



ARMOR

March-April 2007



***“The Strength
of Armor”***

HARMON

ARMOR

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Editor in Chief
LTC SHANE E. LEE

Managing Editor
CHRISTY BOURGEOIS

Commandant
MG ROBERT M. WILLIAMS

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March-April 2007, Vol. CXVI, No. 2

Features

- 7 **The Premature Debut**
by Major David P. Cavaleri
(November-December 1995)
- 12 **Armor's Stand at St. Vith**
by Captain Stephen D. Borows
(November-December 1984)
- 17 **The 72d Tank Battalion in Operation Touchdown**
by Captain Scott D. Aiken
(September-October 1992)
- 21 **Armored Cavalry Regiments Along the Iron Curtain**
by Lieutenant General Bruce C. Clarke
(May-June 1958)
- 26 **Scouts Out — But Not in HMMWVs! The Rise and Fall of the HMMWV-equipped Heavy Maneuver Battalion Scout Platoon**
by Dr. Robert S. Cameron
- 33 **Armor in Vietnam**
by Lieutenant Colonel Raymond R. Battreall, Jr.
(May-June 1966)
- 36 **Ar Rumaylah Airfield Succumbs To Hasty Attack**
by Captain A.A. Puryear and Lieutenant Gerald R. Haywood, II
(September-October 1991)
- 40 **Tanks and "Shock and Awe"**
by Captain Jay D. Pellerin
(September-October 2003)
- 43 **Platoons of Action: An Armor Task Force's Response to Full-Spectrum Operations in Iraq**
by John P.J. DeRosa
(November-December 2005)
- 49 **Abrams Training Aids Devices Simulators and Simulations**
by Lieutenant Colonel Benjamin Harris
- 52 **2007 Armor Warfighting Conference: "Armor: Strong Today — Strong Tomorrow"**
- 53 **2007 Armor Warfighting Conference/Armor Trainer Update Schedule**

Departments

- 2 **Contacts**
- 3 **Letters**
- 4 **Commander's Hatch**
- 5 **Driver's Seat**
- 6 **From the Boresight Line**



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“From My Position...”

“If we are strong, our character will speak for itself. If we are weak, words will be of no help.”

President John F. Kennedy
Undelivered address, Dallas,
22 November 1963.

The subtitle for this issue of *ARMOR* is “The Strength of Armor.” Like last year’s March-April issue, we have designed this edition to support the theme of the 2007 Armor Warfighting Conference. Our branch’s history has clearly and consistently spoken for itself through its actions on the battlefield. This issue is a collection of historical snapshots taken from our magazine’s past that illustrate both the physical and moral strength of the “combat arm of decision.”

The tank demonstrated its physical strength for the first time during the British army’s Somme Offensive of 1916. Although this introduction did not prove decisive, it nevertheless provided a preview of the awesome shock effect that future armored combat vehicles and their crews would deliver to the battlefield. Major David Cavaleri makes this point in his November 1995 article, “The Premature Debut.”

Since 1916, tanks and other armored vehicles have proven their worth in a variety of conditions and performed critical roles across the entire conflict spectrum. From high-intensity conflict in World War II to low-intensity, but no less brutal, counterinsurgency operations in Vietnam, armor has served as an invaluable member of the combined arms team. The articles in this issue serve as a reminder that armor is strong not only because of its inherent ability to deliver mobile, protected, and devastatingly effective firepower, but also because of the flexibility made possible by the innovation and resourcefulness of its Soldiers and leaders.

While many qualities contribute to moral strength, at least one of those qualities must be honest self-assessment. As a group, mounted Soldiers have demonstrated the ability to critically examine themselves, their training, and their equipment to seek improvement and aggressively implement change. Dr. Robert Cam-

eron’s article, “Scouts Out — But Not in HMMWVs! The Rise and Fall of the HMMWV-equipped Heavy Maneuver Battalion Scout Platoon,” is a new article that examines the recent history of heavy battalion scout platoon organizations. It is a cautionary tale that presents a compelling argument for the importance of including rigorous historical analysis as part of any future proposals for doctrinal or organizational change. Having served as a scout platoon leader myself, reading this article was not a particularly comfortable experience. It was nevertheless very enlightening. *ARMOR* has a long tradition of presenting uncomfortable truths necessary to facilitate discussions that will ultimately serve to improve the branch’s fighting skills. This article is both consistent with that tradition and particularly timely as the date for this year’s Armor Conference approaches.

Like previous conferences, this year’s event is certainly an opportunity to renew friendships, share experiences, and take a knee in preparation for the challenges ahead, but it is also an opportunity to produce tangible benefits for the Armor force. This year’s event includes work product panels designed to lay the foundation for the future. These panels will focus on topics ranging from Armor force core competencies in full-spectrum operations to the formation and structure of heavy brigade combat teams. As the architect of the Armor force, the Armor Center depends on the strength of ideas from the force to improve training, equipment, and doctrine. Attendees, subject-matter experts, and other participants in this year’s event will have the ability to influence the Armor force’s future path more than at any other time in the past few years.

Armed with the knowledge of the role of Armor in past conflicts, and the combination of current experience and a healthy respect for history’s lessons, participants at this year’s event are guaranteed to have a professionally rewarding experience. As a branch we know that Armor is strong today; the Soldiers who preceded us made that strength possible. If we harness, refine, and share the hard-won knowledge of the past few years at the 2007 Armor Warfighting Conference, we will ensure that Armor remains strong tomorrow.

S.E. LEE

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

Joyce E. Morrow
JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0702907

Points of Contact

DSN prefix – 464-
Commercial prefix– (502) 624-

ARMOR Editorial Offices

Editor in Chief
LTC Shane E. Lee 4087
E-mail: shane.lee@knox.army.mil

Managing Editor
Christy Bourgeois 4582
E-mail: charlotte.bourgeois@knox.army.mil

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

Art Director
Mr. Jody Harmon 3923
E-mail: jody.harmon@knox.army.mil

Editorial Assistant
Kathy A. Johnson 2249
E-mail: kathy.johnson@knox.army.mil

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U.S. Army Armor Center

Commanding General (ATZK-CG)
MG Robert M. Williams 2121
E-mail: robert.m.williams@knox.army.mil

Deputy Commanding General (ATZK-DCG)
BG Michael S. Tucker 7555
E-mail: michael.s.tucker@knox.army.mil

Chief of Staff (ATZK-CS)
COL Russell Cloy 1101
E-mail: russell.cloy@knox.army.mil

Command Sergeant Major (ATZK-CSM)
CSM Otis Smith 4952
E-mail: otis.smith@knox.army.mil

Command Sergeant Major to DCG (ATZK-DCG-CSM)
CSM Raymond Chandler 7091
E-mail: raymond.chandler@knox.army.mil

Special Assistant to the CG (ARNG) (ATZK-SA)
COL Marlin Levendoski 1315
E-mail: marlin.levendoski@knox.army.mil

Directorate of Training, Doctrine, and Combat Development
COL Richard G. Piscal (ATZK-TD)
E-mail: richard.piscal@knox.army.mil 8247

TRADOC Capability Manager for Heavy Brigade Combat Team
COL John M. Shay (ATZK-TS)
E-mail: john.shay@us.army.mil 7955

Experimentation and Analysis Directorate (ATZK-UAE)
COL David Hubner 7809
E-mail: david.hubner@knox.army.mil

TRADOC Capability Manager, Platform Battle Command/Combat Identification (ATZK-PBC-CID)
COL Alan Mosher 4009
E-mail: alan.mosher@knox.army.mil

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

Unit of Action Maneuver Battle Lab (ATZK-UA)
Joe Hughes 5050
E-mail: joe.hughes@knox.army.mil

Assistant TRADOC Capability Manager Soldier - Mounted Warrior (ATZK-ATS)
MAJ Bryan Salyers 3519
E-mail: bryan.salyers@knox.army.mil

U.S. Army Armor School

Director of the Armor School (ATZK-DAS)
COL Robert Valdivia 1050
E-mail: robert.valdivia@knox.army.mil

1st Armor Training Brigade (ATZK-BAZ)
COL Peter D. Utley 8736
E-mail: peter.utley@knox.army.mil

16th Cavalry Regiment (ATZK-SBZ)
COL Robert R. Naething 7848
E-mail: robert.naething@knox.army.mil

NCO Academy (ATZK-NC)
CSM Samuel Wilson 5150
E-mail: samuel.wilson@knox.army.mil

LETTERS

Not Quite Counterinsurgency: Hezbollah is Not a New Model

Dear *ARMOR*,

We must understand that the situation in Lebanon is not a "counterinsurgency" nor were there any real tactical or technical surprises. Captain Dan Helmer's article, "Not Quite Counterinsurgency," in the January-February 2007 issue *ARMOR*, provides a good synopsis on which to begin analysis, but the analysis itself is too narrowly constrained.

The initiation of an "incident" (capturing an IDF patrol) and then drawing in the mobile reaction forces (IDF tanks) into prepared ambushes is nothing new. In my 1970s ROTC classes, this was called the "Malaysian ambush," named for the technique used by Malay communist guerrillas against the British in the late 1940s. The tactical solution was for reaction forces to increase security during the approach, essentially changing from a "fast drive" into a "movement to contact." Oh yes, with overwhelming force.

The idea of employing antitank guided missiles against infantry is new only to those who never thought of it. Again, in my ROTC days, I heard many anecdotal tales of TOW missiles being fired against point targets such as bunkers, buildings, and so on. With a 3km range, it was, after all, one heck of a precision sniper weapon.

The doctrinal emphasis on "counterinsurgency" is mistaken, as is the claim that Hezbollah "is a new model." Instead, consider the various "Partisan armies" during WWII. Not the highly romanticized and exaggerated "French Resistance," but the real partisan field forces; the Poles, Yugoslavs, Russians, among others, had full partisan battalions and brigades operating on the German Eastern Front. Though always lacking armor and air, these partisan forces used terrain and whatever weapons they had and effectively engaged regular German troops in full battle, disrupting and blunting many German operations. In fact, much of the rationale for creating the "10,000-man" light infantry division (LID) in the 1980s was based on similar assumptions that well-equipped light troops, in-

telligently using terrain, can successfully stop mechanized (Warsaw Pact) forces.

The *political* problem facing the IDF is that they have an "underground army" growing steadily in strength and sophistication across the border in Lebanon. While limited in armor and therefore "offensive" operational capability, it is instead reinforcing its defensive positions, analyzing avenues of approach, and preparing ambushes.

The *doctrinal* problem is that the IDF (apparently) thinks it is involved in "counterinsurgency" operations when in fact it is launching cross-border deliberate attacks against fixed and fortified enemy positions.

The *operational* problem was that having launched an inadequate cross border reaction force and running into a classic "Malay ambush," the national command hesitated and ceded the initiative.

Again, my compliments to Captain Helmer for providing a solid foundation for beginning the analysis.

CHESTER A. KOJRO
LTC, U.S. Army, Retired

Testing the "Hetz" Provides Valuable Lessons Learned

Dear *ARMOR*,

I would first of all like to thank Mr. Staub for responding to my article, "The Secret Testing of Israeli M111 'Hetz' Ammunition: A Model of Failed Commander's Responsibility," in the Letters column of the January-February 2007 issue of *ARMOR*. While his comments and opinion are appreciated, they only seem to increase the number of those guilty of "failed commander's responsibility," including the entire Israeli chain-of-command.

Mr. Staub's comments regarding the reserve status of the Israeli 362d Tank Battalion, the lack of available Israeli air support, and governmental political intrigue do not excuse Israeli commanders (on the ground) from failing to secure, safeguard, or destroy left-behind tanks. Clearly, the battle of Sultan Yakoub was a fierce

and demanding battle for the men of the Israeli 362d Tank Battalion. By failing to destroy or recover their own damaged and abandoned Magach tanks, however, the Israeli commanders caused repercussions literally felt around the world.

Finally, while Mr. Staub suggests that the Battle of Sultan Yakoub is not the best example of failed commander's responsibility (and his example of the battle of the Damascus/Beirut Highway indicates that this was not an isolated problem for the Israelis during the fighting in 1982), the loss of the 362d Battalion's Magach tanks and the M111 "Hetz" ammunition they carried in 1982, represents a worst-case scenario that provides valuable lessons learned for U.S. commanders today.

JAMES M. WARFORD

Fort Hood Training Capabilities Site Offers Valuable Resource Information

The Fort Hood Training Capabilities Website, <https://mdtt.hood.army.mil/capability/main.html>, is a single online entry point for III Corps and Fort Hood's live, virtual, and constructive (LVC) and joint, interagency, and multinational (JIM) training capabilities. The site provides users with training resource descriptions, scheduling instructions, and resource information links to help match training requirements with Fort Hood's vast array of training resources. Fort Hood is one of the premier Army locations providing soldiers with a wide variety of realistic maneuver areas and live-fire training ranges designed to support training at both the individual and collective levels. Visit the Fort Hood Training Capabilities Website to learn about training resources available to enhance your training mission.

Society of the First Infantry Division To Hold Its 89th Annual Reunion

The Society of the First Infantry Division, veterans of the Army's "Big Red One," will hold its 89th annual reunion in St. Louis, Missouri, from 8-12 August 2007 at the Millennium Hotel.

For more information, contact Society of the First Infantry Division, 1933 Morris Road, Blue Bell, PA 19422; telephone 1-888-324-4733; fax 1-215-661-1934; e-mail Soc1ID@aol.com; or visit the website at 1stID.org.

The 2d Infantry Regiment Association Invites Post-Vietnam Vets to Join

Officers and soldiers of the 2d Battalion, 2d Infantry Regiment who served in Germany, Kosovo, and Iraq are encouraged to contact the Second Infantry Regimental Association. The association is currently made up of soldiers who served in the 2d Battalion, 2d Infantry Regiment during Vietnam who would like to extend an invitation for post-Vietnam vets to join. For more information please contact the association at 5005 Portsmouth Road, Fairfax, VA 22032, or telephone 703-323-6891.

The Past, Present, and Future Role of Armor: Share Your Views, Expertise, and Experiences

ARMOR seeks to bring the best in current military writing and thinking to its mounted force. The best source of information is in the form of lessons learned from soldiers in the field; particularly, soldiers with experience in theater. *ARMOR* strives to deliver relevant and contemporary thinking about training, concepts, doctrine, and warfighting at the tactical and operational levels of war, providing its force an advantage over constantly evolving battlefield challenges. Armor soldiers and leaders at all levels are encouraged to reach out and support the missions and challenges of their comrades by sharing their experiences in theater. As the Armor force faces future challenges, the most remarkable developments will not be found among processes, new equipment, or new technologies, but within the soldiers who use them. Keep writing to preserve and share your experiences.

