and growing collection of cavalry knowledge. Until a full-time librarian is available, the ability to respond to queries will continue to be limited, but the Library is open during normal duty hours.

One active volunteer program that contributes uniquely to the Library collection is the oral history program. Veteran cavalrymen are interviewed by committee members or conduct self-interviews on tape. Through a mutually beneficial arrangement with Texas A&M, the tapes are transcribed and the tapes and transcriptions retained by each institution. They provide fascinating first-hand accounts of the horse cavalry of the 1920s and 1930s.

For additional information on the U.S. Cavalry Association, write the association at P.O. Box 2325, Ft. Riley, KS 66442-0325; phone them at (913) 784-5795; visit their web site <www.wtvi.com/cavalry/>; or e-mail them at <cavalry@flinthills.com>.

As a new repository of U.S. Cavalry history, as well as a reference source for horsemanship, the U.S. Cavalry Memorial Research Library promises that a unique part of Army history and lore will not be lost in the modern world. The collection already numbers more than 5,000 items, including documents, books, maps, tapes, and photographs.

BG Philip L. Bolté was commissioned in Cavalry in 1950, one month before the branch was changed to Armor. During his 30 years of active duty, he served in the 1st, 3rd, 7th, and 14th Cavalry Regiments.

Three- or Four-Company Battalions?

Analyzing Real-world Possibilities With a Commercial Wargame

by Lieutenant Colonel Michael K. Robel

Now, I know what you are thinking. Does that battalion have four companies, or only three? To tell you the truth, in all the excitement and change, I kind of lost track of that myself. So, the question is, how lucky do you feel today?

Long time readers of *ARMOR* have seen many changes in the tank battalion organization. When I came into the Army, there were three companies in a battalion, 17 tanks to a company. Companies controlled their own maintenance sections and battalion controlled some centralized supply assets. The Combat Support Company controlled scout, mortar, and air defense platoons. Then came Division 86. Division 86 increased the number of tank companies to four, but reduced the number of tanks in a company to 14. It consolidated all maintenance assets at battalion, removed the ADA platoon to the Divisional Air Defense Battalion, and moved the scout and mortar platoons to headquarters. This was the organization that fought in Desert Storm, and it was very effective.

Now, we are coming back full circle. Battalions are returning to a three-company organization and losing still more of their assets as the maintenance and supply sections are sent to the Division Support Command. This continues a trend of stripping support assets away from line commanders. Yet, by definition of command, they remain responsible for their readiness and receive control of many of these assets when they go to the field.

Digitization is supposed to improve the combat effectiveness of our battalions, enabling them to do more with less. However, it seems to me that the Army 21 battalion has thrown away some of the significant advantages of the Division 86 battalion because of budgetary and recruiting problems without waiting for the new systems to be fielded or proven. I wonder if the fielding of these systems will cause the recall of the Active Army to the continental United States and a further reduction in the number of divisions to eight, or even six.

To refresh everyone's memory, the advantages of the Division 86 battalion were:

- a built-in reserve,
- the ability to defend on two avenues of approach,
- the ability to weight the main effort.

While the AWE has been proclaimed a success, recent observations from the NTC seem to indicate that the Opposing Force (OPFOR) still wins at least 50 percent of the time. It seems that the technology has provided new weak points for an enemy to attack, in spite of the promise of easing command and control.

Now, you may expect that I am an opponent of digitization and change. This is not the case. However, I believe that changing from the Division 86 battalion to the Army 21 version, without the advanced equipment necessary to realize the full potential, is a mistake. My feelings on this were intensified by an article in *Army Times* saying that the change had been ordered without the benefit of simulation study. Accordingly, I decided to simulate the organizational change with *Steel Panthers III: Brigade Command*, a commercial wargame by Strategic Simulations, Inc.

Many may think that using a commercial game to study the problem was inappropriate, but *Steel Panthers III* is a powerful game that provides a good feel for modern armor battle. It models platoons and sections, similar to the Brigade/battalion Battle Simulation (BBS), and generally delivers results comparable to BBS. Commercial, turn-based wargames provide some advantages when studying battles, namely:

FIGHTING VEHICLE CHARACTERISTICS

Attribute	M1A1 (HA)	M1A2	T-90	M2A2	M2A3	BMP-2
Speed	20	21	22		24	24
Hull Armor (Front/Flank/Rear)						
A	57/19/9	57/19/9	65/33/16	12/6/4	14/7/4	4/3/2
H	124/41/20	124/41/20	90/30/15	15/8/4	18/9/4	
R	0/0/0	0/0/0	13/5		9/9/0	
Turret Armor (Front/Flank/Rear)						
A	60/30/15	60/30/15	60/20/10	12/6/6	16/8/8	4/3/2
H	130/65/32	130/65/32	97/49/24	15/8/6	20/16/8	
R			12/13		9/9/0	
Survivability	15	15	9	5	5	4
Electronic Warfare	0	0	1	0	0	0
Fire Control	40	45	30	15	20	15
Accuracy (Gun/Missile)	8	8	7/22	5/22	5/22	3/20

A = Normal Armor, H = HEAT resistant Laminate Armor, R = Reactive Armor

Figure 1

- An excellent and simple to use scenario generator
- *Steel Panthers* (and most wargames) give the player excellent information on the enemy force, not unlike the capabilities the U.S. is striving for with the fielding of the new, digitized weapons systems and "tactical" internet.
- Turn-based games allow the player to compensate for the lack of a staff and subordinate commanders.

Scenario Development

Eight scenarios (each a movement to contact) were constructed. In half of the scenarios, the U.S. side went first; in the other half, the OPFOR player went first. This was to attempt to even out any advantage there may be in going first in a turn-based game. The computer played both sides to even out any prejudices that I might have for one organization or another.

Four U.S. forces were used:

- A balanced (2 M1A1 and 2 M2A2 companies) task force (TF)
- A tank heavy TF (2 M1A1, 1 M2A2)
- A mech heavy TF (1 M1A1, 2 M2A2)
- A tank heavy TF (2 M1A2, 1 M2A3)

The OPFOR in each case was a motorized rifle battalion with three BMP-2 companies and one T-90 company.

In order to eliminate terrain as an advantage to either side, the map was flat. Searching, hitting, rout/rally, troop quality, and tank and infantry toughness were all set to the same value. Turn length was set at 20 turns in all games, and each scenario was run 10 times. In half, the U.S. went first, and in the other half, the OPFOR went first.

Testing the Concept

I expected the balanced TF to win with ease and the others to be closer, with the OPFOR winning some and the U.S. winning some of the three-company battalion fights. The four-company battalion scenarios were run first, to serve as the control. In each case, the U.S. side won every game in about 10 turns with a average victory

Figure 2

The chart at right shows the results of the experiment.

Balanced TF vs MRB (+) (US First)

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	10	0	5	3	3	41	30	5443	428	12.72
2	10	0	5	2	2	41	32	5513	259	21.29
3	10	0	5	4	4	41	25	5262	623	8.45
4	10	0	5	2	2	41	31	5436	252	21.57
5	10	0	5	0	2	41	27	5318	98	54.27
Average	10	0	5	2.2	2.6	41	29	5394.4	332	16.25

Balanced TF vs MRB (+) (US Second)

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	9	0	6	1	0	41	32	3707	56	66.20
2	10	0	6	2	7	41	32	3707	842	4.40
3	10	0	6	6	4	41	32	3707	729	5.09
4	9	0	6	1	3	41	32	3707	410	9.04
5	10	0	6	5	7	41	32	3707	1057	3.51
Average	9.6	0	6	3	4.2	41	32	3707	618.8	5.99

TK HVY (3 CO) TF vs MRB (+) (US First)

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	11	0	5	0	3	41	26	5237	327	16.02
2	11	0	5	5	3	41	32	5505	491	11.21
3	10	0	5	2	4	41	21	5027	499	10.07
4	10	0	5	0	4	41	32	5493	317	17.33
5	11	0	5	0	4	41	28	5324	261	20.40
Average	10.6	0	5	1.4	3.6	41	27.8	5317.2	379	14.03

TK HVY (3 CO) TF vs MRB (+) (US Second)

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	11	0	6	5	4	41	20	3233	584	5.54
2	11	0	6	11	3	41	29	3553	711	5.00
3	9	0	6	8	1	41	28	3559	394	9.03
4	11	0	6	3	3	41	32	3707	407	9.11
5	11	0	6	7	2	41	26	3457	445	7.77
Average	10.6	0	6	6.8	2.6	41	27	3501.8	508.2	6.89

Mech HVY, US First

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	8	0	4	10	2	41	32	5513	718	7.68
2	9	0	4	10	1	41	26	5233	598	8.75
3	9	0	5	17	6	41	27	5333	1436	3.71
4	10	0	5	18	8	41	26	4981	1646	3.03
5	9	0	4	18	3	41	31	5459	987	5.53
Average	9	0	4.4	14.6	4	41	28.4	5303.8	1077	4.92

MECH HVY (3 CO) TF vs MRB (+) (US Second)

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	12	0	7	18	4	41	32	3707	1259	2.94
2	13	0	7	26	7	41	32	3707	1790	2.07
3	9	0	6	20	1	41	31	3663	907	4.04
4	10	0	7	17	1	41	32	3707	888	4.17
5	11	0	6	12	1	41	26	3480	592	5.88
Average	11	0	6.6	18.6	2.8	41	30.6	3652.8	1087.2	3.36

GAME RESULTS

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
Balenced	9.8	0.0	5.5	2.6	3.4	41.0	30.5	4550.7	475.4	9.6
TK HVY	10.6	0.0	5.5	4.1	3.1	41.0	27.4	4409.5	443.6	9.9
MECH HVY	10.0	0.0	5.5	16.6	3.4	41.0	29.5	4477.9	1082.1	4.1
M1A2	11.3	0.0	5.2	2.7	4.8	41.0	28.0	4410.9	659.1	6.7
Average	10.4	0.0	5.4	6.5	3.7	41.0	28.9	4462.3	665.1	6.7

M1A2 vs MRB

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	11	0	6	1	8	41	32	5485	848	6.47
2	11	0	6	0	3	41	32	5495	216	25.44
3	11	0	5	0	9	41	29	5098	1040	4.90
4	11	0	5	0	5	41	32	5468	579	9.44
5	11	0	5	0	8	41	27	5294	950	5.57
Average	11	0	5.4	0.2	6.6	41	30.4	5368	726.6	7.39

MRB vs M1A2

Game Data				US		Russia		Score		
Game	Turns	US Breaks	Russia Breaks	APC	AFV	APC	AFV	US	Russia	Ratio
1	10	0	5	6	6	41	25	3435	986	3.48
2	10	0	5	2	1	41	20	3257	207	15.73
3	15	0	5	8	4	41	32	3697	837	4.42
4	10	0	5	6	1	41	27	3522	370	9.52
5	13	0	5	4	3	41	24	3358	558	6.02
Average	11.6	0	5	5.2	3	41	25.6	3453.8	591.6	5.84
Average	11.3	0	5.2	2.7	4.8	41	28	4410.9	659.1	6.61

point ratio of 11:1. Based on these results, I still expected the OPFOR had a chance of winning some scenarios and that the U.S. would take 11-13 turns to complete the game.

Surprisingly, the tank-heavy TF's engagement results were nearly the same as the first run-through, with a victory point ratio of 10.46:1. I concluded that the TF's real killing power was the M1A1 and the loss of the Bradley company only subtracted a small amount of combat power.

The mech-heavy TF results supported the conclusion: while the U.S. won every battle, the victory point ratio was much closer: only 4.1:1. Average game length in both cases was still about 11 turns.

Finally, for completeness, I ran the M1A2 TF. I expected it to win with about the same performance as the M1A1 TF, perhaps a little better, because the fire control rating for the M1A2 is higher. Amazingly, the M1A2 organization had the lowest score of any run-through, except the mech-heavy task force. Examination of the vehicle statistics did not give any clues as to why this was so, and a few more tank-heavy TF games were played, with nearly identical results to the first group.

I then played some human-versus-computer, and human-versus-human games. There was no significant difference between these and the all-computer games.

On average, each game ran according to the same general pattern, about two turns elapsing before contact, then two or three turns of direct fire combat, and then 5-7 turns of the U.S. mopping up the battlefield. The OPFOR force usually broke after the second direct fire turn and would be ineffective the rest of the game. Results of the engagements are shown in Figure 2.

Conclusions

Considering the results of the game, I reluctantly concluded the superiority of the U.S. equipment is such that the TF has only a limited effect on the battle outcome, although there is a risk of increased casualties until the potential of digitization is fulfilled.

The loss rates approximated those of Desert Storm, so I felt the performance was relatively realistic. Interestingly enough, loss rates with BBS are much more even.

Repetitive playing allowed me to make some other observations that may have some relevance:

ATGMs are not effective in *Steel Panthers III* (at least in 1999). This is a result of the values assigned to special and reactive armor and anti-missile defenses. Time after time, I watched ATGMs hit targets without effect. While the warhead-armor battle ebbs and flows with technology, it does not appear that the *Steel Panthers III* models advanced concepts such as increased stand-off, tandem warheads, and top-attack methods, all of which compensate for improved defenses.

The IFVs routinely resisted tank and ATGM fire. If ATGMS or sabot hit real IFVs, they are going to be destroyed. Additionally, the BMP and M2 flailed away at each other, without result, which again does not match reality.

LTC Michael K. Robel, commissioned in 1976 from the University of Florida, has served as a tank and cavalry platoon leader and troop XO in the 11th ACR, and as a company commander, BMO, S4, S3 Air, and brigade S4 in the 1st ID, including service as G3 operations during Desert Storm. He has worked in simulations at the 87th Exercise Div., Birmingham, has served as program manager for a game company publishing commerical wargames, and is currently working on WARSIM 2000 in Orlando, Fla.

Independent Tank Battalion (Continued from Page 28)

The attachment of the 70th to the 4th was unusual as it lasted until the end of the war for all but three days when the 70th was with the 63rd Infantry Division. The more the 70th and the 4th worked together, the better their operations became. It should have been that way with all independent tank battalions and the infantry divisions they supported. That it wasn't led to untold consequences.

When a tank battalion became attached to an infantry division, the question of authority for use of tanks became significant. Tankers knew what tanks could and could not do. Yet in the hierarchical structure of the Army, orders from one of higher rank must be obeyed, even if an infantry officer put tankers in needless jeopardy.

The worst case occurred late in the war. Company Commander Franklin Anderson attended a meeting at infantry regimental headquarters. There was to be an attack the next morning into a shallow valley with a high ridge on the opposite end still held by the Germans. "That was a perfect place to put 88s, hidden by trees and looking right down on us," Anderson recalls. He had examined the ground and found tank traps which would force tanks to go the way the Germans wanted. At the meeting, the regimental commander, a colonel, planned the attack. He said he could visualize tanks "barreling over the crest of a small hill into the valley." Infantry would rush in when tanks reached their objective. With his tanks in the open, in front of infantry, and with no artillery barrage against the ridge, Anderson knew they would be in serious trouble. Yet he could not question the colonel's authority. He did ask for the attack to begin at 0630, hoping for a morning mist. The colonel said no, it will begin at 0800. An infantry major gave the order for four tanks to move out. Within 50 yards 1-2-3-4-all were knocked out. Six tankers were killed, more were injured.

Such a decision would likely not have been made by infantry and tank platoon leaders or company commanders together planning an action at the point of attack. This is where infantry and tankers had developed a relationship built upon experience and trust.

When I arrived home in September, 1945, the 70th patch was on one upper arm of my "Eisenhower jacket," the Ivy Leaf of the 4th on the other. I am proud to read that the 4th is considered among the best infantry divisions in the European War. I know one of the reasons was the excellent relationship it had with the 70th.

This article is in part extracted from the author's book, *Strike Swiftly: The 70th Tank Battalion From North Africa to Normandy to Germany,* Presidio Press, 1997. It was reviewed in *ARMOR* Magazine, May-June 1998.

Marvin G. Jensen served as a cook with the 70th Tank Battalion in five European campaigns during World War II. He holds a BA with honors in history from San Jose State College, Calif., and an MA from Stanford University. He taught U.S. history in schools and colleges in the San Francisco Bay Area for 25 years and is now retired.

Turning Civilians into Tankers

19K One Station Unit Training at Fort Knox

by Captain Lance Roper

Drill Sergeant Dennis Bellinger observes as the Tank Commander, SFC Willie Hicks, trains soldiers on how to erect the crosswind sensor of D15.

It's early in the morning on Tank Table V. You and your gunner have been summoned to a platoon rehearsal. There's not much time to boresight and you want to get started, but your loader just arrived from Fort Knox two days ago. What can he do to get the tank ready? Will he hurt himself if left alone in the turret?

What should you expect from your brand new soldier who just arrived at your tank company? How much additional training will he need to accomplish basic tasks? How much proficiency does he have in maintaining the tank? NCOs may remember their days from basic training years ago, but many officers do not know much about what their new recruits have learned. This article's aim is to provide an idea and some specifics about the initial four months each tanker spends at Fort Knox, earning a place on his first tank crew.

New tankers train with one of eight 19K One Station Unit Training (OSUT) companies in the Army. Although numbers vary, based on recruiting and the same shortages the rest of the Army faces, two drill sergeants are responsible for the training, motivation, and welfare of 33 soldiers in each of five platoons in the company. Each OSUT company also has a tank section of 11 M1A1 tanks and 11 tank commanders who train three soldiers at a time on the tank, as well as conducting normal maintenance.

The first few weeks of training focus on soldier-specific skills and qualifications. The trainees are under complete supervision and spend their days in classes taught by their own drill sergeants and subject matter experts. Subjects include first aid, NBC, and land navigation, all taught by the medical, NBC, and infantry/cavalry NCOs of 3-81 Armor, the training support battalion in the 1st Armored Training Brigade. Other subjects taught by the drill sergeants include drill and ceremonies, weapons, guard and sentry duties, and, physical fitness. Starting FY99, the Army added an additional week of values and human relations training taught primarily by the drill sergeants. The soldiers negotiate several ranges, including M4 carbine, M9 pistol, hand grenade, and the bayonet assault course. They also conduct foot marches that increase from 3 km to 15 km. The soldiers execute a two-day, infantry-intensive exercise during which they learn individual tactical movement, bivouac and fieldcraft procedures, and negotiate an exciting night infiltration course. During this course, the soldiers low crawl through a series of obstacles while directly under live 7.62 machine gun fire and among live explosion pits. The trainees often refer to this night as the best training event of the cycle.

During the majority of their training weeks, the platoons rotate to the motor pool where they receive over 80 hours of instruction on the M1A1 under the specialized supervision of the company's tank commanders. Each TC normally takes three soldiers and instructs them in great detail on how to operate the tank from the various crewmen's positions. While most instruction focuses on preparing them for probable assignments as drivers or loaders, the trainees qualify on several gunner's station tasks as well. They also get basic instruction on operator-level maintenance and recovery, including emergency procedures. Each soldier's goal is to pass two armored crewman tests which measure his ability to operate the tank stations, and finally to pass the Tank Crew Gunnery Skills Test (TCGST), the same test given any other tanker in the force.