Articles are submitted as e-mail attachments or by mail to: *ARMOR* Magazine, ATTN: ATZK-DAS-A, Bldg 1109A, 201 Sixth Avenue, Ste. 373, Fort Knox, Kentucky 40121-5721, phone: (502) 624-2249 or DSN 464-2249, e-mail: ArmorMagazine@knox.army.mil.

Major General Robert M. Williams
Commanding General
U.S. Army Armor Center



Armor: Strong Today — Strong Tomorrow

I am pleased to announce that the Armor Center and Fort Knox are preparing for the 2007 Armor Warfighting Conference, which will be held from 29 April through 3 May 2007. This year's conference theme is, "Armor: Strong Today — Strong Tomorrow." I have invited several of the Army's top leaders to speak as subject-matter experts, so we can expect a great update on what the Army is doing around the world, as well as which direction the Army is headed. The heart of the conference, however, will be focused discussion panels and work-product panels. We received great feedback from last year's focused discussion panels, but this year we have improved their structure. We will be hosting work-product panels that not only discuss key issues, but also provide documented feedback for future initiatives.

Armor leaders throughout the force are encouraged to send Soldiers in the ranks of staff sergeant to lieutenant colonel to participate as panel members. I would like to see as many of our battalion and brigade commanders and command sergeants major attend as possible. These leaders are in unique positions to carry back to their Soldiers what they learn from the conference. I understand that everyone is busy with many competing priorities; however, those who attend the Armor Conference will have an invaluable opportunity to get an update of the current status and future direction of the Armor and Cavalry force.

While thumbing through past articles recently, I ran across an interesting piece written by General Jacob Devers in the September-October 1948 issue of the *Armored Cavalry Journal* (*ARMOR*'s predecessor). Although written nearly 60 years ago, his article, "The Future of Armor," is as relevant today as it was then. I want to share his incredible vision with you:

"The weapons of warfare have changed through the ages, but the principles of warfare, which dictate the employment of weapons, have remained substantially the same. Of all the weapons which have come to hand, there is none, not even the airplane, which lends itself more readily than armor to the application of all the principles of winning warfare.

The generic term "armor," of course, includes the whole of the armored team — the light, medium, and heavy tanks of the armored cavalry, the armored infantry in personnel carriers, and the self-propelled artillery.

In the selection of an *objective*, which is to be seized and physically held, only the airborne commander is afforded a wider choice than the armored commander. Even so, for the consolidation and exploitation of that objective, he is today dependent upon the arrival of his attached armor by land or sea, and will tomorrow await armor by air, as well as land or sea.

As for maintaining or regaining the *offensive*, it was armor, almost without ex-

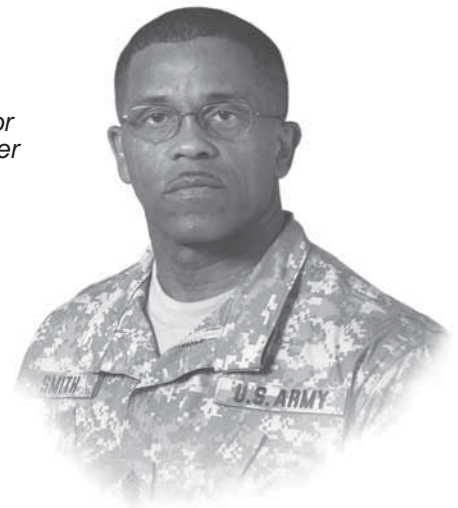
ception in World War II, which gave our commanders this capacity, and prevented costly repetition of the static combat of World War I. Armor is equally preeminent in the practice of the allied principles of *mass*, *movement*, *surprise*, and *simplicity*.

This emphasis on the advantages of armor does not in any way detract from the credit due other ground arms, and the sea and air forces, for their contributions toward victory in the last war. But armor possesses to a marked degree the advantages of *economy of force* and *security*, both principles of major importance in any conflict. Comparison of armored division accomplishments with casualties per day of combat gives striking evidence of efficient utilization of manpower, plus added security for units, as well as individuals.

And, lastly, it is in *cooperation*, in basic battleground teamwork, that armor completely fulfills the final principle of warfare. On the working level, armor helps infantry realize its greatest potential, infantry complements armor, artillery supplements both. World War II demonstrated the invincibility of the United States Army's infantry-tank-artillery team; any future war would prove the same combination an even better bet, no matter what the odds, because of the improvements we have already effected and those we are

Continued on Page 20

CSM Otis Smith
Command Sergeant Major
U.S. Army Armor Center



On Solid Ground

A convoy is planned to move out 1800 hours. It has been raining continuously for the past 24 hours. The course of action is approved and the convoy will travel across unimproved roads under limited visibility conditions. The vehicles in the convoy are some of the heaviest vehicles in the U.S. Army's inventory.

The above conditions under which the convoy will move certainly create the potential for deadly accidents. Commanders, platoon leaders, crewmembers, and drivers must ensure that any and all risk factors are addressed prior to mission execution. A carefully orchestrated plan is a must for all missions, but high-risk conditions demand leaders take extra precautions, such as determining convoy spacing between vehicles and establishing a means of communication between convoy vehicles to alert rear elements of potential road hazards. If lighter vehicles are in the lead position, they can identify hazards for heavier rear element vehicles. Even as the convoy begins movement, poor weather conditions, changes in weather and road conditions, and night-driving conditions increase risk factors immensely.

Safety statistics reveal that more than half of the total accident fatalities that have occurred in Iraq are vehicle-related. Sixty-six percent of those accidents were vehicle rollovers. Embankments and roads giving way and collapsing have involved all types of vehicles and operations, and under various environmental conditions.

Know that under certain environmental conditions, such as heavy or continuous rain fall, poor or substandard road conditions, vehicle loads in excess of 24 tons, and traveling near canals or other bodies of water, the ground beneath your vehicle will likely collapse.

Speed is another contributing factor to vehicle-related fatalities. For example, vehicle drivers who may have to maneuver around potholes when traveling a road that is in poor condition must be cau-

tious of their speed. Driving too fast under conditions, such as narrow roads or while under attack, could cause drivers to lose control of their vehicles.

Conducting standard safety checks of all vehicles prior to a mission, such as ensuring fire extinguishers, safety belts, and doors are all working properly, goes a long way in preventing injury. Prior to each mission, convoy commanders should give a thorough convoy brief to explain the terrain, route, and how troops should react to unsafe situations. Soldiers should constantly be made aware that they always have to be careful and cautious when driving heavy vehicles. If they turn or jerk the wheel too quickly, and are driving in excess of 30 miles per hour, the vehicle is going to flip.

While there are many contributing factors in sustaining vehicle safety that troops should be aware of when participating in convoy movements, situational awareness is the critical element in preventing accidents. Leaders should develop a standard safety stand-down program for their units. Safety stand-down reinforces the basics of vehicle safety and awareness by practicing rehearsals such as convoy briefs and rollover drills. If soldiers rehearse drills, they are much more likely to survive a rollover. Keeping all crewmem-

bers inside the vehicle, bracing yourself, and wearing seat belts are all deciding factors in the severity of any injuries during a rollover.

Leaders are responsible for ensuring soldiers know what to do during any situation; however, soldiers are responsible to exercise common sense and know how to maintain vehicle safety and awareness. The time it takes to properly plan and execute a mission may be the difference between success and failure, or even worse, death. The results are permanent and preventable. Taking the time and effort for success will save a soldier's life.

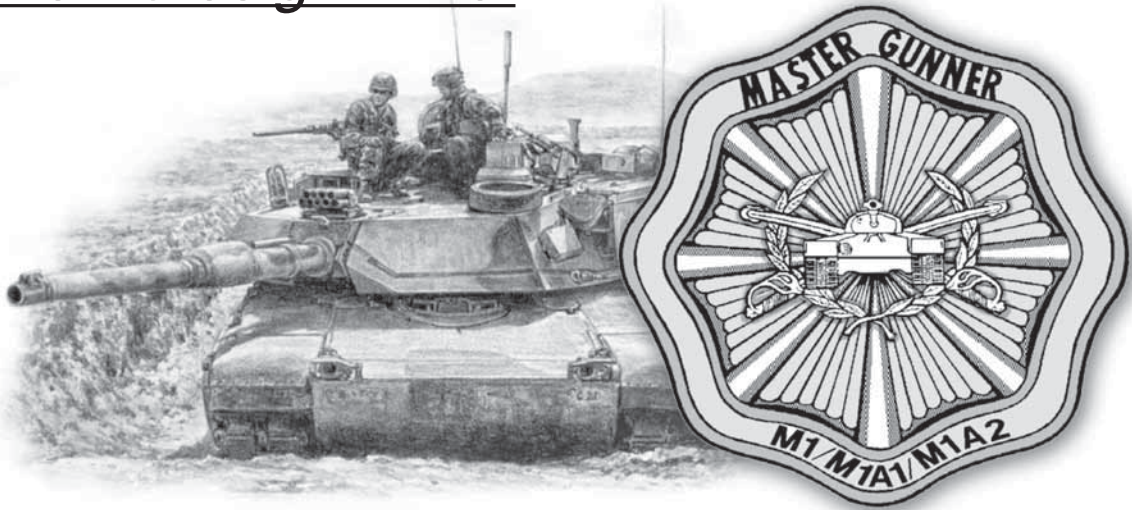
Special thanks to Mr. William D. Watson Jr., for his contributions to this article. Mr. Watson is the System Safety Engineer for Combat Developments at the U.S. Army Armor Center. We thank him for his dedication to training and supporting our troops.

"Teach our young Soldiers and leaders how to think; not what to think."

Actual Examples of Incidents

Case Number	Accident Description
20060926001	Soldier was operating an M2A3 (BFV) when the dirt road reportedly gave way. The BFV overturned into an adjacent canal and came to rest, submerged and inverted. The TC and driver drowned as a result.
20050124001	An M2A2 BFV was on a mission when the road gave way, causing the vehicle to roll over into a canal; 5 crewmembers drowned, 2 were hospitalized.
20040317001	Driver was on recon in a BFV when an embankment gave way. The BFV fell 60 feet, landed upside down in a river; one crewmember drowned, one crewmember died at the hospital.
20030923008	A patrol was searching for two personnel when the M2A3 rolled over an embankment that gave away into a drainage ditch, causing damage/injury.
20060805009	A Stryker attempted to go around a c-wire and the edge of the road collapsed, causing the Stryker to roll on its side.

From the Boresight Line:



Maintaining Gunnery Proficiency and the Ability to Fight Effectively

by First Sergeant Robert Hay

As the ongoing war in Iraq enters its fourth year, we are realizing a significant impact on our armor force's gunnery proficiency, which is due to the current operational tempo (OPTEMPO) and a reduced dwell time between deployments.

Commanders and master gunners have always faced the challenges of maintaining gunnery skill sets while operating in an intensified environment. In today's training environment, maintaining gunnery skill sets is more difficult than ever. Tank companies are now required to train soldiers in small-unit tactics and dismounted operations, as well as ensure they maintain MOS-specific tasks, assuring the Armor Force remains the most effective fighting force in the world. Given that no one can predict the battlefields of tomorrow, we cannot afford to lose sight of our primary mission as armor crewmen. It is a delicate balance right now, and if we are not careful, we will lose the ability to effectively fight our tanks. We are seeing a generation of tankers, both officer and enlisted, with limited experience fighting on the M1A1 platform. A large percentage of armor captains who attended the career course never fired tank gunnery and we are seeing similar statistics with tank commanders — the experience well is slowly drying up.

Armor leaders have a responsibility to ensure these skills do not atrophy any further; they have a responsibility to ensure up and coming young leaders are proficient in gunnery skills so they will possess the skills and ability to train our fu-

ture armor force. We cannot train our soldiers if we have lost the knowledge to do so — we have to get back to the basics. When I say basics, I am referring to teaching the theory and function. A soldier who understands what is happening within the fire-control system when he lases and pulls the trigger increases his chances of a first-round target hit and will have a better understanding of what causes target misses.

It is understandable that the current OPTEMPO demands company-level training be focused on the mission at hand. Using opportunity or "hip pocket" training at the crew level can accomplish basic tasks for the crew. We must conduct the missions we are given, but we also owe it to the rest of the force to maintain our level of armor training for the future.

This training can be conducted in orderly rooms, in motor pools, or by using training devices such as the variants of the advanced gunnery training system (AGTS). Armor leaders, along with guidance from unit master gunners, have the ability to complete these tasks with little or no borrowed time from current missions. The AKO Abrams Master Gunner Knowledge Network has the tools to accomplish credible training. All soldiers have access to this information — you do not have to be a master gunner to access the pre-course study material.

Commanders, master gunners, as subject-matter experts, should identify non-commissioned officers (NCOs) to assist

in training and testing the tank crew gunnery skills test. These NCOs can also assist in teaching unit-level classes on the basic fire-control system, as well as the methodology for engagement techniques from the main gun to the employment of machine guns. For example, conducting a brown-bag lunch in a classroom environment, for those in a garrison location, the master gunner can teach a class to gunners and tank commanders on the basics of armament accuracy checks (AACs) or a class on preventive maintenance on the M2HB or M240 machine guns. If the unit is deployed with vehicles, the master gunner can conduct methodology training on the fire-control system while boresighting and explain how the system boresights.

"Chair drills" also accomplish training with little resources or prep time. One effective method is using a laptop to build slide shows with targets that move across the screen, which enable crews to conduct fire-command training. Target hand-off training can be conducted anywhere by using vehicles, or other designated targets, available in the immediate area. A simple "white box" identification walk through of the fire-control components can be done while explaining how those components interact with the system.