Their training culminates with Gun-Field week, during which the soldiers perform their learned skills in a field environment. The 5-6 day exercise includes training events that test their general soldier skills, require them to spend four hours in MOPP 4, and exercise basic fieldcraft in company bivouac sites. Lately, the training companies have designed scenarios to approximate the recent dismounted missions tankers perform in Bosnia and Macedonia. The week is also their chance to see and experience the Abrams tank in action. Each soldier drives the tank across the Kentucky countryside on the "mud course" through trails and puddles. Then the soldiers shoot the tank on a live fire range. During tank gunnery, each soldier drives, loads, and guns the tank, firing the main gun, coax, and loader's 240 machine gun. At gunnery, soldiers negotiate defensive and offensive engagements under both day and night conditions. The week finishes with a final foot march through a Rites of Passage Ceremony, where qualifying soldiers receive their Armor Branch insignia for their class A uniform. This solemn ceremony, following a week of rugged field training, marks their entrance into the proud Armor Corps. To incorporate a historical perspective, the Patton Museum hosts the ceremony. By

"...at a minimum each one has the basic skills to perform both dismounted and mounted tasks, individually and as part of a crew..."

Drill Sergeant Dennis Bellinger corrects a trainee while the Tank Commander, SFC Willie

the end of the week, the soldiers know they can operate the tank in a field environment and recognize their place as vital members in the Combat Arm of Decision.

Two additional programs offer specialized training to certain soldiers. Following each cycle, the battalion uses its nine M1A2s to qualify 27 soldiers assigned to Fort Hood or Fort Carson on the digital systems specific to that tank. These soldiers remain at Fort Knox for an extra week after graduation and earn the K4 skill identifier. The top soldiers in each cycle enter the Excellence in Armor program (see "Driver's Seat," page 7). The soldiers who qualify for this prestigious program gain additional UCOFT experience and fire extra engagements during gunnery. If they can remain in the program, they graduate as PFCs. Requirements, however, are strict. Soldiers who graduate EIA have maintained a 230+ APFT score, first time GOs on all tasks, and received a commendable rating while appearing before a board of senior NCOs.

The product we provide to the Army's armor units is a trained tanker. Your new tanker has proven his proficiency in a variety of basic soldier tasks, including NBC, first aid, and land navigation. He has passed an external evaluation of armor crewman tasks, including the TCGST to FM 17-12 standards. He has passed the APFT within two weeks of his graduation date. The drill sergeant influence, by tradition, has taught him discipline and motivation. The tank commander influence has taught him how to work professionally with an NCO in a four-man crew. Of course, all soldiers have different competencies, but at a minimum each one has the basic skills to perform both dismounted and mounted tasks, individually and as part of a crew, in Bosnia, Kuwait, Korea, Germany, CONUS, or wherever the Army needs him.

"TC, while you were out, I powered up the gunner's station, conducted a computer self-test, computer data checks, zero pressure check, and firing circuit test. Everything's good. Do you want me to start boresighting procedures from the gunner's seat?"

CPT Lance Roper was commissioned through ROTC in 1990 at Furman University in South Carolina. He has held several positions in tank battalions in Germany. At Fort Knox, he has been an AOBC Team Chief and commander of D Company, 2-81 Armor.

Abrams TSM: Halon Extinguishers Are Not a Health Hazard

The Tank System Manager (TSM) for the Abrams tank is making an attempt to clear up misconceptions about the health effects of Halon 1301, the chlorofluorocarbon-based gas used in the tanks' fire-extinguishing system. "Some soldiers mistakenly believe that Halon is harmful to them, and some even believe that breathing the discharged agent is deadly," said COL James H. Nunn.

What seems to be fueling these false rumors, he said, is the plan to phase out Halon. Because this gas, and other so-called CFCs, are believed to deplete the Earth's ozone layer, there is a continuing scramble to replace Halon with less environmentally destructive substances. They are not being phased out because of health effects. In some cases, the Army is substituting CO2 extinguishers for Halon, *but not in tank crew compartments,* because the CO2, which is heavier than air, sinks to the bottom of the crew compartment, which is already a small, enclosed, sealed space. Discharge of a CO2 extinguisher within that small volume easily exceeds safe concentrations as it displaces the air, and could suffocate crewmen. This is not the case with Halon.

Halon 1301 is approved by the Surgeon General for safe use in crew, engine, and hand-held fire extinguishing systems.

The only fatalities traceable to the fire extinguishing systems have been caused by improper maintenance when installing and removing the pressurized bottles. Unrestrained, they can become lethal missiles within the confines of the tank's crew compartment.

Training in a Multi-Intensity Environment

An Approach To Training the Company/Troop

by Captain Charles T. Lombardo and First Lieutenant Max Clegg

Today, and in the future, American soldiers will conduct a more diverse spectrum of missions than their predecessors. However, given limited operations budgets, units must plan and execute productive, METL-focused training that maximizes time and available assets. This article discusses how 1st (Tiger) Squadron, 3rd ACR developed a Mission Training Plan that both met these conditions and challenged subordinate units with a realistic, multi-intensity scenario.

The annual mission training plan for heavy, CONUS-based units typically consists of gunnery tables twice a year and lane training that focuses on conducting mission essential tasks in a high-intensity environment. Other training events, such as live-fire exercises (CALFEX) or computer simulation (Janus or SIMNET) complement this training and exercise the staff. This model is limited in scope and fails to prepare units for many of the challenges they might face in a lower-intensity environment, or as they deploy, prepare, and stage for high-intensity conflict.

The Tiger Squadron commander wanted to break the mold of past lane training plans that focused only on the standard METL tasks: Zone Recon, MTC, and Defend. First, he shortened the duration of the exercise to 96 hours per troop, opting for continuous operations with no administrative periods. This timeline helped curb OPTEMPO expenditure, increased the pressure on troop-level leadership, and tested the time management skills of staff and commanders alike. In addition to the high-intensity tasks, the unit integrated multiple BOS elements that are not standard in the task organization of the cavalry troop. His mission statement follows:

1/3 ACR conducts METL-focused training in a continuous robust environment focused on high-intensity combat with multiple distracters.

The battle flow focused on one troop at a time, except for the last iteration, when Dragon Company (Tank) accompanied Crazyhorse Troop. Over the four-day period, each troop would conduct three standard tactical missions: Zone Recon, Movement to Contact, and Defense, but not before undergoing a reception phase involving low- and mid-intensity conflict. Initially, troops operated in a low-intensity environment designed to simulate RSOI into a country troubled first by ethnic unrest, displacement, guerrilla activity, and eventually all-out conflict. A troop's performance in this reception phase dictated the tempo at which they progressed through the next two phases. For example, every troop conducted a route reconnaissance while faced with the challenges of maintaining contact with a simulated Russian unit, hostile civilian refugees, and coordination with a Russian linguist. All tasks had to be accomplished in accordance with a strict set of "United Nations-imposed" rules of engagement. Violations of ROE typically resulted in an "international incident," accelerating hostilities and subsequently shortening a commander's preparation time for high-intensity operations. Additionally, units had to handle, coordinate, or negotiate with UN liaisons, news media, uncooperative civilians, female refugees, and kidnapping of friendly soldiers and equipment. Simulated combat stress casualties required troops to coordinate for chaplain support. MIAs forced troop commanders to refine personnel tracking and solve diverse medical evacuation situations in a simulated combat environment.

Units were also required to coordinate with and utilize combat service support units. Air CASEVAC exercises, coordination with MP units for processing EPWs, and investigation of ROE violations were two such examples. The troop/company commanders were given

Day 3/4	Troop Mission: ***Defense In Sector***
1400	DISMOUNTS FOR THE PREVIOUS MISSION ARE CALLING ARTY ON CAV TROOP WHILE TROOP IS IN DEFENSIVE PREPARATION
1700	INITIAL LOGPAC IS DESTROYED AND TROOP MUST REQUEST ADDITIONAL LOGPAC
1900	TROOP MUST ESCORT ATTACHED SMOKE PLATOON BACK TO SQUADRON HEADQUARTERS.
0030	SCOUT FROM THE CAV TROOP ON A SCREEN LINE DISPLAYS SYMPTOMS OF COMBAT STRESS CASUALTY. TROOP MUST THEN COORDINATE FOR CHAPLAIN SUPPORT TO ASSIST THE CASUALTY.
0100	TROOP MUST CONDUCT A PATROL TO LINK UP WITH WOUNDED PRISONER AND ESCORT HIM BACK TO SQUADRON HQs
0500	OC 1 MEETS CIVILIAN BROADCAST TEAM & TAKES TO TRP CDR'S BATTLE POSITION. SIMULTANEOUS WITH ARTILLERY LANDING ON THE VEHICLE DEFENSIVE POSITIONS
0600	OC 2 EMPLACE FASCAM MINEFIELD
0630	MAKE CONTACT WITH MEDEVAC HELICOPTER AT SQUADRON TOC
0645	LD THE OPFOR

Figure 1

control of elements that are usually regimental and squadron assets, such as chemical smoke and recon assets, GSR, and interrogation and translation support elements from the 66th MI Company.

In addition to the maneuver training plan, C Troop and D Company conducted a "***No-Notice Gunnery***." The intent for the no-notice gunnery was to determine the proficiency of gunnery skills at the section level without placing the unit in a standard gunnery scenario.