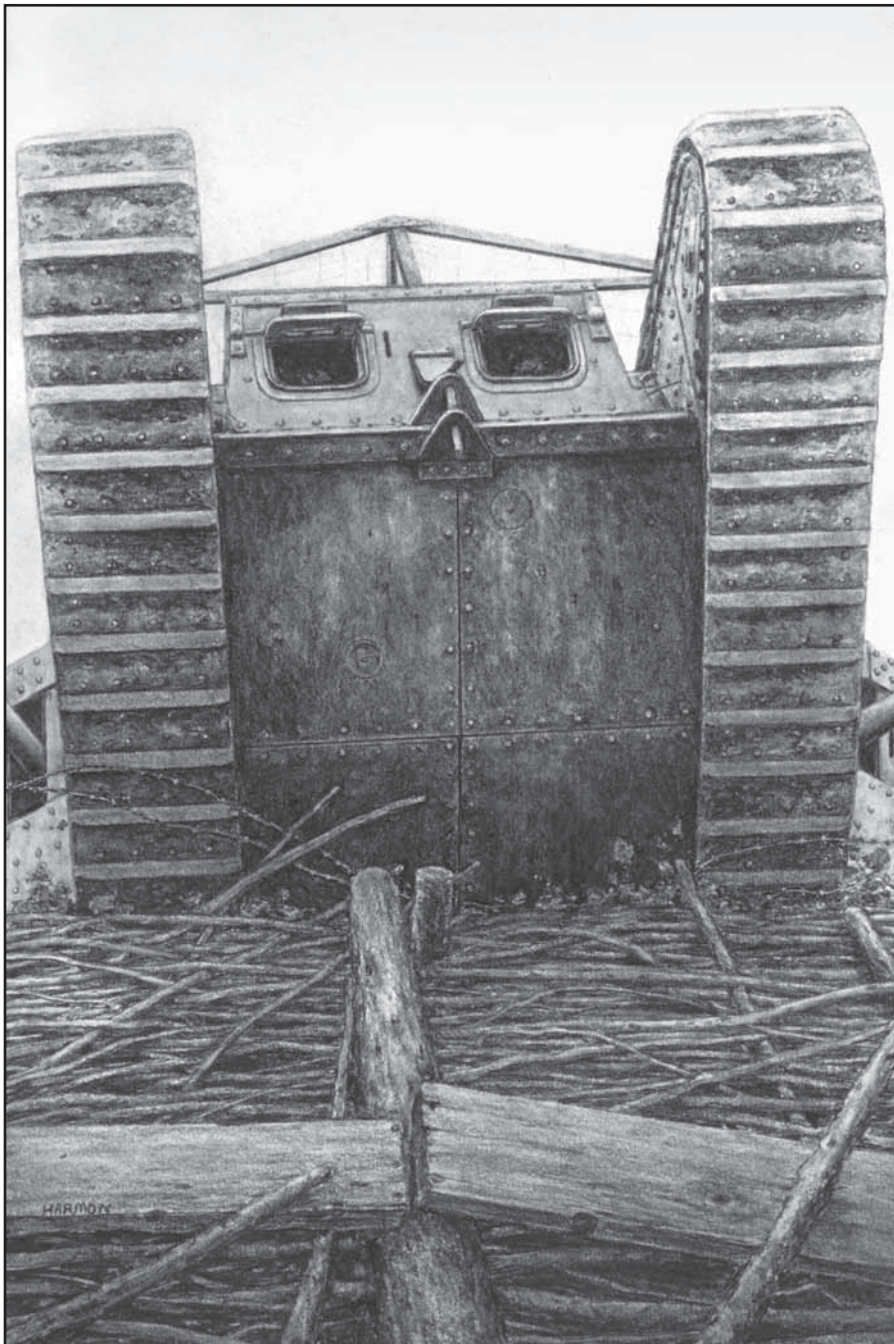
To maintain core MOS proficiencies, the armor force must focus and train on the basics and continue to progress through advanced gunnery techniques and procedures. To be effective, armor soldiers must maintain their core MOS proficiency.

The Premature Debut:

*The Introduction of Armored Fighting Vehicles and Tactics
by the British Army During the September 1916 Somme Offensive*

by Major David P. Cavaleri

(Reprinted from November-December 1995)



“From a mockery, the tanks have become a terrible weapon. Armoured they come rolling on in long lines, more than anything else [they] embody for us the horror of war.”

— Erich Maria Remarque
All Quiet On The Western Front

A soldier’s ability to maneuver on the World War I battlefield was limited by a number of factors — the trafficability of terrain, the extent of protective cover, the distance between start point and objective, the complexity of obstacles, and the strength of enemy opposition.

By the end of 1914, strategic maneuver had succumbed to the “battlefield stalemate,” defined as the maneuver deadlock resulting from the effective use of the machine gun, the creative emplacement of barbed-wire and trench obstacles, and the accurate employment of high-explosive artillery fire.¹

Most military historians agree that the British introduction of tanks represented an adaptation of traditional tactics in response to this stalemate. Whatever controversy surrounds this topic centers on the timing of the decision to commit this new weapon. British Expeditionary Force (BEF) Commander, General Sir Douglas Haig, knowingly sacrificed the elements of surprise and secrecy surrounding the tanks in pursuit of an operational breakthrough on the Western Front. Haig’s decision to employ tanks in September 1916 on the Somme Front was correct, despite opposition from key military and government officials.

There were opposing contemporary views on this issue. Conservative tank proponents led by Ernest D. Swinton and Winston Churchill advocated delaying the employment of tanks until field testing was completed and adequate numbers of vehicles were available. This camp found itself in direct opposition to Haig, who orchestrated what some called a pre-

mature disclosure of this secret weapon. While advocates and adversaries differed on their analysis of this tank debut, mechanized proponents, such as J.F.C. Fuller, incorporated many of the lessons learned in subsequent operations, particularly the 1917 Cambrai breakthrough.

This story begins in early December 1915 when allied military representatives met to decide strategy for the following year.² They decided to deliver a series of offensives as simultaneously as possible to prevent the enemy from shifting reserves. Following that recommendation, the British War Committee directed the BEF to concentrate its efforts in late 1916 or early 1917 on the Western Front. Minister of Munitions, David Lloyd George, was adamant that any British or combined offensive be delayed “until we are at full strength, which they say will not be until well into the summer.”³ Lloyd George’s caution was mitigated, however, by the German offensive against Verdun that commenced in February 1916.

The decision to defend the historic fortress, made by General Joseph Joffre, chief of the French General Staff, proved costly. Churchill estimated the total number of French casualties at Verdun to be approximately 460,000 men.⁴ This Pyrrhic defense affected preparations for the upcoming allied offensives and the ability of the French to participate in those operations. Haig believed the French capable of maintaining a defensive posture long enough to allow the BEF time to build combat strength, but the actual French military situation was significantly different. On 24 May, Haig received a

letter from Joffre, which stated that, “owing to the hard fighting at Verdun [the French] had not the number of divisions available for a combined attack.”⁵ Joffre wanted an allied offensive by the beginning of July 1916, and exhibited French pride by stating they “would prefer to lose their casualties in an offensive attack rather than to melt away while sitting still.”⁶ Pressured by French losses, the war committee authorized Haig to begin offensive operations in July in the vicinity of the Somme River.

Haig and his planning staff selected the Somme area for several reasons. This sector had seen little activity since late 1914. The ground was generally composed of chalky subsoil covered with loam, which would provide good maneuverability if the weather stayed dry. The area was fairly flat, contained few major dominating terrain features or built-up areas, and most importantly for Haig, was open enough to allow the employment of cavalry once the infantry achieved a breakthrough.⁷ “The most striking characteristic of the Somme battlefield,” wrote Douglas Johnson, “[was] its monotonous succession of low rolling plain.”⁸

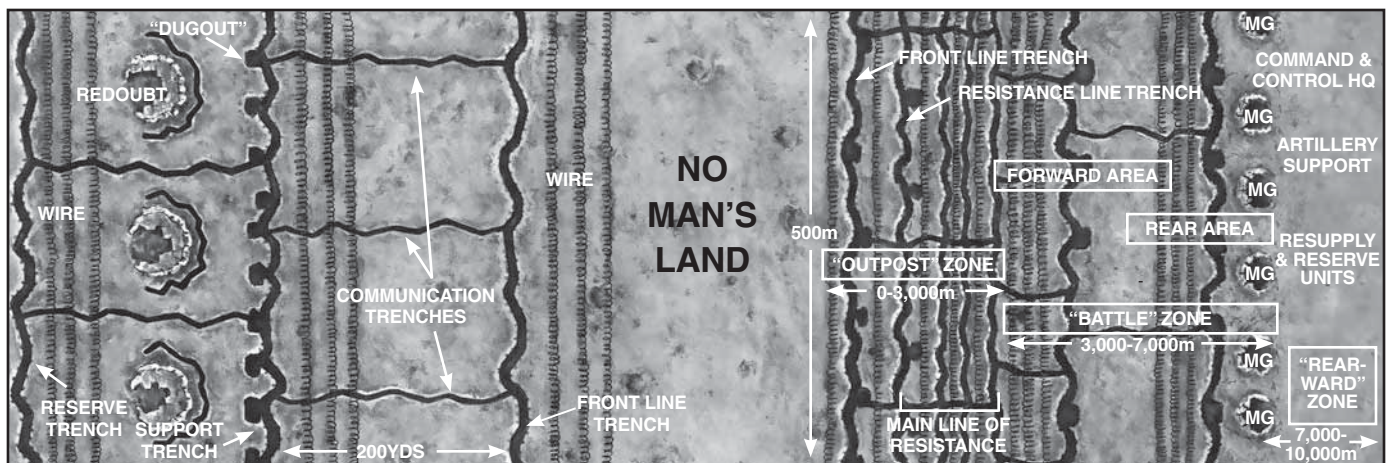
Haig realized that the topography of this sector favored the defenders.⁹ The Germans had enjoyed ample time to reinforce and extend their positions. The “outpost” and “battle” zones consisted of multiple trench systems, 10-foot deep and interconnected with numerous communications trenches. Beneath the trenches, the Germans constructed dugouts of reinforced barrier material, down to depths of 30 feet, designed to protect the defend-

ers from artillery barrages. Each zone was protected with two belts of barbed-wire obstacles, each 40 yards deep and held in place with stakes. Machine guns were sighted in on “no man’s land” and on the trenches.

Haig said the defensive network formed, “in short, not merely a series of successive lines, but one composite system of enormous depth and strength.”¹⁰ Churchill wrote that the complexity of the defensive network was as much a factor in selecting the area as was the sector’s suitability for maneuver. “All these conditions,” he wrote, “clearly indicated to the staffs a suitable field for our offensive, and it was certain that if the enemy were defeated here, he would be more disheartened than by being overcome upon some easier battleground.”¹¹

Haig’s scheme of maneuver called for an assault on a wide front that would ultimately result in a penetration. As units stabilized the penetration and rolled up the exposed flanks, British and French cavalry divisions would break through and conduct operations in the “rearward” zone.¹² Haig assigned the main effort of the attack to the Fourth Army under General Sir Henry Rawlinson, with orders to penetrate the “outpost” and “battle” zones. North of his sector, another corps was to seize the German trenches on a three-mile front and conduct diversionary operations.¹³ The boldness of the plan required that Rawlinson secure multiple breaches in the outpost and battle zones.

In contrast to Haig’s expectations, Rawlinson’s plan was less assuming. He proposed to capture initially only the out-



“The “outpost” and “battle” zones consisted of multiple trench systems, 10-foot deep and interconnected with numerous communications trenches. Beneath the trenches, the Germans constructed dugouts of reinforced barrier material, down to depths of 30 feet, designed to protect the defenders from artillery barrages. Each zone was protected with two belts of barbed-wire obstacles, each 40 yards deep and held in place with stakes. Machine guns were sighted in on “no man’s land” and on the trenches.”

post zone trench positions. Only after he accomplished this objective would he advance and attack the battle zone. Where Haig planned to capture all three defensive networks in rapid succession, Rawlinson planned for the orderly reduction of obstacles and was skeptical of the potential for cavalry exploitation.¹⁴ Rawlinson was of the traditional school; expressing confidence in the preparatory barrage, which fired approximately 1,000,000 shrapnel shells, Rawlinson told his subordinate corps commanders that “nothing could exist at the conclusion of the bombardment in the area covered by it.”¹⁵

On 1 July, 14 British divisions faced eight German divisions across “no man’s land.” As British troops climbed over parapets, they discovered the artillery had failed. Defenders rebuilt wire obstacles only minimally damaged by the shrapnel shells and manned their positions before the British assault troops reached the first obstacles; in the first 30 minutes alone, the British experienced 30,000 casualties.¹⁶ The British first-day losses totalled 60,000, and later Churchill rightfully called 1 July 1916, “the greatest loss and slaughter sustained in a single day in the whole history of the British Army.”¹⁷

Haig’s initial reaction to British losses was one of acceptance: “AG [Adjutant-General] reported today that the total casualties are estimated at over 40,000 to date. This cannot be considered severe in view of the numbers engaged and the length of the front attacked.”¹⁸ His attitude was tempered, however, by the British army’s failure to achieve its initial tactical objectives. On a 15-mile front, they controlled a stretch 3 miles wide, but only 1 mile deep. The British captured only three of the 13 villages considered crucial to the offensive. At no point were the British even close to the battle zone positions, nor did they control any higher ground.¹⁹ Haig’s reaction indicates his intent to achieve a breakthrough; the loss of 40,000 men was acceptable given his ultimate goal of regaining operational mobility. The real tragedy lay in Haig’s failure to end the operation and cut his losses.

He had accomplished two limited goals, relieving pressure on Verdun and preventing German diversion of troops, but failed to breach the enemy line and loose his cavalry divisions. The failure to achieve this third goal is attributable to the BEF’s inability to overcome the battlefield stalemate via traditional tactics. His actions with regard to the newly developed “machine gun destroyer” under-

scored his willingness to employ innovative measures in spite of political and military opposition.

Ernest Swinton, generally acknowledged as the inventor of the tank, had met Haig in April 1916, where they discussed operational recommendations for the tanks. In response to Swinton’s statement that August was the earliest that tanks would be available in large numbers, Haig replied that was too late — he said 50 were urgently required by the first of June.²⁰ Swinton mistook Haig’s interest as a general agreement with his principle of employing tanks in mass: “I was much relieved that the two senior officers in France ... were in accord with my ideas. It implied that they approved the policy of not employing tanks in dribbles.”²¹

After the July disaster, Haig felt pressure to regain momentum. “Even if I do not get as many [tanks] as I hope,” he wrote to General F.N. Robertson, Chief Inspector General of the BEF, “I shall use what I have got, as I cannot wait any longer for them.”²² An August letter from the Ministry of Munitions advised him that accessories for the tanks [weapons] would not be delivered until 1 September: “This is disappointing,” he wrote, “as I have been looking forward to obtaining decisive results from the use of these tanks at an early date.”²³ By early September, 59 tanks arrived in France, and Haig assigned them to Rawlinson.

On 11 September, Haig visited Rawlinson, and among the things they discussed was the “necessity for advancing quickly so as to take full advantage” of the tanks.²⁴ Rawlinson expected the tanks to assist in capturing tactically important villages, reduce the overall number of casualties, and maintain the momentum of the assault.²⁵ His plan to have the tanks precede the infantry resulted in an immediate conflict between the infantry and the artillery. The experiences of July and August demonstrated that the traditional creeping barrage advanced too rapidly and was of insufficient density to suppress the defense. To correct this problem, Rawlinson’s artillery commanders slowed the rate of advance to 50 yards per minute, while increasing the rate of fire to three rounds per gun per minute.²⁶ However, this revision resulted in a series of maneuver problems.

Put simply, the artillery could not fire the creeping barrage in support of the infantry assault without hitting the tanks. Without the barrage, the infantry would be exposed to defenders. Rawlinson’s so-

lution was to group the vehicles and create assault corridors through the barrage; however, these movement corridors compounded the problems. Since the tanks could engage targets only within range of their weapons, any strongpoint beyond that range, but still within the corridor, would engage the infantry. The tanks’ relatively slow speed (less than 4 miles per hour) made it likely that the infantry would outrun the tanks. Rawlinson’s plan denied several infantry units the established support of the creeping barrage and replaced it “with a vulnerable substitute of doubtful efficacy.”²⁷

The reduced artillery protection was just one of several concerns cited by tank advocates. Churchill protested the “exposure [of] this tremendous secret to the enemy upon such a petty scale and as a mere makeweight to what I was sure could only be an indecisive operation.”²⁸ Lloyd George disagreed with Haig’s decision to throw “a few specimen machines into the fight without waiting until a sufficient number had been manufactured.”²⁹ Swinton opposed the tanks’ employment on the grounds that: Haig had too few tanks available; the shell-torn battlefield would hinder tank movement; Rawlinson’s piecemeal allocation negated the tanks’ mass assault capability; and the premature disclosure of the tanks would result in the overall loss of surprise. Despite these valid objections, Haig stood firm. He needed to regain operational mobility, and traditional tactics had proven incapable of achieving that goal.

On 12 September, the British began a preparatory barrage. The artillery fired 828,000 shells [weighing more than 30,000,000 pounds], with emphasis on the destruction of the trenches in the outpost and battle zones.³⁰ Three days later, the assault kicked off and by the end of the first day’s maneuver, the British had achieved several minor tactical objectives. The outpost zone line was captured on a front of 9,000 yards, while the battle zone line was in British hands for a distance of 4,000 yards. Several German strongpoints were finally neutralized after 2 months of fighting and British troops held positions affording good observation of the “rearward” zone.

Despite these gains, the introduction of the tank on 15 September did not have a significant impact on the strategic situation. Out of the 59 tanks that arrived in France before the battle, 49 reached the staging areas. Of that number, only 35 reached their assigned starting points; the rest were lost to mechanical difficulties.

Thirty-one tanks actually assaulted into “no man’s land,” but only nine maintained momentum and crossed over the outpost zone.³¹ The remainder fell victim to Swinton’s fears: poor crew training, inadequate logistics support, unsuitable terrain, mechanical breakdowns, and combat losses.³² The principal contribution made by the tanks was to raise considerably the morale of the British troops. One soldier recounted his impression of one of the tanks, designated D16:

Wounded? Who cares about being wounded? There was that old D16, groaning and grumbling along, poking her big nose here and there. She stopped now and then as if unsure of the road then plunged on over everything. I can still see her great big head, coughing like a hippo. But the best of it was how the Tommies went on, following her — actually

*bering, steel body as it rumbled toward a [machine gun post]. And the infantry, as it saw the tanks’ machine guns blazing, left it to the tank ... confident that no enemy would be left behind to fire into their backs.*³⁵

Churchill recalled conversations with soldiers who related that, whenever a tank approached a strongpoint, “the sight of it was enough and the astounded Germans forthwith fled or yielded.”³⁶ He and Palmer were convinced that the tanks saved British lives. Palmer, in particular, estimated that they saved 25,000 casualties, which would have been the additional cost of gaining ground by unassisted infantry action.³⁷

Higher level opinions varied. Haig wrote, “Certainly, some of the tanks have done marvels and have enabled our attack to

ing.”⁴¹ Brigadier General Sir James Edmonds stated that “To divulge our new methods whilst attacking with insufficient means was to squander possibilities of surprise... and the first effect of the tanks was thrown away on the Somme.”⁴²

Churchill’s assessment was blunt: “To achieve this miniature success,” he wrote, “a secret of war, which well used would have procured a world-shaking victory in 1917, had been recklessly revealed to the enemy.”⁴³ Swinton considered the operation an “error of judgment by reason of the gulf which lay between the utmost that could have been achieved then and what might have been gained by waiting.”⁴⁴ Despite these criticisms, the fact remains that Haig was faced with an operational problem and employed tanks in the effort to regain momentum.

For the next 14 months, the BEF employed tanks strictly as infantry assault weapons. Only a few tank advocates, such as J.F.C. Fuller, worked toward expanding their tactical role. Major Fuller began a comprehensive study of tanks and their employment as part of his duties as the primary staff officer of the BEF tank detachment. In February 1917, he published a training manual designed to standardize training practices in the detachment.⁴⁵ Calling the tanks “a mobile fortress, which could escort the infantry into the enemy’s defenses and from behind, which they could sally forth and clean up his trenches,” Fuller believed that tanks were capable of more than infantry support actions.⁴⁶

Fuller expanded Swinton’s theoretical concepts, and “soon became the leading advocate,” wrote Basil Liddell Hart, “of the tank’s wider potentialities — as a means to revive mobile warfare, instead of merely as a modernized ‘battering ram’ for breaking into entrenched defenses.”⁴⁷ Early in 1917, Fuller proposed a limited raid operation to test his ideas; after several revisions, General Headquarters (GHQ) approved the plans for the November 1917 Cambrai operation. This operational test represented a transition in the BEF’s position concerning battlefield mobility. By relying on tanks to execute the initial penetration and conduct machine gun suppression, Fuller acknowledged Swinton’s principles and the tanks’ limited successes on the Somme. But by recognizing the potential for the tanks to penetrate to the rearward zone and set up a breakthrough, Fuller advocated a more offense-oriented role for the tanks. This increased role was mitigated by constraints on maneuverability, operational

“All the News That’s
Fit to Print.”

The New York Times

VOL. LXVI...NO. 21,622
NEW YORK, MONDAY, SEPTEMBER 10, 1917

Amazing Deeds of British ‘Willies’; One Climbs Redoubt, Kills Men In It

New Armored Motor Monsters in Their First Test Also Knock Down Houses, Snap Off Trees and Leap Trenches Like Kangaroos.

BY PHILIP GIBBS.

Special Cable to THE NEW YORK TIMES.
The London Daily Chronicle Dispatches.

WITH THE BRITISH ARMIES IN
THE FIELD, Saturday, Sept. 16.—

“It is your victory,” said one of their
officers, speaking to me in French. “It

New York Times coverage of the first attack — “Willies” was a slang term for tanks.

*cheering! There hasn’t been anything like her in this bloody war before. Let’s have more of them, I say.*³³

Lieutenant Frederick Palmer wrote: “No more thrilling message was ever brought than that which said that a tank was ‘walking’ up the main street of Flers, surrounded by cheering British soldiers, who were in possession of the village.”³⁴ He summarized the infantry’s attitude by saying:

“Leave it to me!” was the unspoken message communicated to the infantry by the sight of that careening, dipping, clam-

*progress at a surprisingly fast pace.”*³⁸ He told Swinton, “Though the tanks had not achieved all that had been hoped, they had saved many lives and had fully justified themselves.”³⁹ Conversely, Lloyd George considered the decision to launch “the first handful of these machines on a comparatively local operation...to have been a foolish blunder.”⁴⁰ He believed the premature introduction of the tank, contrary to the views of those “who had first realized the need and had conceived it, fought for its adoption, designed it, produced it, and carried out the crew train-

readiness, and the actual number of tanks available; Fuller recognized these constraints, and his final Cambrai plan relied on the cavalry to break through the rearward zone in the hopes of setting up a breakout.

On 20 November 1917, the British artillery commenced a suppressive barrage along a 6-mile-wide front near Cambrai. Unlike previous preparatory barrages, this 45-minute barrage was predominantly smoke and high explosive. The obstacle-reduction mission was given to the tanks, while the artillery concentrated on suppressing the defenders' artillery and masking the advance. After less than 1 hour, the artillery began the creeping barrage and 476 tanks led six infantry divisions forward. The absence of a traditional preparatory bombardment contributed to the defenders' surprise and to the success of the tanks in breaching the first defensive lines.

The opening stages of the attack were successful. Masked by smoke and the creeping barrage, the tanks tore holes through the wire obstacles and filled in ditches with wood fascines. Less than 2 hours after the attack began, the British captured the Hindenburg main line along a 6-mile front. By 1130 hours, the Hindenburg support line, with the exception of the ridge at Flesquieres, was in British hands as well. Completely outdone by the rapidity of the operation, the Germans were unable to reinforce the line and the defense cracked. By the end of the

day, the British had penetrated to a depth of 4 miles and captured more than 5,000 prisoners, all gained at the relatively low cost of just over 4,000 casualties.⁴⁸ The first day's operation demonstrated the effects of coordinated tank, infantry, and artillery tactics over suitable terrain; it also outlined the need for the BEF to plan for success and incorporate rear-area exploitation missions in future battle analyses.

Several contemporaries marked 20 November 1917, as a landmark in the history of warfare. Lloyd George later said that the battle "will go down to history as one of the epoch-making events of the war, marking the beginning of a new era in mechanized warfare."⁴⁹ Haig credited the use of tanks at Cambrai with making it possible "to dispense with artillery preparation, and so to conceal our intentions from the enemy up to the actual moment of attack."⁵⁰ He later credited the tanks' penetration of the Hindenburg Line with having "a most inspiring moral effect on the armies I command . . . the great value of the tanks in the offensive has been conclusively proved."⁵¹ And Swinton, not surprisingly, claimed some credit for the success of 20 November. "It has an added interest," he wrote, "in that it was upon the lines here laid down [reference made to his February 1916 'Notes on the Employment of Tanks'] that the epoch-making Battle of Cambrai was fought."⁵²

Of course, Haig is responsible for the lack of orchestration of power to exploit

the initial success of 20 November 1917. He took what Fuller had designed as a raid and made the operation into much more. By the same token, much of the credit for the success of the Cambrai operation must also go to Haig and his decision to commit the tanks earlier in 1916. The tanks' performance at Cambrai proved their value as an infantry support weapon and machine gun destroyer. The Somme tank operation provided invaluable information regarding tank potential, employment restrictions, practical mechanical operating procedures, and doctrinal considerations. Subsequent developments in British WWI tactics were based not only on increased tank production but also on revisions in the traditional mentality with regard to the relationship between the infantry, cavalry, artillery, and tanks. Without the experience gained as a result of Haig's decision to employ tanks in September 1916, it is highly unlikely that the Cambrai operation would have produced such dramatic tactical results.



Major David P. Cavaleri earned his commission in 1983 through Officer Candidate School. He received a B.A. from Eastern Nazarene College at Quincy, and an M.A. in history from the University of Missouri at Columbia. A graduate of several Army schools, at the time this article was originally published, he was an instructor of history at the U.S. Military Academy at West Point, NY.

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Armor's Stand at St. Vith

by Captain Stephen D. Borows

(Reprinted from November-December 1984)

The German army, in a totally unforeseen move, launched a precipitous offensive in the middle of their war with the Western allies. The Ardennes Battle of December 1944 (more familiarly known as the Battle of the Bulge) was the greatest battle fought by the American Army as it suffered some 78,000 casualties. The similarities between this last great German offensive and a Warsaw Pact conventional armor-heavy breakthrough attack, with little warning provided to NATO forces, are significant and very relevant to a study of a possible Central European conflict in the 1980s.

If such an event should occur, the concept of operations and pattern of battle might just as well possess the same elements of this 1944 winter clash — surprise, cut-off units, bad weather, logistics problems, breakdown of communications, and the many other components of battle mechanics, which constitute the complexity of modern combat. Fortunately, the American soldier of 1944 was able

to meet the situation at hand and his example is deserving of great praise.

Between 16 December and 23 December 1944, the small Belgian town of St. Vith was defended by a heterogeneous force of lost units, stragglers, and the extremely resourceful armored brigade of 7th Armored Division, commanded by General (then Colonel) Bruce C. Clarke.

Because of a lack of understanding of this battle by the media, not much information was given to the American public at the time. What did seize the attention and imagination of the country was the drama being played out further to the south in Bastogne where the 101st Airborne Division was cut off and surrounded. The day-to-day suspense connected with watching the progress of General Patton's rescuing armored columns has made Bastogne the symbol of the obstinate, gallant, and ultimately successful American defense in the Battle of the Bulge.



But there were other crucial actions which better deserve attention. The shoulders of the German penetration were held

by tenacious infantry encounters at Monschau in Belgium and at Echternach in Luxembourg. However, the battle, above all others, that derailed the German timetable by six days was the action at St. Vith — the fiercest defensive battle ever fought by American forces on the Western Front.¹

The allies had broken through the German western defenses and were advancing well ahead of their timetable in a mood of high optimism and cocky overconfidence. As they charged across France on the heels of the retreating, yet elusive, German army, the cost of the allied advance began to mount as the months of continuous battle took their toll on American men and equipment.

By October, the allies were also troubled by the fact that the warm and hazy days of the previous month gave way to early fall rains and cold temperatures that interfered with mobile operations. With these changing circumstances, critical to the conduct of the war, the American high command was forced to take stock of their situation after the heady successes since the Normandy invasion in June.

Casualties came to more than 2,300 since D-Day, and German resistance had been stiffening since mid-September. It was all but certain that the war could continue for at least another winter. Others argued with supreme confidence that the troops would be in Berlin by Christmas.

General Dwight D. Eisenhower, Supreme Allied Commander in the European theater of operations, had missed a great opportunity in early September to strike at the Ruhr, the northern industrial center of Germany, as was proposed in a plan by British Field Marshal Bernard L. Montgomery. This was accompanied by a simultaneous failure to free the mouth of the Scheldt Estuary and the all-important seaport of Antwerp, Belgium. Up to this point, the allies were proceeding with an advance on a broad front and were now roughly on Germany's pre-1940 boundary, but with a severely weakened force.