All of these challenges faced troop commanders as the scenario evolved into the standard high-intensity conflict mission plan. However, intentional distracters and complications were also planned into high-intensity operations. Figure 1 is an example of the Mission Event List for a cavalry troop for the second high-intensity mission, Defend in Sector. Careful planning and synchronization is key for the staff in ensuring that events are properly executed.

The timeline presented many problems for the troop leadership. Along with the standard EA development, the troop was expected to manage its resources to satisfy the demanding task list. The troop's ability to implement the available resources was key in progressing through this tough scenario.

Neither administrative halts nor AARs were conducted during the four-day period. A cumulative AAR was conducted at the end of the exercise, and it was clear that the units had met the intent. Commanders noted the benefits of condensing the field problem and eliminating administrative halts. Not only did this method add realism to the training, but it successfully tested their platoon leaders' ability to plan rapidly and efficiently. Rapidly-evolving scenarios tested their ability to react and take control of unexpected situations within the ROE and their commanders' intent. Soldiers, too, enjoyed the continuous pace; they didn't miss the boring downtime between missions. With respect to operating within a limited budget of resources and OPTEMPO miles, the operation was also a success. OPTEMPO was reduced from 150 miles for the troop in past operations to 73 miles for tanks and 91 for Bradleys. The PERSTEMPO was reduced from 11 days to 4 days (no-notice gunnery added 6 days to the total), allowing the squadron to retain the flexibility to retrain those units failing to meet the commander's intent.

Overall, the result of the mixed levels of intensity was evident in the execution of the high-intensity tasks, where published standards were applied, but the conditions made more challenging. During the Defend in Sector lane, troop commanders could not focus solely on EA development; they were also expected to execute a variety of tasks like conducting civilian escort on the battlefield, reacting to media on the battlefield, and recovering a downed pilot. These additional tasks took away from the planning and preparation of our standard EA development and troop-leading procedures. Because of the rapid battle rhythm, the troop leadership had to pass responsibilities down to the NCOs of the troop/company. Additionally, troop/company leadership learned that a clear understanding of ROE and unit SOPs was paramount. The troop TOCs also faced the challenge of processing large volumes of information and reporting in a timely and accurate manner to both the squadron and scout and tank platoons on the ground.

In these ways, Tiger Squadron's model incorporated low-, middle-, and high-intensity scenarios into a challenging, cost-effective, and rigorous training event. Most importantly, the model is one step in preparing soldiers to conduct a world of diverse missions in a time of limited resources.

CPT Charles T. Lombardo is a 1992 graduate of Southwest Missouri State University. He has served as a tank platoon leader, scout platoon leader, battalion S1, and S3 Air in 3-67 Armor, 4th ID, and as a mech infantry platoon leader in 1-41 Infantry, 2AD. Currently, he is assigned to the 3rd ACR, where he has served as the regimental planner, the squadron maintenance officer for 1st Squadron, and presently as B Troop commander. He is a graduate of AOBC, Airborne, Scout Platoon Leaders Course, Cavalry Leaders Course, FAOAC, BMOC, and Combined Arms Service Staff School.

1LT Max Clegg is a 1996 graduate of the U.S. Military Academy. He has served as a tank platoon leader and is currently serving as a scout platoon leader in B Troop, 1st Squadron, 3rd ACR. He is a graduate of AOBC, Air Assault, Scout Platoon Leaders Course, and Ranger School.

INSIGHTS...Continued from Page 14

our *full* combat potential in the years ahead. In short, we must strive to create the same conditions the OPFOR enjoys — conditions which have become unique in the force. No positive enhancement in our combat capability will occur unless we do. It matters little if we throw Crusader gun systems, the tactical internet, or Comanche helicopters into the force. They will lie there only as combat potential. Their effective employment and effectiveness on the battlefield will hinge upon a couple of imperatives. First, it will hinge upon mastery of the *fundamentals* of warfighting at crew and small-unit level, the opportunity to learn these fundamentals under realistic field conditions, and training at the frequency necessary to develop and sustain performance standards. In turn, this demands and compels us to change the way we measure combat readiness. Second, it will hinge upon combined-arms commanders and staffs who possess a proven complement of tactical knowledge, skill, ability and intuition, derived through long experience. We will have to change the way we develop and train combined-arms commanders and warfighting staffs.

In conclusion, in the context of this essay the 11th Armored Cavalry Regiment — the Opposing Force at the NTC — serves only as an example of what our Army can be and illuminates many of the components of warfighting necessary for a combined-arms team to achieve its *full* combat potential at the tactical level of war. You can choose to dismiss, agree with or dispute these things. But one thing is certain. If we ignore the insights provided by the soldiers and leaders of our OPFOR regiment these past few years, then we will be far less than we can be. We will fall far short of our *full* combat potential, and we just might jeopardize our landpower dominance in the years ahead. Let's roll up our sleeves.

The Final Score: Russian Armor Losses in Chechnya Reflect Lethality of an Urban Fight

by First Lieutenant Adam Geibel

On 3 September 1996, Colonel-General Alexander Galkin, head of the chief armored vehicle and tank directorate of the Russian defense ministry, told journalists that federal forces in Chechnya had lost 260 armored fighting vehicles, including T-72 and T-80 tanks as well as APCs.[1]

Galkin, describing lost AFVs as equipment absolutely unrepairable, noted that this figure did not include assets lost during a later offensive, called the Second Battle of Grozny.

The general reiterated that the high figure was due to the nature of city fighting, and not any inherent defects in Russian AFVs, adding "if we had not brought tanks into Grozny, then more infantrymen would have been killed, because the tanks did protect the infantry."

The later offensive, which appeared to have ended the war, added heavily to the total: MOUT fighting during the Second Battle of Grozny, from 6 to 28 August, was as intense as the New Year's Eve Day Battle (31 December 1994). On 12 August, the Russians admitted to losing three T-72 tanks, one light tank,[2] 22 BMPs, and 18 other APCs. Two days later, the rebels claimed that they had destroyed 120 tanks and 65 APCs.

"If we had not brought tanks into Grozny, then more infantrymen would have been killed, because the tanks did protect the infantry."

Throughout the war, both sides have exaggerated casualty counts — the rebel figures probably include totals from the simultaneous fighting around Gudermes and Argun, as well as several unconfirmed but highly successful ambushes. Their count might also include lightly-damaged vehicles as well.

The Interior Ministry, which made up the bulk of the Grozny garrison, claimed to have lost 26 AFVs by the 16th. However, on the 28th, the Russian command said that the rebels had captured 31 armored vehicles (tanks, APCs, and IFVs) in good working order, which they were now using, plus an unknown number of lightly-damaged Russian AFVs which the Chechens have hidden for quick repairs.

Notes

[1]An all-inclusive term: BTR-70s and 80s, MTLBs and BMP-1, 2, and 3s, unless otherwise differentiated.

[2]Implies that at least one PT-76 was fielded.

1LT Adam Geibel is the Tactical Intelligence Officer, 5/117th Cavalry, 42ID (NJARNG). In civilian life, he is the Associate Editor of the *Journal of Military Ordnance* and a freelance writer.

The Battle of Grozny

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Finch, MAJ Raymond C. III, "Why the Russian Military Failed in Chechnya," *Special Study Number 98-16*, Fort Leavenworth, Kansas: Foreign Military Studies Office, 1998.

Geibel, Adam, "Red Dawn in Chechnya," *Caucasus Nightmare/A Campaign Chronicle*, Armored Warfare Planning Conference: Chechen Republic Online - Articles, 1999.

Grau, Mr. Lester A., "Russian Manufactured Armored Vehicle Vulnerability in Urban Combat: The Chechnya Experience," *Red Thrust Star*, Fort Leavenworth, Kansas: Foreign Military Studies Office, January 1997.

-----, "Changing Russian Urban Tactics: The Aftermath of the Battle for Grozny," *INSS Strategic Forum*, Number 38, Fort Leavenworth, Kansas: Foreign Military Studies Office, July 1995.

"Grozny (city map) 1:40,000," *The Perry-Castañeda Library Map Collection*, The University of Texas at Austin: U.S. Army Map Service, 1959.

"Grozny (topographic) 1:250,000," *The Perry-Castañeda Library Map Collection*, The University of Texas at Austin: U.S. Army Map Service, 1959.

"Grozny (tactical pilotage chart) 1:500,000," *The Perry-Castañeda Library Map Collection*, The University of Texas at Austin: U.S. Defense Mapping Agency, 1980.

Siradze, Reno, Free Ichkeria (Chechnya Republic Online), Finland: Studio Archigraph Ltd, 1996.

Smeets, Rieks H.J. and Egbert G.Ch. Wesselink, "CHECHNYA, ONE YEAR OF WAR: A Pax Christi International Report," 11 December 1995.

Thomas, Timothy L., "The Caucasus Conflict and Russian Security: The Russian Armed Forces Confront Chechnya," Fort Leavenworth, Kansas: Foreign Military Studies Office, 1996.

CPT Chad Rupe is a 1994 graduate of the U.S. Military Academy. His previous assignments include service as a tank platoon leader and tank company XO, 2-72 AR and as assistant S3, S3 Air, and adjutant, 3/3 ACR. He is currently commander, HHT, 3/16 Cav.

there is ONE other such unit — in the National Guard. It is 1st Squadron, 158th Cavalry, Maryland Army National Guard, which is the divisional cavalry squadron for the only light infantry division in the Reserve Component — the 29th ID (Light), where I had the privilege of serving in the unit for five years in various capacities: platoon leader, troop XO, and on the squadron staff.

2. TO&E. Unlike other cav troops, the light div cav ground troop lacks both a mortar section (as CPT Stephens stated) AND lacks a dedicated XO. While the Army seems to suggest that the XO position is unnecessary (since wheeled vehicles require little maintenance in comparison to heavy counterparts) both of the commanders I served under in A Troop disagreed and — like their active duty counterparts — found a way to get the senior LT to be his 2IC. In the A Troop that I know, this was accomplished in a remarkably similar way: by consolidating 1st platoon into the remaining three platoons, thereby increasing the effective strength of the 3 remaining platoons and freeing the senior LT for the CO's right-hand-man job. This has the added benefit, as the author noted, of increasing the number of vehicles in a platoon from five to six. However, by reducing the number of maneuver platoons from four to three, the ground troop commander may have difficulty covering the division's entire 20 km front for extended periods of time. This is particularly true if one considers the doctrinal frontage of a cavalry scout platoon is 3-6 km. Since the light div cav platoon's manning, however, is only 15-18 men, it becomes difficult for a platoon to continuously maintain more than one OP for over 24-36 hours. The lack of troop mortars has been recognized as a long-standing deficiency of the organization, but to my knowledge, nothing has been done about it.

3. Scout/TOW mix. If I recall correctly, the latest TO&E change made the cross-attachment of TOWs and .50 cal/Mk19 vehicles official. My experience is that this is the optimal configuration for general use of the troop. It allows the individual platoon leader to have antitank fires ready for his immediate use, and has the added benefit of providing him with thermal sight night vision capability. Of course, the commander retains the prerogative to call back his TOWs and mass them when he feels it is necessary.

Conclusions. The tankers and cavalrymen I've met at various service schools tended to scoff or stare at me with puzzled looks when I told them I was in a light divisional cavalry squadron. While their confusion is understandable, the light squadron must be taken in its greater context to be appreciated for what it is. It is fairly well equipped to provide reconnaissance, surveillance, and limited security operations for the light infantry division. While the unit doesn't have any armored vehicles, its inherent firepower, communications, and mobility make it arguably the most deadly battalion-sized unit in the division. The light division cavalry concept can — and does — work when air and ground troops team closely together to accentuate their respective strengths and minimize weaknesses on missions for which light forces are intended.

ANDY GOLDIN
1LT, Armor, WAARNG
via e-mail

More Hints on Improving Effectiveness of After-Action Reviews

Dear Sir:

The recent article by COL William Blankmeyer and LTC Terry Blakely ("Leaders Conducting After Action Reviews Often Deliver Substandard Feedback," November-December 1998 *ARMOR*) pointed out a significant training issue and provided some sensible ideas for improvement. I would like to offer a few more.

1. Have commanders, not counterparts, conduct training events and facilitate AARs. Giving an effective AAR requires tactical knowledge and experience. AARs should be lead by leaders who have been tactically successful at the level of the AAR. The company commander and 1SG should lead AARs for their platoons and battalion commanders, S3s and command sergeants major company-level AARs. Besides having the needed experience, the commander should conduct the AARs of his subordinates because he must understand fully their strengths and weaknesses to assess, adjust and implement training programs.

2. Focus collective AARs on finding and fixing "what was broke" during execution. Look at the five bottom-line performance measures: 1) Killing the enemy, 2) Avoiding casualties, 3) Accomplishing the mission and mission required tasks, 4) Accomplishing critical sustainment functions (e.g. casualty treatment and evacuation), and 5) Giving higher timely accurate reports.

3. Do multiple execution repetitions. AAR lessons are best learned with an immediate chance to implement improvements. If there are any problems, do a quick AAR and execute again. Not doing a 2nd or 3rd "run" should be the rare exception. Always plan for multiple execution repetitions.

4. Use the 8-step training model effectively. Correct leader planning issues are before the order is issued and do not begin execution until preparation is done to standard. This allows shorter execution AARs and facilitates multiple repetitions.

5. Conduct "big" AARs. The NTC sequence of lower to higher level AARs with only the unit leader and direct subordinates participation is not the best for home station training. For full understanding and faster collective learning, it is better to have the leader and two levels of subordinates, for example a company team AAR down to tank/BFV commander and squad leader level. These can be followed up with short AARs at the subordinate level focused on implementing fixes and specific internal issues.

6. Make the lanes hard and the OPFOR good. The unit should have to perform very well or suffer obvious consequences. I have heard numerous NTC OCs say that it is impossible to have an effective AAR if the OPFOR makes a mistake that allows the BLUEFOR to win even though it made many mistakes.

7. Have the OPFOR an active participant at AARs. Not just describing his plan and actions, but telling what the unit being trained did well and not so well, and offering suggestions for improvement. The impact of an OPFOR tank commander saying he was able to kill several tanks because no one was looking his way has a lot more impact than an OC saying that 360-degree security wasn't maintained.

JAMES C. CROWLEY
LTC (Ret.), Armor
Peachtree City, Ga.

Reconnaissance — Better Left to Air Cav Elements

Dear Sir:

The Team Recon approach to reconnaissance puzzles me a tad (see "TEAM RECON: A New Approach to Armored TF Reconnaissance," March-April 1999 issue). It looks like an awkward effort to find a mission for armor, when scouting, in particular, and reconnaissance, in general, is better left to air cavalry elements than to armored elements. Granted, armored elements, even lightly armored HMMWVs, are better able to cope in a stand-up, knock-down fight than are choppers, but the purpose of scouting is generally to avoid direct contact with the enemy, and rather to shadow him in an effort to determine his intentions, no? Certainly, armored elements are better able to thwart enemy ground reconnaissance efforts than are helicopters. But if one is looking for a fight, then that is what the main armored elements are for, no?

A Vietnam-era air cavalry troop could better and more quickly do the job that Team Recon seeks to do, save slug it out with heavier enemy units. You want a Named Area of Interest checked out? The enemy found and fixed? The aero-scouts can do that in no time, flying nap-of-the-earth, hugging the ground. For instance, a scout chopper in 'Nam commonly, flying inches above the earth, followed enemy footprints on the ground.

P.S. I am not a dispassionate observer. To me the most beautiful fighting unit in the world is the armored cavalry squadron (circa 1966-7), with an air cavalry troop organic to it.

WILLIAM D. LIVINGSTON
CPT, Armor (Retired)
Colorado Springs, Colo.

TACTICAL VIGNETTE 99-3

Screen in a Snowstorm

WHAT'S YOUR NEXT MOVE??

You are the commander of A Troop (Wolfpack), 1-201 Cavalry, the ground troop of the light division cavalry squadron of the 32nd Infantry Division (Light). Your division is deployed to the Republic of Urbuti (RU) in support of OPERATION BIG EASY. The RU recently seceded from the United States of Leinad (USL). Special Operations Forces (SOF) and other intelligence sources indicate that the USL will attempt an insurgency to overthrow the RU government and regain the province. On RU's western border is the country of Eus, an ally of USL, but not aggressive towards RU. The rules of engagement (ROE) allow for destruction of armed USL forces crossing the border into RU.

Squadron Mission: 1-201 Cav screens along PL SILVER from PL GOLD to PL LEAD and along PL GOLD between PL BRONZE and PL SILVER NLT 010900JUN1999 to identify and track insurgents entering the RU.

Squadron Commander's Intent: Purpose – I want to identify and track insurgents from the USL entering the RU and prevent them from harming civilians. Endstate – The squadron will continue to screen until relieved, and will have destroyed insurgents with Hellfires and rockets if possible, or have handed targets off to 1st Brigade.

Troop Mission: A, 1-201 Cav screens along PL SILVER from PL GOLD to PL LEAD NLT 010900NOV-1999 to identify and track insurgents entering the RU.

You task organized your troop in a scout/anti-tank (SCAT) configuration. You have four platoons with three scout HMMWVs and two AT HMMWVs each, for a total of 20 HMMWVs with six MK-19 platforms, six cal .50 platforms, and eight TOW platforms. You do not have a FIST, mortars, or a troop executive officer. You are responsible for maintaining continuous surveillance of Named Areas of Interest (NAIs) 1-8. Each observation post (OP) has either two or three vehicles, with a mix of scout and AT platforms. Your squadron commander (SCO) has accepted risk on the west flank of the squadron and assigned B and C Troops (8xOH-58D each) to screen along PL GOLD (NAIs 12-15) until the brigade cavalry troop from 1st Brigade can relieve the air troops. The air troops are also responsible for NAIs 9-11 along PL SILVER.