One major handicap was logistics. Ninety percent of all allied war materiel that landed in France was still on the Normandy beaches due to the retention of Antwerp by the Germans and the inadequacies of the English Channel and French Riviera coastal ports.² Ammunition was so short that it had to be rationed and, owing to shipping shortages and miscalculations in Washington, even minimum requirements were not being met.³ Each month, American forces used up ten percent of their armored fighting vehicles



In the public mind, the encirclement of the 101st Airborne Division at Bastogne became synonymous with the drama of the Battle of the Bulge. But the skillful mobile defense mounted at St. Vith upset the German timetable and snubbed Hitler's last great offensive. Above, a street scene at Bastogne after the battle.

and eight million rounds of mortar and artillery ammunition, as well as one hundred artillery tubes. During September alone, they were burning up twenty thousand tons of supplies, six million gallons of gasoline, and two thousand tons of artillery ammunition a day. Every bean and bullet came down a long supply pipeline from Cherbourg on the French coast to the front. The famous Red Ball Express was one desperate means of keeping the supplies coming. But by September, the allied war machine was rapidly losing steam. The simple fact was that supplies could not keep up with the rapid advances.

The 7th Armored Division, for example, was stalled for six days in front of the fortress town of Metz in southern France before it received enough gas to resume its attack. The situation was the same for Colonel Bruce C. Clarke's "Combat Command A" of the 4th Armored Division. It was estimated that this division, on average, consumed seventy-four tons of petroleum products daily, or, as Clarke sized it up later, about a thousand gallons of fuel to move the division one mile.⁴ Logistics, therefore, was the one element in all the allied planning that failed at the crucial moment.

At the same time, Hitler laid his plans for a massive counteroffensive through

the seemingly impassable Ardennes. It was here, had allied planners thought back, that the Germans broke the boundary between the British and French armies in 1940. They were about to try exactly the same maneuver in the winter of 1944.

The Germans assembled 20 divisions under Generals Dietrich and Manteuffel for the counteroffensive of December 1944. The halt in the advance of the American Army enabled them to do this with little interruption or even allied knowledge of the preparations.

American intelligence had a poor opinion of the state of German equipment and availability. That same source also failed to discern any signs of the massive German buildup:

- "The German army is in a poor condition — we will finish it in the early spring.
- The German tanks have been greatly reduced in numbers and are in a poor state of maintenance.
- We know immediately if the Germans move a division, and are able to report it to General Bradley at the next morning's briefing."

Before pursuing the battle further, let us consider some questions that may have



“...A major lesson of armored warfare was demonstrated at St. Vith...”

been raised at the time, but certainly came to light following the battle:

- Why did the allied army run out of gasoline in September 1944?
- Was General Eisenhower aware of the problem on 15 September when he wanted Field Marshal Montgomery to push forward and take Berlin?
- Why did the allied G2, 12th Army Group, not detect the preparations for the counteroffensive of 16 December 1944?
- Why was the 106th Infantry Division placed where it was (to the east of St. Vith) without any armor support attached?
- What was to account for the condition of the 106th Infantry Division’s training?
- Why did the 101st Airborne Division move into Bastogne and make no plans to break out?
- How effective was the handling of the First Army (where the Bulge was) by General Hodges?
- Why did General Eisenhower relieve General Bradley of command of the First and Ninth Armies on the evening of 19 December 1944?

- Why did he give these armies to Montgomery — a Briton?
- Why did Ike’s chief of staff (General Smith), on the evening of 19 December, tell Bradley that his relief from command was only for the length of the Bulge but, in fact, General Hodges would be under General Montgomery for a month, and General Simpson’s Ninth Army until after the allies crossed the Rhine?
- Could the Battle of the Bulge, encompassing a great area of maneuver, be adequately directed from Ike’s headquarters, which was as far away as Versailles, France?
- Did the false report, that Clarke’s command had been destroyed at St. Vith, pervading Eisenhower’s headquarters on 18 December lead to the replacement of Bradley (an infantryman) by Montgomery (a tanker)? Their opponent, General Manteuffel, was the top German Panzer general with a distinguished reputation.
- To what degree did Patton’s Third Army affect German operations after it relieved Bastogne on 26 December 1944?
- Had the allied army not been delayed in the fall of 1944, and then subse-

quently surprised in the Battle of the Bulge, would the allies have overrun a greater part of Germany before the Russians got there?

- Would Germany have necessarily been split in two and would we have needed to keep some 200,000 Army and Air Force personnel in Germany for the past 38 years at great expense?

There are other questions, which may be considered in another article or book due to extensive research. This is difficult since Eisenhower would now be 93 if still alive, and his senior commanders were generally the same age. There are few who have experienced high command in battle that can discern the correct answers to these questions.

The greatest defensive battle fought by American forces in Europe had some unique moments:

- It was commanded by a British general after the third day.
- While all U.S. commanders from corps level and above were infantrymen, the officers of the 7th Armored Division and its attached units (“CC B,” 9th Armored Division) included a field artillery division commander

How History Assessed Clarke's Stand at St. Vith

The German offensive was predicated on three conditions. The attack had to be a surprise; the weather had to preclude allied air strikes on the German columns; and progress of the main effort through and beyond St. Vith had to be rapid. Two conditions were met — surprise and weather. The third was not met and the German offensive failed.

Careful planning went into the offensive preparations. The Germans established the sequence and range of American patrols on the attack front. They located boundaries between regiments and battalions and they called off a planned 1½-hour artillery preparation because they did not want to “wake up” the Americans.

The attack was launched with platoon columns down the boundaries between regiments and battalions because they were the weakest points in the defense line. After penetrating 3-4 kilometers, the attacking columns closed behind the Americans and took 8,500 prisoners.

Here we have the classic penetrate and surround maneuver, an early version of the deep strike attack of AirLand Battle doctrine [Army doctrine]. Pre-attack intelligence established the American patrol's ranges and frequencies and the location of boundaries was essential to the initial success of the offensive.

The amazing factor in the St. Vith battle was that the defenders were not a homogeneous force. Rather, they were a hodgepodge of battered, in-place units, and relieving units. The leadership of brand-new Brigadier Gen-

eral Bruce C. Clarke (he had been promoted only 10 days before) not only welded the disorganized units into a cohesive fighting force, it held St. Vith and destroyed the German's timetable and hopes for success.

Years later, when questioned as to the principal duty of a general in such a battle, General Clarke replied, “It is to prevent the confusion from becoming disorganized.”

Clarke established a fire base in the St. Vith sector with a tank destroyer company dug in. He set up a mobile counterattack force to be used when the Germans had created a serious situation. The force could counterattack the Germans then retire to its original positions and prepare for its next foray.

Criticized by General Ridgway for his “hit and retire” tactics, General Clarke replied in effect that he was not holding ground, *per se*, he was delaying the enemy advance at its most critical point for as long as possible with the least expenditure of American lives. “We are winning; he is losing,” he told General Ridgway.

After 7 days of futile attempts to break through the St. Vith sector, General von Manteuffel recommended to Hitler's adjutant “that the German Army give up the attack and return to the West Wall.”

Early in the battle, General Eisenhower placed British Field Marshal Montgomery in command of the U.S. First and Ninth Armies, temporarily replacing General Bradley. The ramifications of this act are beyond the scope of this article, nevertheless, General

Montgomery had nothing but praise for the American soldiers he commanded in the battle. In the *New York Times* of 8 January 1945, Montgomery said of the Americans who had fought in the Bulge: “The American troops, isolated and cut off, were fighting and holding on to centers of road communication, making it extremely difficult for the Germans to move any flow through the gaps they had created...”

“...The American soldiers of the U.S. Seventh Armored Division and the 106th Infantry Division stuck it out [at St. Vith] and put up a very fine performance. By Jove, they stuck it out, those chaps.”

Clarke's “hit and retire” tactics were not only successful in delaying the German offensive, they also won him the postwar plaudits of his opponent, General von Manteuffel, who wrote to Clarke on 9 November 1975, “...possession of the ground or capture of ground does not garanty (sic) victory! Loss of ground does not mean defeat — withdrawal is not disgrace, but a method of fighting! *Your fighting around St. Vith ist (sic) one of the best model[s] of this method of fighting!*” (italics von Manteuffel's, Ed.)

The Battle of the Bulge remains the hardest fought battle the Americans knew in Europe in World War II. It epitomizes the bravery of the fighting troops, but more than that, it holds many valuable lessons to the commander of today's fighting troops.

— ROBERT E. ROGGE
Assistant Editor, *ARMOR* (1984)

Above left, tanks and infantry rush to relieve Bastogne late in December, 1944. At right, U.S. troops and tanks moving over snow, which complicated the battle. Below left, a wounded German prisoner getting helped to an aid station by his comrades and, below right, a knocked-out Panther tank.



With the pressure easing, U.S. infantrymen trudge through snow-covered Belgian fields in the wake of the Bulge fighting. The German attempt to sweep through the Ardennes to the Channel was stymied.



(Hasbrouck) and two engineer combat commanders (Hoge and Clarke).

It was no small achievement in military history that a small force of 8,020 American soldiers warded off over 87,000 enemy troops and prevented them from controlling St. Vith and the vital area east of the Salm River for a period of six days.⁵ Throughout this ordeal, the 7th Armored Division, with the 14th Cavalry Group and "CC B" of the 9th Armored Division attached, sacrificed nearly 3,400 officers and men who were killed, wounded, or missing.

Colonel Clarke's plan of action during this engagement was to cause maximum delay of the German advance, and at the same time, prevent the destruction of his combat command.

A major lesson of armored warfare was demonstrated at St. Vith: an armored unit can stage an awesome mobile defensive action if required to do so by force of circumstances. By the aggressive employment of small-unit counterattacks, an armored task force can harass an enemy and confuse him as to its actual size and composition. This example was witnessed in more recent times during the Arab-Israeli War of 1973. To stand and defend every inch of ground does not apply in all situations.

By the time the last of Clarke's troops pulled out of the St. Vith salient, the German offensive was eight days old, and General Patton's Third Army was counterattacking along the entire southern flank of the German "Bulge." From the German point of view, St. Vith was far more important than Bastogne during the Battle of the Bulge.⁶ The main German effort was to bypass Bastogne and turn north.

What, in effect, was accomplished by the Ardennes Offensive of 1944 was to delay allied offensive operations by only about six weeks, but with a loss to the Germans of nearly 250,000 men, 600 tanks and assault guns, and about 1,600 Luftwaffe planes. Furthermore, the offensive had caused a serious reduction in war materiel stocks, and the depleted state of German supply reserves precluded any further large-scale offensive. Allied victory, therefore, was guaranteed.

The Ardennes, in a very real way, had been the birthplace of German 1940 lightning tactics. Now, four years later, the town of St. Vith became the burial place where the once potent German blitzkrieg came home to die.



Notes

¹William Donohue Ellis and Colonel Thomas J. Cunningham, Jr. (Retired), *Clarke of St. Vith: The Sergeant's General*, Dellon, Liderbach, Inc., Cleveland, 1974, p. xi, Introduction.

²Peter Elstob, *Hitler's Last Offensive*, Macmillan Co., New York, 1971, p. 39.

³Arthur Bryant, *Triumph in the West*, Doubleday & Company, New York, 1959, p. 239. (In fact, in the middle of November, General Eisenhower was forced to broadcast an appeal to the American people for more ammunition.)

⁴Brigadier General Bruce C. Clarke and Lieutenant Colonel Creighton W. Abrams, *The Principles of the Employment of Armor*, U.S. Army Armor School, Fort Knox, KY, p. 5. Written while General Clarke was assistant commandant of the Armor School and Colonel Abrams was working under him as the command and staff director, U.S. Army Armor School, 1948-49.

⁵*History of the Seventh Armored Division and the Seventh Armored Division Association*, Taylor Publishing Co., Dallas, TX, 1982, p. 103.

⁶NORTHAG videotapes, reel no. 8, the meeting of General Hasso von Manteuffel, German Army, retired, and General Bruce C. Clarke, U.S. Army, retired, was conducted as part of a Department of the Army project entitled the "NORTHAG Terrain Study" on 12-15 June 1976. The discussions on the battle of St. Vith, Belgium, 16-23 December 1944, were recorded on videotape, which is in the possession of the author.

Captain Stephen D. Borows is a 1976 graduate of Virginia Military Institute and was a candidate for an M.A. at the University of Louisville in 1983. He is a graduate of the Airborne and Ranger Schools and the French Command School No. 4. He served as a tank and cavalry platoon leader; a brigade headquarters company XO; an armor battalion assistant S1 and assistant S4; an instructor and military historian at Command, Staff, and Doctrine Department, U.S. Army Armor School; and as an AIT company commander at Fort Knox.

Depth and Synchronization at the Battle of Heartbreak Ridge:

The 72d Tank Battalion in Operation Touchdown

by Captain Scott D. Aiken

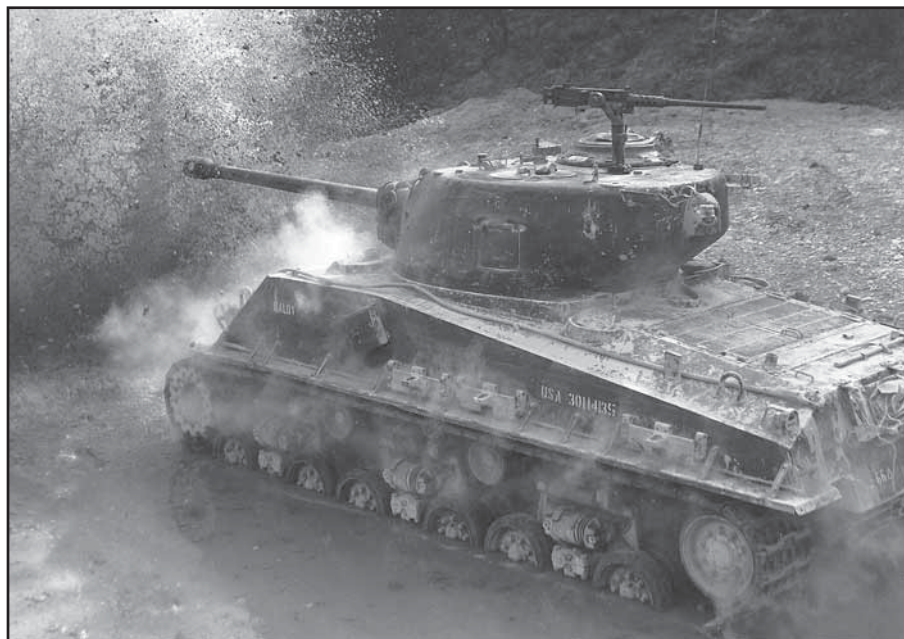
(Reprinted from September-October 1992)

The application of what is now the Air-Land Battle [Army doctrinal] tenets of depth and synchronization resulted in the 72d Tank Battalion's success in Operation Touchdown from 10 to 12 October 1951. This operation led to the ultimate victory of the 2d Infantry Division at the Battle of Heartbreak Ridge in Korea. In this operation, both tenets were used with highly favorable results. The 72d Tank Battalion's actions in Operation Touchdown characterized depth in time, space, and resources. This armored attack is also a perfect example of synchronization with its classic use of combined arms tied to excellent engineer and logistics plans.