It is now 051000NOV1999; your troop has been screening for four days. There has been light civilian traffic across both borders. Satellite photos and unmanned aerial vehicles (UAVs) indicate that, two days ago, two battalions of the USL Army moved out of their motor pools and barracks and began moving south. Yesterday, Eus issued a statement that the United States could no longer fly in its airspace. A situation is developing and you monitor the following radio traffic:

- At 051005, you hear the following radio transmission on your squadron command net from B Troop commander to the SCO: "Saber 6, this is Bulldog 6, I have lost contact with Bulldog 26, break. At last contact, he had nothing to report at NAIs 12-14 and was returning from the FARP enroute to NAI 15, break. The ceiling has dropped to 50 feet with 100 meters visibility, so I cannot get another team to Bulldog 26's location, break. Request assistance from Wolfpack to reestablish contact with Bulldog 26, over."
- The squadron S2 reports that there is a snowstorm moving in that will probably last for two days.
- C Troop commander reports that his troop is closed on AA Saber and that flying is extremely dangerous.
- You receive the following spot report from your 2nd platoon, observing NAIs 3 and 4: "Wolfpack 6, this is White 1, contact, three T-34s moving south, vi-

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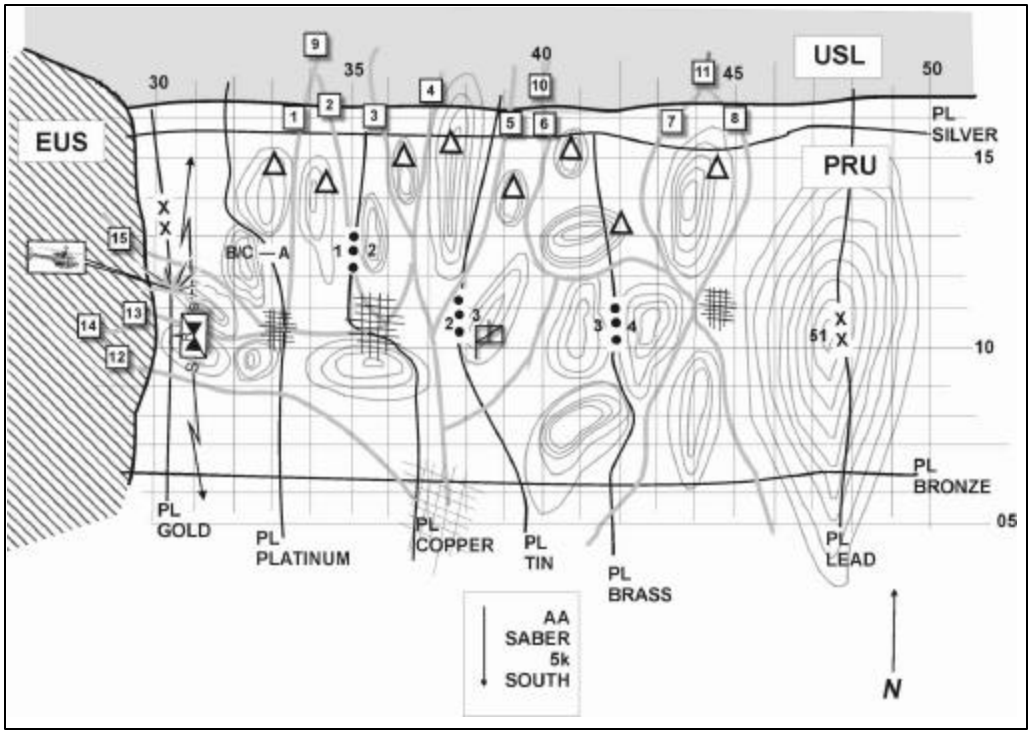

SOLUTION — Tactical Vignette 99-1

"FORGING STEEL — Exploiting a Brigade's Success" from the January-February 1999 issue of ARMOR

(**Note:** There was a mistake in this tactical vignette when it ran in the Jan-Feb 99 issue. The second paragraph, second sentence should have read, "OBJ ANVIL is located three kilometers to the east of PL Red," instead of west.)

Author's Solution

SITUATION.

Enemy. The enemy defense along OBJ ANVIL has collapsed. It appears that remnants of the enemy mechanized infantry battalion are falling back and trying to secure the bridge over the Quasimodo River while another battalion is approaching from the west to reestablish a defense. Scout #3 reports two T-80s and five BMPs moving northeastward in the vicinity grid 028152. Scout #1 reported two T-80s vicinity grid 040205 moving southwest out of the town of Dirkheim, followed by small dust clouds. We have lost contact with Scout #1. An enemy battalion consisting of six T-80s and 15 BMPs is moving west toward OBJ STEEL, estimated arrival time is 40 minutes. I believe the enemy company in the south is attempting to secure the bridge on OBJ STEEL. The enemy battalion in the west will likely attempt to secure the bridge and reestablish a coherent defense along the river. The unidentified force from Dirkheim will most likely defend the gap between Scout #1 and Scout #2 or move to secure the bridge.

Friendly. The brigade is reorganizing along PL RED. The brigade commander intends to continue the attack by securing OBJ STEEL for future operations.

MISSION. TF 1-40 attacks to secure the bridge on OBJ STEEL to allow the brigade to continue the attack.

EXECUTION.

Intent. Our purpose is to secure the bridge over the Quasimodo River. This provides the brigade a significant tactical advantage for future operations. We must delay the attacking enemy battalion in order to gain time to secure the bridgehead. We must defeat the retreating enemy company in the south. Then, we must secure the far side of the bridge to provide sufficient maneuver space for follow-on forces to cross the bridge to continue the attack. The endstate is the bridge and OBJ STEEL secured with two companies securing the far side and one company in depth securing the near side and the task force prepared to repel the enemy battalion's attack.

Concept of Operations. We will cross PL RED in a vee formation with TM C in the north, TM B in the south, and TM A followed by the Engineer Company in the rear. CAS will delay the attacking enemy battalion and artillery will focus on the enemy company in the south. TM C will seize the near side of OBJ STEEL and the bridge while protecting the task force northern flank. TM B will destroy the southern enemy company and then support-by-fire to assist in securing the near side of OBJ STEEL. TM A will cross the bridge after it is secured by TM C, then defend the far side against the attacking enemy battalion. On order, TM B will cross the bridge to assist defending the far side of the bridge in the south.

Concept of Fires. We have priority of artillery fires and two sorties of A-10s loaded with Mavericks on station in 15 minutes. Priority of artillery fires is to Scout #3 to delay the enemy company in the south. On order, artillery priority of fires shift to TM B. Once TM B has destroyed the enemy company, priority of artillery fires is to TM A to assist in delaying enemy battalion and defending the bridgehead. Mortar priority of fires is to TM C, on order TM A. CAS will engage the enemy battalion to provide us the time needed to secure the far side of OBJ STEEL.

Tasks to Subordinate Units.

TM C (initial main effort). Seize the near side of OBJ STEEL and secure the bridge to protect the forward passage of TM A. Support-by-fire vicinity grid 061194, orient east, to protect the crossing and deployment of TM A. Clear the bridge to support the crossing of TM A. Block the mobility corridor vicinity grid 045192 to protect the northeastern flank of the task force. Primary observer for fires against the enemy battalion until TM A is deployed.

TM B. Destroy the enemy company in the south to protect TM Cs southern flank. Then support-by-fire vicinity center-of-mass grid 042172, orient northeast, to assist securing the near side of OBJ STEEL. On order, follow TM A and defend the southern half of OBJ STEEL, south of the 18-grid line, to assist in protecting the bridgehead.

TM A (on-order main effort). On order, seize and defend the far side of OBJ STEEL to allow the brigade to continue the attack. Be prepared to defend the entire far side of the bridgehead if TM B is unable to cross the bridge in time. Be prepared to reinforce TM Cs blocking of the mobility corridor in the vicinity of grid 061194.

B Company Engineers. Follow TM A, secure the bridge after TM A has crossed. Coordinate emplacement of VOLCANO minefields in support of TM A, execution is on-order.

Mortars. Follow TM C. Occupy position vicinity grid 035186. Initial priority of fires is TM C in order to suppress and obscure enemy forces approaching from the north or at the bridge. As the main effort shifts from TM C to TM A, priority of mortar fires shifts to TM A in order to suppress and obscure enemy forces on the far side of the bridge.

Scout. Attempt to reestablish contact with Scout #1 now. Reposition Scout #2 to the north to observe the unidentified enemy force reported by Scout 1.

SERVICE SUPPORT. Task force trains remain in AA PITTSBURG. Resupply IAW with SOP.

COMMAND AND SIGNAL. I will move with TM C, then with TM A. TF S3 moves TM B. Task force TOC remains in AA PITTSBURG. Signal is no change.

We move in 15 minutes. Acknowledge over.

RATIONALE.

Success of the task force mission rests on securing the bridge to support the brigade's future operations. Securing the bridge means the task force must secure

Continued on next page

TV 99-3 (Cont. from Page 49)

cinity NAI 3, break. I will lose visual contact in approximately five mikes, break. Recommend that Red reposition to continue to track the vehicles, over."

- The weather has gotten worse and you can no longer talk to the squadron TOC.

- You hear a weak radio transmission: "Any Wolfpack element, this is Bulldog 26, I am on the ground at GV305120, break. I had an engine failure and had to land. There is a group of about five personnel observing me 500 meters to the north, they appear unarmed, break. We spotted one T-55 moving east last seen approximately 1.5 kilometers NNW of NAI 16, request assistance, over."

What do you do?

Requirement: You have five minutes to decide what to do and issue your FRAGO as you would if speaking on the radio. Submit your solutions by e-mail to: taylorde@ftknox-dtdd-emh5.army.mil or by regular mail to Cavalry Branch, Doctrine Division, ATTN: ATZK-TDD-C, Ft. Knox, KY 40121-5210.

Solutions to this vignette will appear in the September-October 1999 issue of ARMOR.

Solution (Continued from previous page)

the far side of OBJ STEEL to provide the required maneuver space for follow-on brigade forces to move out of the bridgehead. The task force must send maneuver forces to seize the far side. Further maneuver forces on the far side of the bridge must be strong enough to defend against the attacking enemy battalion.