Early in the autumn of 1951, General Matthew Ridgway authorized limited objective attacks to seize important terrain features across the Korean front. Lieutenant General James A. Van Fleet, Eighth Army commander, determined that it was necessary to improve the position of his right flank. This decision led to the Battle of Heartbreak Ridge being fought by the 2d Infantry Division.¹

Heartbreak Ridge was an extension of Bloody Ridge and was located in the eastern part of the Eighth Army's sector. Heartbreak Ridge was a long, narrow ridge running north to south. It was located between the Mundung-ni Valley to the west and the Satae-ri Valley to the east.²

Operation Touchdown was conceived after the 2d Infantry Division conducted several unsuccessful piecemeal frontal assaults against strong North Korean defenses from 13 September to 1 October. These attacks were never larger than battalion strength and repeatedly stormed Hills 931 and 851. These endeavors proved costly and ineffective. Despite the valiant efforts of the 2d Infantry Division, the enemy retained Heartbreak Ridge with strong defenses; positions were so elaborate that some bunkers could hold an entire 1,000-man North Korean regiment.³ Major General Robert N. Young, 2d Infantry Division commander, decided that these frontal attacks should cease. Instead, he called for a coordinated attack by the entire division, supported with powerful



Key to the 72d Tank Battalion's fight was the "Easy 8" M4 Sherman.

combined arms assets.⁴ This attack was designated "Operation Touchdown."

Operation Touchdown was so named because it involved a long "end run" around the flank of the enemy at Heartbreak Ridge to cut his lines of communication, concentrated at the northern entrance to the Mundung-ni Valley.⁵ General Young believed that Operation Touchdown would work because the simultaneous advance of all three regiments in the division would eliminate the enemy's advantage of being able to concentrate his fire, particularly mortars. Once the attack commenced, the enemy would be hard pressed to move reinforcements from one sector to another.⁶

The advance of the regiments would be supplemented with two powerful armored thrusts. One attack would be conducted up the Satae-ri Valley. This task force would break behind enemy lines, disrupt enemy communications, and inflict casualties. The second armored thrust was the key to Operation Touchdown. It was to

be a tank/infantry drive up the Mundung-ni Valley.⁷ Operation Touchdown was a drastic shift of technique in the Heartbreak Ridge battle, trading relentless frontal assaults for maneuver against the enemy's weak points.

The effective use of armor by the 2d Infantry Division was to be the key to Operation Touchdown's success. Task Force Sturman was organized with tanks and elements from the 23d Infantry Regiment. It began operations on 3 October as a supporting effort. Task Force Sturman was to conduct several raids in the Satae-ri Valley east of Heartbreak Ridge to engage the North Korean emplacements from the rear. When the infantry attacks began, the task force was to keep the enemy pinned down.

On the opposite side of the division sector, the advance of the infantry would provide cover for the division's engineers building the tank track to Mundung-ni. When the job was finished, the tanks of the 72d Tank Battalion would duplicate

the job of Task Force Sturman but on a larger scale.⁸ Operation Touchdown made great use of the tank/infantry team to conduct extended maneuver into the enemy's rear.

Supporting arms would play an important role in the attack of the 72d Tank Battalion up the Mundung-ni Valley. The five days before Operation Touchdown were used to extensively plan and coordinate supporting arms.⁹ Artillery, mortars, and close air support would be used considerably before and during Operation Touchdown. Additionally, the machine guns of the 82d Antiaircraft Battalion were used to suppress enemy positions in the hills overlooking the valley where vital engineer projects were being conducted. This suppression allowed engineers to clear the valley floor of enemy mines and obstacles with little opposition from communist patrols or snipers.¹⁰ This is an example of the efficient use of all available resources allocated to the division commander to increase his combat power.

The 72d Tank Battalion's foray in the Mundung-ni Valley was reinforced by a massive engineer effort. Preliminary engineer endeavors began as early as 1 October when Lieutenant Colonel Robert W. Love, the division engineer officer, was ordered to get a road to Mundung-ni ready for tank traffic. The time schedule would not allow for an entire road to be built. The existing road would have to be widened and repaired in some parts and com-

pletely built in others. Sections had to be bypassed and built or widened later.

One detour used was a stream bed, which complicated the effort. Enemy antitank mines were laid throughout the valley.¹¹ "The road ... leading to the Mundung-ni Valley had been virtually obliterated by an elaborate pattern of cratering done with the avowed purpose of blocking a tank thrust."¹² Countermine operations, obstacle reduction, and road building in the Mundung-ni Valley were extensive and lasted throughout the operation. However, the fruits of the engineer's efforts would be reaped when the 72d Tank Battalion violently overran Mundung-ni.

The logistics preparation for the 72d Tank Battalion's actions was supervised by Lieutenant Colonel Arthur Cornelison, G4, 2d Infantry Division. This preparation began around 1 October. Special equipment would allow tanks to move over obstacles or wet areas. This equipment was obtained and issued to the 72d Tank Battalion.¹³

A requirement for numerous explosives and for tactical bridging was foreseen before the operation and was acquired.¹⁴ The 2d Engineer Battalion would later use over 40 tons of explosives in clearing mines and building the road up the Mundung-ni Valley.¹⁵ This liberal use of explosives was the only technique that would allow such a massive engineering endeavor to take place rapidly. Extensive logistics preparation allowed for this require-

ment of explosives to be met. This expense in explosives was fully justified by reducing vehicle and equipment losses.¹⁶

The projected daily expenditure of artillery ammunition for the division totaled 20,000 rounds, which made up the bulk of the 1,200 tons of supplies that needed to be moved forward each day, more than the division's organic transportation would allow. Thus, the use of forward supply dumps and air-delivered supplies would supplement the division's trucks. Air drops of food, ammunition, and medical supplies were of inestimable value during Operation Touchdown.¹⁷

By 2 October, the logistics portion of the operations order was nearly complete and planning continued for an ammunition supply point and emergency class I and class III dumps. The task then turned to stockpiling fuel, rations, and ammunition at these forward areas.¹⁸ Considerable forethought and effort by the 2d Infantry Division G4 ensured that all fuel, demolitions, and ammunition requests were met. This allowed the 72d Tank Battalion to conduct its attack fully supported with supplies, engineer efforts, and indirect fires.

Considerable preparatory bombardment of the Mundung-ni Valley by U.S. warplanes and artillery began days before the operation. On 3 October, 35 sorties were flown on planned objectives. On 4 October, 7,100 rounds of artillery ammunition and 45 sorties of air strikes were used.¹⁹

Task Force Sturman was active on 4 October. In less than three hours, the force knocked out 14 bunkers of the North Korean 19th Regiment in the Satae-ri Valley.²⁰ By 5 October, over 45,000 rounds of artillery ammunition were trucked to the ammunition storage point near Polmal. Additionally, 20,000 gallons of fuel and large amounts of rations were moved to forward supply dumps.²¹

As H-hour approached, artillery expenditure increased dramatically and Marine Corps Corsairs attacked enemy positions with napalm, rockets, and machine guns.²² Supporting arms were brought to bear on the initial objectives of all three regiments. On the evening of 5 October at 2100 hours, Operation Touchdown commenced. The 2d Infantry Division initiated the attack with the 9th, 23d, and 38th Regiments abreast. By early the next day, the central peak of Heartbreak Ridge at Hill 931 was in the 2d Division's possession as the attack moved to the north.²³ Task Force Sturman continued its effective runs up the Satae-ri Valley. On 6 October, the task force destroyed 35 enemy



Half-track-mounted quad .50 calibers, nominally air defense weapons, were often used in Korea to suppress infantry ambushes. They kept patrols and snipers from interfering with road improvements prior to the "end run" up the Mundung-ni Valley in Operation Touchdown.

bunkers.²⁴ This armored task force continued its success on 9 and 10 October by destroying several enemy bunkers on Hill 851.²⁵

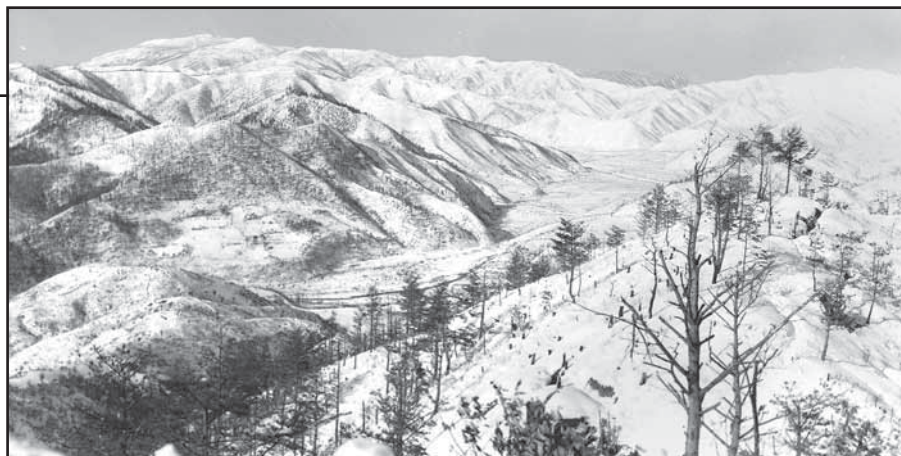
On 10 October, the road to Mundung-ni was complete. Infantry from the 23d and 38th Regiments seized Hills 931 and 605. With these hills under friendly control, the tanks would be protected from enemy antitank squads in most of the restrictive Mundung-ni Valley.²⁶ On 10 October at 0630 hours, the 72d Tank Battalion complemented the division attack with an armored drive up the Mundung-ni Valley.²⁷

This drive consisted of 68 Sherman tanks and a battalion of the 38th Infantry Regiment that accompanied the tanks to counter any enemy antitank squads.²⁸ This allowed for the maximum mutual support between the tanks and the accompanying infantry. The division plan called for the 72d Tank Battalion to withdraw only as far as necessary to get infantry protection. All fuel, maintenance, and ammunition were to be taken forward to them.²⁹ This was accomplished thanks to the extensive logistics planning and stockpiling before the operation.

The success of the 72d Tank Battalion in making its 8-mile attack up the Mundung-ni Valley was due in part to detailed staff planning. Extensive ground reconnaissance, aerial observation, engineering skill, and infantry support was coordinated to produce a highly synchronized attack. On 10 October, the village of Mundung-ni was seized. The tanks then pushed 1 kilometer north of the village and placed fire on the reverse slope of Hill 841 (slightly NW of Hill 605). Tank losses for the day were surprisingly light, with two tanks destroyed and five damaged.³⁰

The communists were surprised at the appearance of tanks in their rear areas.³¹ The unexpected appearance of tanks at Mundung-ni had caught the Chinese troops of the 204th Division, 68th Army, in exposed positions. These troops were then in the process of relieving elements of the mauled North Korean Fifth Corps.³² The presence of Chinese units was proof that the North Koreans had been badly hurt by Operation Touchdown to the degree that help had been sent.³³

After 10 October, the 72d Tank Battalion made daily thrusts further up the valley on 11 and 12 October, destroying enemy forces and supply dumps each day. The tanks would pull back to the forward infantry units each night for protection.³⁴ These daily thrusts are an example of



The snow in this winter view reveals the typical hilly Korean terrain that challenged the 2d ID and the 72d Tank Battalion. Narrow valley floors were easy to block and transverse ridges offered snipers good cover. Deep bunkers higher up resisted frontal assault and often could accommodate an entire North Korean or Chinese regiment.

depth in time. The attacks by the 72d Tank Battalion kept relentless pressure on the enemy for 3 days.

The last objective on Heartbreak Ridge was Hill 851. It was finally seized by the 23d Infantry Regiment on 13 October. After several counterattacks in an attempt to reclaim Heartbreak Ridge, the assault was beaten back.³⁵

The 2d Infantry Division won the Battle of Heartbreak Ridge at the cost of 3,700 casualties.³⁶ Estimates of enemy losses totaled close to 25,000.³⁷ This battle marked the last major UN offensive before the resumption of peace talks in 1951.³⁸ However, months of heavy fighting remained while peace negotiations were ongoing. During these months, the front line along the Eighth Army sector remained exactly where it had been placed by Operation Touchdown.³⁹ Operation Touchdown can, therefore, be considered one of the final decisive actions of the Korean War.

The 72d Tank Battalion's action in Operation Touchdown was a classic example of the AirLand Battle tenet of depth. Depth is the extension of operations in time, space, and resources. By using depth, a commander can obtain the necessary space to maneuver effectively. He can also gain the necessary time to plan, arrange, and execute operations and the necessary resources to win.⁴⁰

The attack by the 72d Tank Battalion was extended in space, time, and resources. The armored thrust of several miles to Mundung-ni was an extension of the division attack deep into the enemy's flank and rear. It was possible due to exhaustive engineer mobility efforts. The duration of the operation placed relentless combined arms attacks against an outma-

neuvered enemy. Prolonged artillery and aerial bombardment in support of the armored thrust also contributed to the extension of Operation Touchdown in time and space. Additionally, the resources dedicated and expended on the 72d Tank Battalion gave depth to the effort. A massive logistics build-up preceded the operation and ensured that ammunition, fuel, and other supplies were available for a protracted armor campaign in both duration and space.

Synchronization is the arrangement of all forces and actions on the battlefield in time, space, and purpose to produce maximum combat power at a decisive point.⁴¹ Synchronization includes the integration of maneuver forces, supporting arms, and combat service support forces for the desired results.

The synchronization of the preparatory artillery and aerial bombardments, the engineer efforts, the supporting attack by Task Force Sturman, and the armored drive of the 72d Tank Battalion all led to the build-up of combat power against communist forces in the Heartbreak Ridge and Mundung-ni area. Vigilant operational security allowed concealment of the progress of the engineers along the road to Mundung-ni. This contributed to the surprise of the armored thrust up the valley.⁴² The shock effect of massed armor in the enemy's rear areas discouraged its initiative toward repelling the infantry assaults to its front, which helped in the capture of Heartbreak Ridge.⁴³ Thorough logistics planning allowed for the sustainment of this combined arms force once the operation was launched.

Operation Touchdown effectively used the AirLand Battle tenets of depth and synchronization. All of the battlefield activities before and during the period from

10 to 12 October focused on the enemy's rear, at the decisive point of Mundungni. This is where communist supply lines were eventually cut. The combination of infantry and tanks, supported by close air support, artillery, engineers, and logistics efforts produced a group of synchronized combat systems that could fight in depth. These forces overwhelmed the static defenses of the North Koreans and led to the successful conclusion of the Battle of Heartbreak Ridge.



Notes

- ¹ Matthew B. Ridgway, *The Korean War*, Doubleday and Company, Garden City, N.Y., 1967, p. 188.
- ² Harry G. Summers Jr., *Korean War Almanac*, Facts on File, New York, 1990, p. 134.
- ³ Virgil E. Craven, "Operation Touchdown Won Heartbreak Ridge," *Combat Forces Journal*, December 1953, p. 25.
- ⁴ Ridgway, p. 189.
- ⁵ Sam Freedman, "Tankers at Heartbreak," *Armor Magazine*, September-October 1952, p. 26.

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- ⁷ Robert W. Love, "Engineers in Operation Touchdown," *Military Engineer*, September-October 1954, p. 325.
- ⁸ Craven, p. 26.
- ⁹ *Ibid.*, pp. 26-27.
- ¹⁰ James M. Hiscock, "The 82nd at Heartbreak Ridge," *Anti-aircraft Journal*, May-June 1952, p. 18.
- ¹¹ Craven, pp. 26-27.
- ¹² Freedman, p. 27.
- ¹³ Love, p. 327.
- ¹⁴ *Ibid.*, p. 326.
- ¹⁵ *Ibid.*, p. 329.
- ¹⁶ *Ibid.*, p. 331.
- ¹⁷ Ridgway, p. 189.
- ¹⁸ Amed L. Hinshaw, *Heartbreak Ridge: Korea, 1951*, Praeger Publishers, New York, 1989, p. 86.
- ¹⁹ *Ibid.*, pp. 95-96.
- ²⁰ *Ibid.*, p. 93.
- ²¹ *Ibid.*, p. 96.
- ²² Craven, p. 28.
- ²³ Hinshaw, p. 101.
- ²⁴ Love, pp. 328-329.
- ²⁵ Clark C. Monroe, Clark C., *The Second United States Infantry Division in Korea 1950-1951*, Toppan Printing Co., Ltd., Tokyo, 1951, p. 172.
- ²⁶ *Ibid.*
- ²⁷ Craven, p. 29.
- ²⁸ Freedman, p. 26.

- ²⁹ Hinshaw, p. 112.
- ³⁰ *Ibid.*
- ³¹ Love, p. 330.
- ³² Hinshaw, p. 112.
- ³³ Craven, p. 29.
- ³⁴ Hinshaw, p. 113.
- ³⁵ Summers, pp. 134-135.
- ³⁶ *Ibid.*, p. 30.
- ³⁷ *Ibid.*, p. 135.
- ³⁸ Love, p. 331.
- ³⁹ Craven, p. 25.
- ⁴⁰ U.S. Government, Department of the Army, Field Manual 100-5, *Operations*, Washington, D.C., 1986, p. 16.
- ⁴¹ *Ibid.*
- ⁴² Love, p. 331.
- ⁴³ Freedman, p. 25.

Captain Scott D. Aiken, U.S. Marine Corps, wrote this article while a student at the U.S. Army Infantry Officer Advanced Course at Fort Benning, GA, in 1991, followed by assignment as commanding officer of India Company, 3d Battalion, 7th Marines, 1st Marine Division (rein), FMF, at the Marine Corps Air Ground Combat Center, Twentynine Palms, CA.

Commander's Hatch from Page 4

in process of achieving, in both organization and materiel."

Later in the article General Devers goes on to say, "The future of armor is limited only by the ingenuity of American industry and the resourcefulness of the officers and enlisted men who belong to armored units. To those qualities there are no limits — nor are there to the future of armor."

Armor's future is measured by its past successes, which represent an extremely lethal and powerful Armor Force, both of today and tomorrow. General Devers' very insightful words reiterate this fact; in particular, his closing sentence, "To those qualities there are no limits — nor are there to the future of armor."

Prior to the invasion of Iraq, many strategic thinkers were certain that the tank was less relevant to the contemporary operational environment (COE). The massive steel behemoths that ruled the plains of Europe for decades were too clumsy for a new world order that required troops to rapidly deploy to small conflicts across the globe. It was not long before the idea of "power is increasingly defined not by mass or

size, but by swiftness and mobility" caught on. This information age battle thinking prompted the Army to announce a "transformation" program to reduce the reliance on heavy combat units in favor of lighter, more strategically deployable, medium weight forces. The "future combat system," would be protected not by heavy armor but by a linked computer network of sensors, robots, and precision weapons that would find and destroy the enemy from greater stand-off ranges.

This concept is still the key to our future mounted force and is actively in development; however, we now know that tanks are still a vital part of our success in the COE and what continues to make us the "Combat Arm of Decision." In fact, we know that the Abrams tank will be in our inventory until the year 2050 at least. We must continue to ensure that not only the Abrams, but the entire heavy brigade combat team (HBCT) formation is a current and relevant force for the next 40 years. As future brigade combat teams (FBCTs) come online over the next several years and decades, we must work to keep the entire force modern and capable. They must have

comparable capabilities that will enable them to fight together.

At the start of World War II, the Army produced huge quantities of modern tanks in record time. Not content with the status quo, Army leaders during the interwar period had laid the groundwork for this remarkable achievement by carefully investing their paltry developmental funds in critical supporting technologies. In a time when technology is advancing at the speed of light, we must stay on the leading edge of combat developments. In 2050, we will certainly not want our mounted force dependent on 2007 technology. Of serious concern to this mounted force are developments for the HBCT and our reconnaissance, surveillance, and security organizations. At this year's Armor Warfighting Conference, we will address these and other important issues regarding the Armor Force. This forum is a great opportunity for the mounted community and its associates to gather professionally to highlight the greatest mounted force and to enjoy the camaraderie of colleagues, friends, and acquaintances. See you at the conference!

FORGE THE THUNDERBOLT!



Because of heavier armor and greater firepower, M48 tanks replaced M41s in Seventh Army's armored cavalry regiments.

Armored Cavalry Regiments Along the Iron Curtain

by Lieutenant General Bruce C. Clarke

(Reprinted from May-June 1958)

"The responsibility of alerting Seventh Army and the rest of the world, in case of attack, is the mission of armored cavalry regiments along the Iron Curtain."

One of the most important military jobs in the world today is being handled by the Seventh Army's three armored cavalry regiments. Sitting astride the rugged, mountainous terrain along the border that separates the United States' area of responsibility in Germany from Soviet Satellite Czechoslovakia and the Soviet zone of Germany, these three regiments are charged with the tremendous responsibility of alerting Seventh Army, and the rest of the world, in case of attack. To accomplish this vital mission, personnel of the regiments must be constantly on the move,

watching, listening, scouting, and patrolling day and night, month after month, and year after year.

The alert, when and if it comes, must come swiftly and surely. A delay of a few minutes may mean the difference between victory and defeat. There can be no relaxation, no let-down, no half-way measures. Personnel and equipment must be in top shape constantly.

No other units in the United States Army today, except for those in Korea, have an actual tactical mission to perform, and few units anywhere have a mission of such importance to the whole free world.

It was no accident that armored cavalry regiments were chosen for the task. It is a traditional cavalry mission, and one for

which they are equipped and able to perform well. The capabilities needed for the border mission are almost precisely those set forth in the armored cavalry regiment table of organization and equipment (TOE), 17-51R. Mission requirements are:

- To operate as a light armored task force in security and light combat missions without reinforcement.
- To operate as a highly mobile armored task force when suitably reinforced.
- To execute screening and counterreconnaissance missions.
- To reconnoiter for higher echelons, normally by independent action without reinforcement.

Their TOE mission is to operate as a light armored force in security, light combat, and reconnaissance missions, and this too, is precisely the mission they have today. In performing this mission, the three regiments involved, the 3d, 11th, and 14th, have over 500 miles of border to watch, and to more fully understand the problems with which they are faced, a knowledge of some of the conditions which exist is necessary.

Along this very formidable front, the three regiments are deployed not necessarily as they would like to be, but as they must be because of the location of troop housing. In some cases, this actually puts a battalion behind the regimental headquarters and many miles away, both from the regimental headquarters and from the border it is expected to guard.

The entire border for which Seventh Army is responsible is generally mountainous, rugged terrain. Roads do not always follow the border, and usually they are in poor condition.

East and West methods of marking the border are a stark revelation of the basic philosophic difference between the communist and the free worlds. Let's look first at the communist side of this border.

Indicating the border exactly from one end to the other are white stone markers.

Along the East German border, and at some locations along the Czech border, comes a plowed strip several yards wide. This strip is kept raked, and the purpose seems to be to detect signs of border crossers who may have slipped through other barriers.

Three rows of barbed-wire fences run the full length of the Czech border and at some places along the East German border. The two outside rows are about four feet high. The center row is from six to eight feet high, and porcelain insulators indicate that it is capable of being electrified and probably is at night. Wherever this fence crosses a road, gates have been installed, and at some places tunnels have been dug beneath the fence. These fences are never located right on the border, but from a few to hundreds of yards behind it, with no apparent pattern.

Hundreds of towers have been erected all along the border on the communist side, and most are mutually supporting. Here again, there is no pattern for manning the towers. Some appear to be manned all the time, and some appear never to be manned.

Where they exist, the fences and the plowed strip are maintained in good repair. Details are often observed repairing the fences and raking the plowed strip.

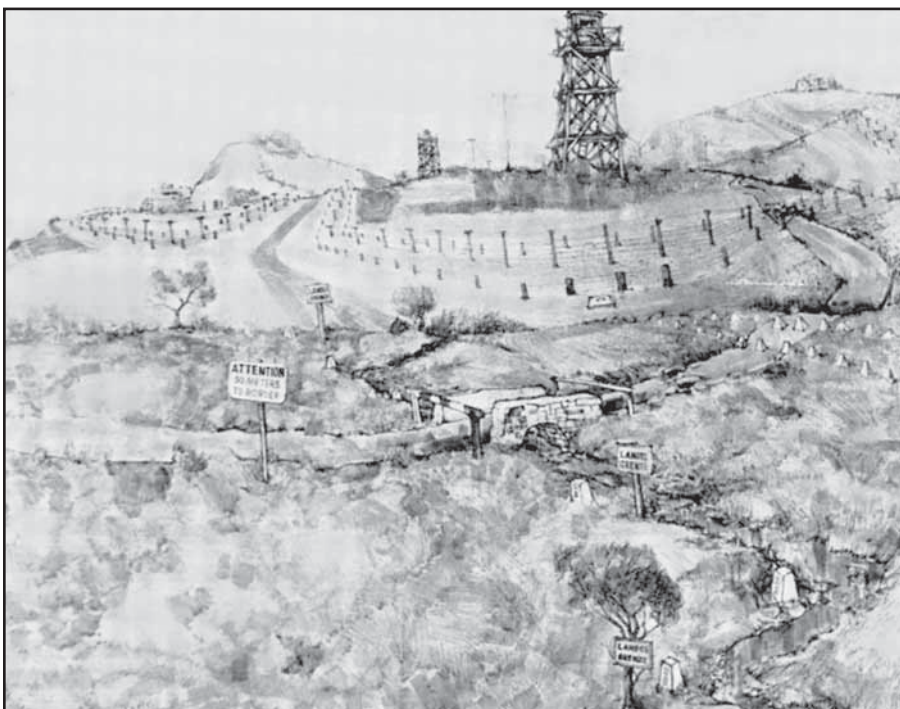
Little farming is permitted along the Czech border, and entire villages within a mile of the border have been evacuated or razed. Some of the farm buildings are now used by the Czech guards. East German farmers, however, cultivate their fields, in most cases right up to the border, and villages close to the border appear to be intact.

On the western side, the situation is entirely different. Except where there are old roads leading to the border, the only indications a border exists are the white stone markers and signs in German which read "Landes Grenze," meaning "state border," placed at intervals alongside the stone markers. For American personnel, we have erected along each all-weather road signs that read "Attention — 50 Meters to the Border." Also on these roads, German customs officials have placed a simple wooden bar. And that's all. No plowed strip, no barbed-wire fences, no towers.

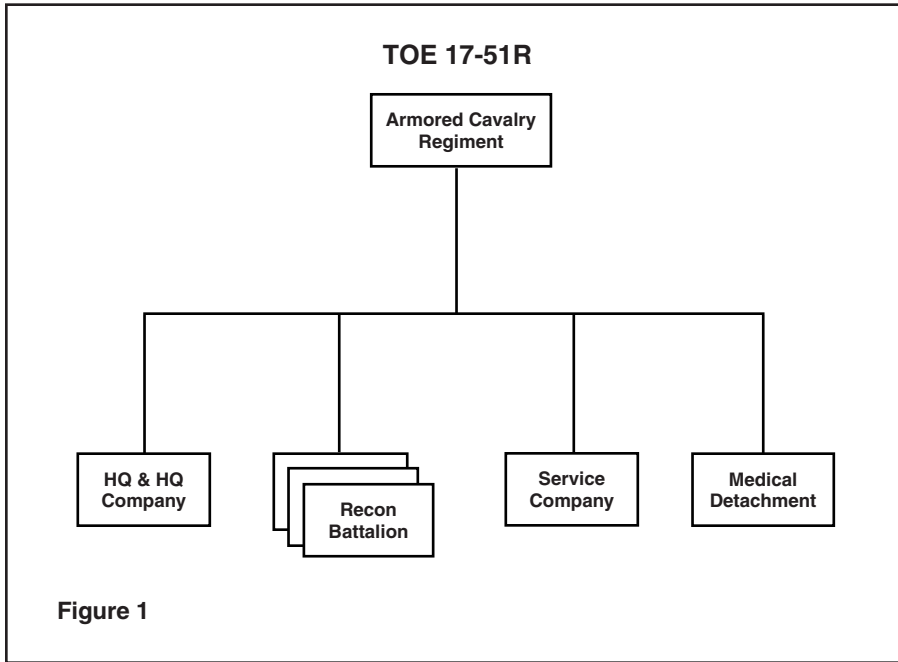
Although methods of marking the border may differ between East and West, vigilance does not. Observation posts dug into the hills all along the border are manned constantly by men of Seventh Army's three armored cavalry regiments. Five-man motorized patrols move constantly between border camps and the observation posts. The border patrols check not only with our own camps and observation posts (OP), but with the German border security police and German customs officials. Information is exchanged each time. It becomes fairly obvious, without mentioning other factors, that the border mission is no part-time job.