There are three threats the task force must overcome to secure the bridge. The first is the retreating enemy company in the south. The enemy company poses a serious threat to the mission if it gets to the bridge before the task force. At only four kilometers away from the bridge, the enemy company will arrive at the bridge before the task force. We used artillery, adjusted by Scout #3, to delay this enemy company until it can be engaged. This enemy company must be destroyed to prevent it from interfering with the continuing attack. We tasked TM B to destroy this enemy company. With two tank platoons and one mechanized infantry platoon, TM B has the combat power to quickly destroy the enemy company and then be available for other tasks like assisting TM A with defending the far side of the bridge.

The second threat is the enemy battalion approaching from the west. The enemy battalion is expected to arrive in about 40 minutes. This means the enemy battalion is likely to arrive at the bridge just before or just as the task force gets there. The enemy battalion has to be delayed. We used the two A-10s to delay the enemy battalion. These two aircraft should delay the enemy as well as inflict some damage. This delay provides the task force the time needed to deploy TM A, the most lethal company in the task force, to the far side of the objective. Any additional delay of the enemy battalion should provide enough time for the deployment of TM B to the far side. But if TM B does not have time to get to the far side, TM A has the combat power to defend against the enemy battalion.

The final threat is from the unknown enemy force approaching from the north out of the town of Dirkheim. Because the task force has lost communications with Scout #1 the enemy force's exact composition and actions are not known. We assumed some risk against this threat. It is likely TM C can handle this enemy threat. If the enemy force moves toward the bridge, then TM C will have to destroy it prior to securing the bridge. If the enemy force turns east towards PL RED, the other two task forces can eliminate it. TM C with two mechanized infantry platoons, a tank platoon, and a combat engineer platoon has the combat power and support to block the mobility corridor north of OBJ STEEL, clear the bridge, and overwatch the far side of the bridge.

Some Lessons Learned To Avoid Fatal Accidents

From Major Monroe Harden, U.S. Army Safety Center, Fort Rucker, Ala.

As an accident investigator assigned to the Army Safety Center at Fort Rucker, I have the unpleasant job of determining the causes and identifying corrective actions for accidents that kill our soldiers or seriously damage our equipment. I would like to share a few lessons learned from some recent fatal accidents.

1. Do conduct pre-exercise recons of your training areas. Just because you, your unit, and your people have been to the NTC/JRTC/LTA many times, you won't automatically know if some contractor or unauthorized person dug a trench across a tank trail the week before your mission. Take a look at the training area and identify any hazards before you move in and begin the exercise.

2. Do train your personnel on the proper actions to take when encountering unexploded ordnance (UXO). The procedures in the Common Task Manual are very good. Soldiers are naturally curious — leaders need to train them not to examine things found on the ground in training areas. For units on large, open posts, this caution applies to family members and civilians as well. Teach your kids not to play with items found in the woods — they may be UXO as well.

3. Wear your seatbelts! Wear them in your POVs, and wear them in your military vehicles if they are equipped with the belts.

4. Pay attention to your driver selection and training programs. Brand new 2LT TCs coupled with brand new PV2 drivers can add up to trouble. Be sure that your drivers and TCs know the proper ground guiding procedures for day and night operations.

5. Practice your rollover drills. Don't just talk about them — DO them. Be sure that every crewman knows what to do when he hears the command "rollover" — what to hang on to, what to switch off, what to do after the vehicle comes to rest, and how to get out. Be sure that your loads plans will not block off any egress routes, and that all items are secured in place so that they won't fall out, even if the vehicle is completely upside down.

We are in the process of examining the rollover procedures for tracked and wheeled vehicles in conjunction with TRADOC, AMC, and the Program Managers' offices. We are always interested in input from the field. If you have any procedures, SOPs, or comments to add to our efforts, feel free to email them to me at *hardenm@safety-emh1.army.mil.*

The Safety Center publishes a monthly newsletter, "Countermeasure," that covers all aspects of ground system safety, risk management, and accident lessons learned. If your unit does not receive a copy, contact me at the above email address and we will add you to our distribution list.

REVIEWS

Books on the Balkans Put Missions in Perspective

by Lieutenant Colonel Dan Zajac

Editor's Note: Lieutenant Colonel Zajac forwarded us the following list of books that he found useful during his assignment to Bosnia from December of 1995 to June of 1997. He said they are listed by utility and recommended reading order.

Bridge on the Drina by Ivo Andric. University of Chicago Press, 1977.

Nobel Literature Award Winner. An intense historical novel that spans a long period in Bosnian history, from the Turkish occupation until WWI. It was near unanimously recommended by Bosnian-Serbs, Moslems, and Croats alike. (No kidding, I asked them what book I should read to better understand them — if I could read only one.) This book captures the ethos/gestalt of Bosnia-Herzegovina better than any. It is a "must read" for anyone who really wants to understand.

If you like Ivo Andric's work, also try his *Bosnian Chronicle* (University of Chicago Press, 1993).

Yugoslavia - Death of a Nation by Laura Silber and Allen Little. TV/Penguin Books, 1996.

This is the best overall account of the conflict. It covers the break-up of Yugoslavia and the ensuing conflicts, from the late 1980s through the Dayton Peace Accords, and helps one to understand why we're in Bosnia today. This book ties in wonderfully with *The Death of Yugoslavia,* the five-part B.B.C. television series, which is available on video. Moreover, the video series brings to life all of the personalities in the book. The video and book are powerful indictments of Milosevic's guilt in starting the whole thing. Recently, the History Channel had Laura Silber do a short on the same topic — both videos would be great for training soldiers heading into the AOR.

Endgame — the Betrayal and Fall of Srebrenica: Europe's Worst Massacre Since World War II by David Rhode. FSG, 1997.

If you want to know what happened at Srebrenica, this is a must-read. Without doubt the most detailed and objective (despite a somewhat anti-U.N. and anti-Serb bent) account of the long lead-up and eventual demise of the Srebrenica "enclave." He captures the role of the French (U.N.) GEN Morillon, Naser Oric, and Muslim complicity better than any other work on the topic. I met Rhode as he was researching/writing the book, during 2d Brigade, 1AD's war crimes-related missions in the Drina Valley. Rhode gets most of it right and only fails in his understanding of the extent of the U.S. Army's role in the investigations. We could not tell him, of course.

Srebrenica: Record of a War Crime by Jan Willem Honig and Norbert Both, Penguin Books 1996.

This is a good book detailing the fall of Srebrenica and the origins of the pocket/enclave. Good detail on the role of Naser Oric and the Muslim side of the battle. Don't bother with this one if you read Rhode's book.

Black Lamb and Grey Falcon by Rebecca West. Penguin Books.

One woman's journey through Yugoslavia in the late 1930s, but don't let the publishing date deceive you. This book is relevant. A long read but a wonderful book for those really interested in the region. Many buy this book, but few read it due to the size. If you have the time and want to add depth to your understanding — read this book.

The Fall of Yugoslavia: The Third Balkan War by Misha Glenny, Penguin Books, 1996.

Another pretty objective account of the Yugoslav conflicts from the late '80s through Dayton. It helps one to understand why we're in Bosnia today. A quick read but not as comprehensive as *Yugoslavia: Death of a Nation.*

Balkan Ghosts by Robert D. Kaplan. Vintage Books, 1993.

Popularized when President Clinton noted that he had read it. Provides background on the peoples and motivations in the Balkans — a quick, interesting read, however it is a somewhat superficial and not nearly as scholarly as most of the other titles on this list. A lot of folks read this one and think they have it all figured out — big mistake.

Why Bosnia?: Writings on the Balkan War edited by Rabbi All & Lawre Lifeschutz, The Pamphleteer's Press Inc., Stony Creek, Conn., 1993.

An interesting compilation of articles on the conflict from international authors, decidedly pro-Muslim. Gives the reader a dose of the horror of the conflict as well as the pro-Muslim propaganda machine.

The Serbs: The Guardians of the Gate by R.G.D. Laffan, C.F., Dorset Press, New York, 1989.

Written by a pro-Serbian British officer during WWI. Biased, yes, but useful in helping to understand the Serb people and their fortress mentality, or as a Muslim linguist once told me, "the whole Serb thing."

Balkan Tragedy. Chaos and Dissolution After the Cold War by Susan L. Woodward, The Brookings Institution, Washington D.C., 1995.

Good book that covers the conflict up through January 1995. Not the easiest read on this list. Heavier than the others on political-economic factors.

Seasons in Hell by Ed Vulliamy, Penguin Books, 1993.

Hard on the U.N. for ineptitude and on the West for failure to stop the fighting.

Hearts Grown Brutal: Sagas of Sarajevo by Roger Cohen. I haven't read this one yet, but I listened to the author in a lecture and question and answer period and the guy seems to have a lot of insights at the human level — very impressive. I plan to pick this one up soon. In addition, both Lord Owen and Richard Holbrook published new books in the last 12 months, however, I have not had the time to read them. Given the role they played, I'm sure they'd add a lot, but the macro view they would provide might not help a soldier at the pointy edge in Brcko, Zvornic, or Han Pijesak.

LTC Dan Zajac served as the G3, Operations of 1AD in Bad Kreuznach, deploying to Croatia and Bosnia in 1993 for recons. He assisted in planning for potential Bosnia deployment and planned/supervised execution of the 1st NATO/Partnership for Peace Exercise in Poland in September, 1994. In early 1995, he deployed to Kuwait for Instrinsic Action 95-4 as the Battalion S3, 2-68 Armor. From Dec '95-Jul '96, as the S3, 2d Bde, 1AD, he deployed to Bosnia for Operation Joint Endeavor. His next assignment was as aide de camp to the commander, V Corps (with travels to Bosnia, Croatia, Macedonia, and Hungary). In 1997-98, he served as the XO of 1st Bde, 3ID, Ft. Stewart, Ga., deploying to Egypt for Bright Star and Kuwait for Operation Desert Thunder. He is currently the commander of 3-69 Armor.

A Call For Doctrinal Reform

The Principles of War for the Information Age by Robert R. Leonhard, Presidio Press, Novato, Calif., 1998. 288 pages. Retail, $30; Amazon.com, $22.

In this, the deadliest century in human history, there has been no shortage of pundits, journalists, historians, and not a few veterans touting their personal observations, opinions, and experiences as the newest immutable theory of warfare. Few of these offerings passed contemporary scrutiny, let alone the tests of time. A few names, none without some intellectual battle-scars, survive and stand out, J.F.C. Fuller and Richard Simpkin come immediately to mind. When military historians of the future sit down to develop their revised syllabi on "War and Its Theorists," there will be a third name to add — Robert Leonhard.

This is Leonhard's third book of pure military theory. His first two, *The Art of Maneuver* and *Fighting By Minutes* carry the progression of his thought over the course of the past decade. In this book, Leonhard takes on not just the methods that the Army actually uses (despite what the doctrine suggests) but the foundation of much of our base doctrine itself. According to his analysis, the current "Principles of War" that the U.S. Army uses are out-of-date by at least 150 years. They are better described as "Principles of Battle" and are, therefore, inappropriate as guidance for an army in pursuit of "Operational Art."

In his dissection of the history that brought the principles into U.S. Army doctrine, Leonhard acknowledges that he follows along a fairly well beaten track. Other historians have pointed out how the U.S. came to incorporate the principles. Where Leonhard deviates, and what makes this book worth double the cover price, is in his analysis of why each and every principle is either irrelevent, misapplied, or misunderstood as they are currently listed. His debunking of the concept of the "Offensive" through illustration of the true objective (initiative) is exemplary. It is the stuff of OPD sessions and true professional development. Agree with his theories or not, every professional should own this book and use it to develop his peers. It is a book to read, think and argue about, and in that it succeeds exactly as Leonhard intended.

In fact, about the only distractions within this book are Leonhard's awareness of his role and the lack of footnotes and bibliography. The first is evident throughout the text as he acknowledges that some of these views and theories will likely offend a segment of his peers and superiors. While this may be true, and though Leonhard takes some perhaps justifiable delight in tweaking a few doctrinaire noses, there is really very little to be gained from the inclusion of this in the text. It may work counter to his intent as some junior or future leaders read his book before they become truly knowledgeable or committed to the current doctrine, and through his comments become aware that there is (or was) some dispute over the validity of his vision.

As for the need for additional documentation, one should recognize from the outset that this is not a book filled with stuffy academic prose, nor should it be. Leonhard writes in an easy, almost conversational style. Moreover, much of what he presents is the creation of his own very fertile mind, and as such requires no documentation. My criticism is not intended to change any of those attributes, rather to supplement them. A more complete bibliography and some explanatory footnotes embedded in the text could go a long way towards creating the next generation of theorists in a future release of this book.

All in all, this was a good read. Though not every one of his new principles is flawless in this reader's opinion, they are good starting points for doctrinal reform and more than any other American military theorist presents elsewhere. The book, readily available from all on-line booksellers if not carried by your local bookstore, is a bargain at twice the retail price.

ROBERT L. BATEMAN
CPT, Infantry
West Point, N.Y.

The Three Meter Zone by CSM J.D. Pendry, Presidio Press, Novato, Calif., 1999, 230 pages, $24.95 (hardback).

"The three meter zone" is the zone of the first-line noncommissioned leader. It is the zone of day-after-day, in-the-face, hands-on leadership. It is the most critical leadership zone; if what is done within the zone is done with common sense and high standards, the product will be an outstanding soldier. If what is done within the zone is done poorly and to low standards, the product will be an elimination action or, even worse, an unmotivated, untrained, unfit soldier who is merely marking time until ETS. As our Army is suffering from dramatically high attrition rates among first-term soldiers, CSM Pendry's short book is both timely and useful. He clearly explains how first-line leaders can develop themselves and their leadership style, and how they can lead their soldiers to success. I recommend this book be read by sergeants and by company-grade officers. I encourage all battalion and brigade commanders to add it to their unit's professional reading list.

CSM Pendry focuses first on the leader, and explains how he developed his own leadership style. He shows how he changed many of his opinions over the years, and how he critically examined his values to develop a solid foundation for his leadership style. He includes an interesting discussion of the need for counseling of the battalion CSM by the battalion commander, which can be read with profit by every NCO who intends to become a "command team" member. He relates that it was crucial to his own development to simply sit down and write out what the Army values mean to him (he includes, but goes beyond, LDRSHIP). It was not easy for him to do, but when finished, he had his position, he knew where he was going, and he knew how he planned to get there. Another concept he found useful was the "personal battle focus," his own mission essential tasks, means of assessing where he was, and plan to get where he wanted to be. CSM Pendry emphasizes the critical importance of *being the example* of what we want our soldiers to be — never easy, but absolutely essential to success within the three-meter zone.

In the second half of his book, CSM Pendry focuses on standards and discipline for soldiers — knowing them, respecting and rewarding them, motivating them, training them, and physically training them. The longest and most important of these sections covers "knowing them." Here, CSM Pendry emphasizes that different styles must be used for different people, with the goal of moving the soldier out of the three-meter zone of constant supervision and detailed instructions, into the "fifty" or "one-hundred meter" zones of increased responsibility and autonomy. Readers will find his comments on the need to know and be partners with civilian employees, on the need to welcome newly promoted NCOs into the corps, and on the need to communicate with and participate in low-profile events with soldiers to be very thought-provoking.

Finally, every leader should read his comments concerning how too many NCOs and company grade officers have "willed" the Single Soldier Initiatives for Quality of Life to fail; he correctly indicts many leaders for willfully failing to support the program and our own soldiers as the best of them try to improve their style of life.

CSM Pendry has no magical formulas for leaders. He has thought critically about how he leads; he has improved as a leader by applying his insights. Read this book, take up his challenge to critically examine ourselves and our styles. We can become masters of the "three-meter zone" as well. The entire Army will benefit.

CSM DAVID L. LADY
Command Sergeant Major
U.S. Army Armor Center

The HMMWV Storage Rack

Lightweight, easy-to-mount rack solves limited cargo capacity problem

by Captain T. J. Johnson

A challenge that has always faced cavalrymen and tankers is where to store all the items necessary to accomplish their missions. It was this challenge that motivated me and one of my NCOs to create the HMMWV storage rack.

As the Alpha Troop executive officer of 3rd Squadron, 4th Cavalry, I became very familiar with the issues and demands facing our scouts on a daily basis. One issue that always seemed to be at the forefront of discussion was the lack of space in our M1025 and M966 HMMWVs. While a very powerful and versatile vehicle, the HMMWV's limited cargo capacity restricts the amount of ammunition, weapons, and personal belongings that can be carried.

SGT Kenneth Patrick and I were talking about this one day, and decided to tackle the issue. SGT Patrick drew a rough diagram of what a rack should look like. We decided that it should be capable of hauling water cans, ammunition, fuel cans, personal belongings, and other military items.

With SGT Patrick's idea on paper, I called a workshop on post to see if they could build a prototype of our rack. When they told me they could, I went to the unit S4 who freed up funds to build the prototype. We worked with the civilian welder to improve some of the flaws in our original design, increasing the width of the rack to accommodate a bigger payload. The final product, approximately 44-½ inches long, 11-½ inches tall, and 21 inches deep, was fabricated primarily of angle iron and flat bar stock. The upper edge contained three spaced hooks designed for attachment onto the tailgate of the HMMWV.

The left and right ends of the rack contained arms angled downward to support the main horizontal platform. A variety of cargo could be carried on this large deck, which was made of an expanded wire mesh. To secure the racks to the HMMWV, holes were drilled into the left and right hand corners of the rack and the HMMWV tailgate. Bolts, washers, and wingnuts secured the rack to the tailgate. As a further safety precaution, the four cargo straps on the back of the tailgate were threaded around the rack to provide further stability.

The rack proved an instant success. Soldiers were happy to have a product that not only increased their HMMWV's carrying capacity, but more importantly, freed up some interior space for other essential equipment. At only 35-40 pounds, another positive feature of the rack was the ease with which it could be mounted and dismounted from the tailgate.

From gunnery deployments to Pohakuloa Training Area on the big island of Hawaii to Operation Cobra Gold in Thailand, the durability and dependability of the racks were proven again and again. I thought about selling the idea to the U.S. Army, but after seeing how successful the rack has been in various operations, I've decided to share this with everybody in the Armor community. I'm hoping that somebody may see this and improve upon the idea that SGT Patrick and I developed.

I learned two very important lessons while developing this rack. The first one is that a supportive chain of command willing to spend money on soldiers' ideas promotes initiative and esprit de corps. The second lesson was that it pays to listen to NCOs and get their input on issues that affect readiness and mission accomplishment. Many NCOs have a wealth of knowledge and experiences that junior officers must tap into and utilize in order for our Army to be successful in future years.

CPT T.J. Johnson was a Distinguished Military Graduate commissioned in Armor in 1994 from Ripon College. He has served as a scout platoon leader in 5/17 Cav (Korea) and as troop executive and squadron maintenance officer in 3/4 Cav (Hawaii). His military education includes AOBC, SPLC, Airborne, Air Assault, and BMOC. He is currently at Ft. Knox for AOAC, CAS3, and CLC. His next assignment is at Ft. Wainwright, Alaska.

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