If all this were not enough, the cavalrymen are constantly faced with harassing phenomena from the other side of the border. One OP reported 160 flares fired in 45 minutes, and lesser pyrotechnic displays are not unusual. This seems to be a favorite way for communist border guards to communicate with each other. Sounds of rifle fire often punctuate the border night, and thin fingers of searchlights probe incessantly for information.

Despite all this, the more homely aspects of military life must go on. Maintenance must still be performed. Training must be given. Supplies must be drawn and issued. Personnel problems must be solved. How to do these things most efficiently has always been a matter to be reckoned with, and we have recently made some organizational changes in the armored cavalry regiments, which we think have improved soldiers' ability to perform



An artist's drawing of border precautions taken by communists to make sure no one escapes to the West. The towers offer good fields of vision and fire.



missions and at the same time to function better in more conventional pursuits.

Initially, we started with essentially the organization set forth in TOE 17-51R for an armored cavalry regiment (Figure 1). Under this organization, most of the service elements of the regiment are concentrated at regimental headquarters. The supply, maintenance, medical, and administrative sections that work for the battalions are all in either the regimental service company or the headquarters and headquarters company.

To illustrate exactly what this means to the Seventh Army, let me use the 11th Armored Cavalry Regiment as an example. The regimental headquarters with all the service elements is located at Straubing, along with its 1st Battalion. The 2d Battalion is located 41 miles away at Landshut, and the 3d Battalion at Regensburg, 27 miles from regimental headquarters. The border for which the regiment is responsible runs from the junction of the Czechoslovakian, Austrian, and West German borders, 132 miles north to Baernau. This puts the regimental headquarters and its 1st Battalion 45 miles from the border, and its 2d and 3d Battalions respectively 90 and 55 miles from it. Both the 2d and 3d Battalions are located behind regimental headquarters with respect to the border.

You can see immediately that the distances involved pose a mighty problem for the service elements of the regiment. The perfect solution would be, obviously, to reduce the front for which the regiment is responsible, move the battalions forward of the regimental headquarters and closer to it. Unfortunately, the obvi-

ous solution is an impossible one. As previously mentioned, the location of the units is dictated by the availability of troop housing.

With the physical locations of our units imposed on us by circumstances beyond our control, the only alternative, if we were to improve the situation, is to alter our organization to fit the circumstances. After some discussion with the regimental commanders, I directed such action in March 1957.

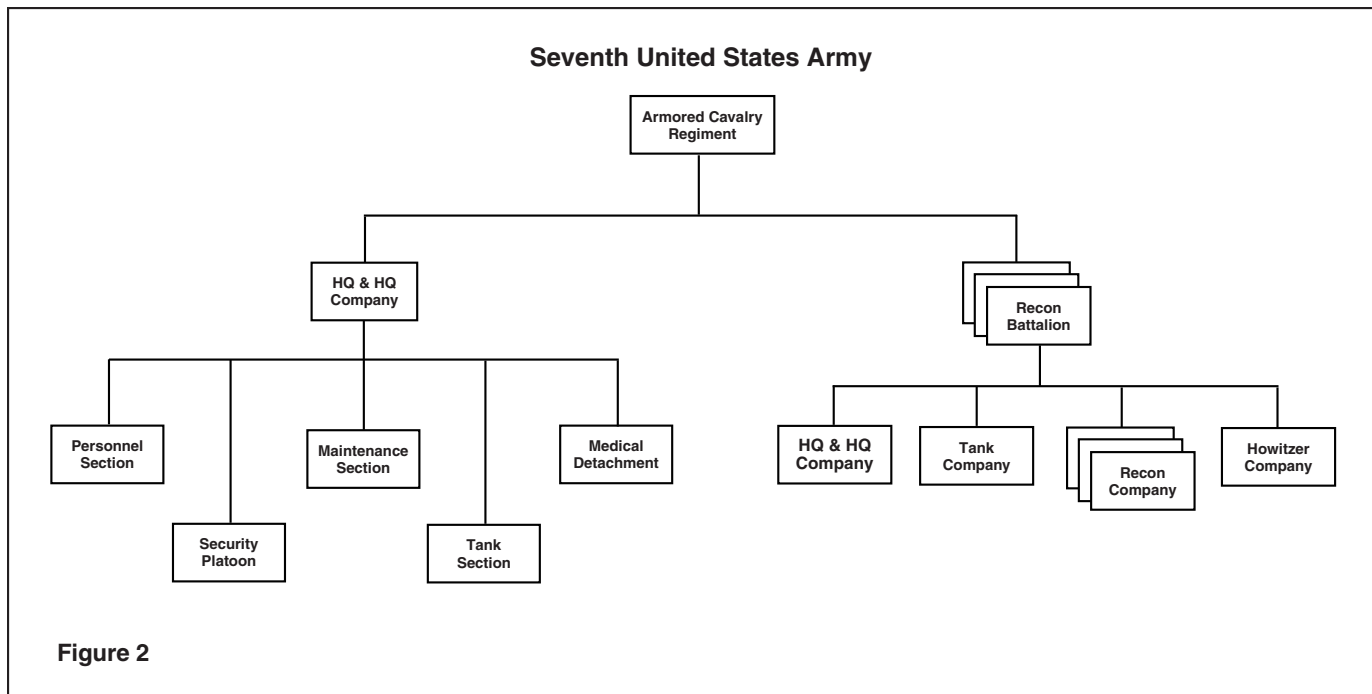
The reorganization was not difficult. We simply organized the headquarters and headquarters companies of our reconnaissance battalions as set forth in TOE 17-56R, *but as though they were not organic to an armored cavalry regiment.*

This was done by simply adding a personnel section, a maintenance platoon, and a supply platoon to each battalion's headquarters and headquarters company, and was provided for in the TOE. To get the personnel and equipment for the change, we took the battalion sections of the regimental headquarters and headquarters company, service company, and medical detachment and transferred them to their respective battalions. And then we went one step further. We found that there was so little left in the regimental service company that it no longer served a useful function as a separate unit. The remaining personnel and equipment were transferred to the regimental headquarters and headquarters company, and the service company was eliminated completely. Although the medical detachment was similarly depleted, we placed it directly under command of the headquarters and headquarters company commander instead of eliminating it. We thus arrived at organization as shown in Figure 2.

There are, of course, pros and cons to this organization. However, all three regimental commanders and the corps commanders, under whose immediate supervision they operate, agree with me that this is the best organization for our particular need in Seventh Army. We are operating over wide fronts, wider perhaps than would be imposed even on an atomic battlefield, and the new organization gives us the best setup for wide front, extended area operations in which all three battalions are employed and faced with a big job.



The addition of the H13 helicopter provides speedy evacuation of sick and injured from border camps and observation posts.



The other side of the coin was illustrated during Command Post Exercise (CPX) Lion Noir, conducted shortly after the reorganization took place. Just before the counteroffensive portion of the exercise, the 11th Armored Cavalry Regiment was in reserve with two attached battalions — one tank and one armored infantry. An infantry regiment attacked to create a gap in the enemy lines through which the reinforced 11th was to pass. This was done on schedule, but the gap was only about 8,000 yards wide. From here, Colonel Allen D. Hulse, commander of the 11th, tells it in his own words:

“Our scheme of maneuver provided for a fast passage of lines with two battalions abreast. We had hoped for a clean breakthrough, followed by a hasty river crossing to get our objectives. However, enemy resistance was organized and moderately determined all day long. The width of the zone restricted maneuver so that two of my five battalions did most of the fighting and needed plenty of logistical support by nightfall. Two of my battalions were never committed on the first day.”

Under the old organization, all the service company, plus any supporting service elements, could have gone to work for the two battalions which had carried the ball all day.”

As you can see, our organization is not going to be the best for all possible circumstances. The regimental commander unquestionably loses some flexibility. We doubt, however, that this is an appreciable loss under the operational requirements with which the regiments are faced in Germany.

In our reorganization of the regiments, we also considered the problem of furnishing adequate and timely logistics support to the regiments from outside. With an actual tactical requirement to fulfill, the regiments could not tolerate the delays in support which sometimes occur. We felt it necessary to see that this support was always there at the precise time it was needed, and so during the last half of 1957, we attached to each regiment three additional service elements. These are a reduced-strength direct support ordnance company, a full-strength armored medical company, and a full-strength armored engineer company. These units live and train with the regiments and so become part of the team. They learn the mission, the terrain, and the operational requirements of the regiment they must support.

In addition to the foregoing modifications and innovations, some important substitutions and additions in equipment have also been made, especially in tanks and airplanes.

The TOE provides for M41 tanks in the reconnaissance companies and M48s in the tank companies of the regiments. We have replaced all the M41s with M48s. The obvious advantages of better protection by heavier armor, better antitank capabilities, and longer range and increased firepower far outweigh the almost no decrease in tactical mobility occasioned by the change. Logistics problems are also somewhat simplified since ammunition, repair, and maintenance are standardized and fewer types of ammunition must be handled.

In aircraft we also attempted to increase the capabilities of the regiments. Besides the daily border patrol missions, all aircraft fly if weather permits; armored cavalry regimental commanders rely heavily on them for moving equipment, for emergency use as radio relay stations, and for normal passenger flights. To the TOE authorization of eight L19s we first added an H13 helicopter to permit commanders to perform transportation jobs they could not previously perform, as well with other means. Aside from getting the regimental commander quickly to command posts and border stations inaccessible to fixed wing aircraft, the helicopter has proven invaluable, especially in winter, for evacuating injured or ill soldiers from border posts in the mountains.

More recently, we have authorized each regiment to replace one L19 with an L20. This will give them the additional load and passenger-carrying capacity they have long needed and will provide an all-weather capability not present before. These L20s are now on hand and will be issued to the regiments as soon as installation of the new ARC 44 radios has been completed.

Finally, I want to discuss the methods used by the regimental commanders in accomplishing the mission of keeping the border under observation at all times. Methods of operation vary somewhat among the three regiments, and the differences are determined largely by the distance the units are located from the Iron Curtain border. Battalions of the 14th, for example, are housed close enough to the border to permit company command-

ers to send out the necessary patrols from garrison locations.

The 3d and the 11th Regiments are not so fortunate. Their distance from the border dictates that complete companies be moved from garrison to border camps. From these camps, the units operate the patrols and observation posts. In all three regiments, the border patrol mission is rotated between companies so that each company has an equal amount of time on the border.

The 3d and the 14th Regiments have assigned sectors of responsibility to all three of their battalions. Battalion commanders are responsible for the border operation of their particular sector, and they run the whole operation with their own personnel and equipment. In each of these regiments, a small number of additional personnel have been added to the S2 section to handle the increased workload imposed at regimental headquarters by the border operation.

The 11th Regiment, on the other hand, prefers to handle the complete border operation from regimental headquarters, and has established a separate staff section for the purpose. Until January 1958, this section was separate from the others and its chief reported directly to the commander. In January, the border section, still with the same responsibilities, was combined with the S2 section.

The border section of the 11th has complete operational control, under the regimental commander, over everything pertaining to the border mission. It does all

the planning, gives direction to the companies on the border, and is responsible for logistics support of the border units, including the vast communications network that links the observation posts, patrols, and the border camps to the regimental headquarters. Battalion commanders are responsible only for seeing that their companies are properly equipped and moved to the border camps. Their responsibility for the border operation ends there. After arrival at the border camps, the companies come under operational control of the regimental commander, through his border officer.

Colonel Hulse, the 11th Regiment commander, feels that this method of operation has several advantages: it puts the complete border operation under one commander at all times; it permits the battalion commanders and their staffs to devote full time to training activities, which are considerable; and it permits all communications to be operated and controlled by one section for the entire border.

The disadvantages are that the battalion commander is removed from the chain of command for one part of his unit's operation, and that the method takes slightly more personnel. Colonel Hulse points out that if his battalions were closer to the border, it might be better for them to handle their share of the border operation, but since they are not, he prefers to leave them out of the picture almost entirely.

I must point out that aside from setting forth the mission to be accomplished,

higher headquarters leaves the business of how to accomplish the mission pretty much up to the regimental commanders. These differences in organization are largely a matter of personal preference of the commanders concerned, and both systems get the job done.

All too briefly I have outlined the major changes we in Seventh Army felt necessary to make in the organization of our three armored cavalry regiments, and as much of their methods of operation as is unclassified. These represent the collective judgment and empirical data gathered over a good many years of actual operations.

One more point demands mention. The tremendous responsibility placed on these three regiments presents challenges of leadership available in few other units. The officers and men of the regiments live every day with the knowledge that if armed aggression comes, it will come to them first. There will be no time for correcting mistakes; no time for checking the book to see what to do. The everyday training must be superior and it must be worked into a schedule already tightly filled with a very real tactical mission. Because of the physical separation of units and because of their individual missions, the training task rests squarely on the shoulders of the company, platoon, section, and squad leaders. The opportunities for professional mental and moral growth in an assignment are without parallel.

Perhaps because of this very situation, the *esprit de corps* and efficiency of these units are of an excellence to be envied. I am sure every man knows what would be demanded of him if aggression came.

I am just as sure, from my own observations, that the armored cavalry regiments of the Seventh United States Army are trained and equipped to perform the vital military mission with which they have been charged.



Lieutenant General Bruce C. Clarke, commanding general of the U. S. Seventh Army at the time he wrote this article, graduated from the U.S. Military Academy in 1927. He earned a B.S. degree in Civil Engineering from Cornell University. During World War II, he served in Europe with the 4th and 7th Armored Divisions. He commanded a corps in Korea during hostilities. Subsequently, he was the commanding general, USARPAC. He assumed command of the Continental Army Command in 1958, shortly after the publication of this article.



The addition of an L20 to each regiment provides an all-weather capability.

Scouts Out — But Not in HMMWVs!

The Rise and Fall of the HMMWV-equipped Heavy Maneuver

by Dr. Robert S. Cameron

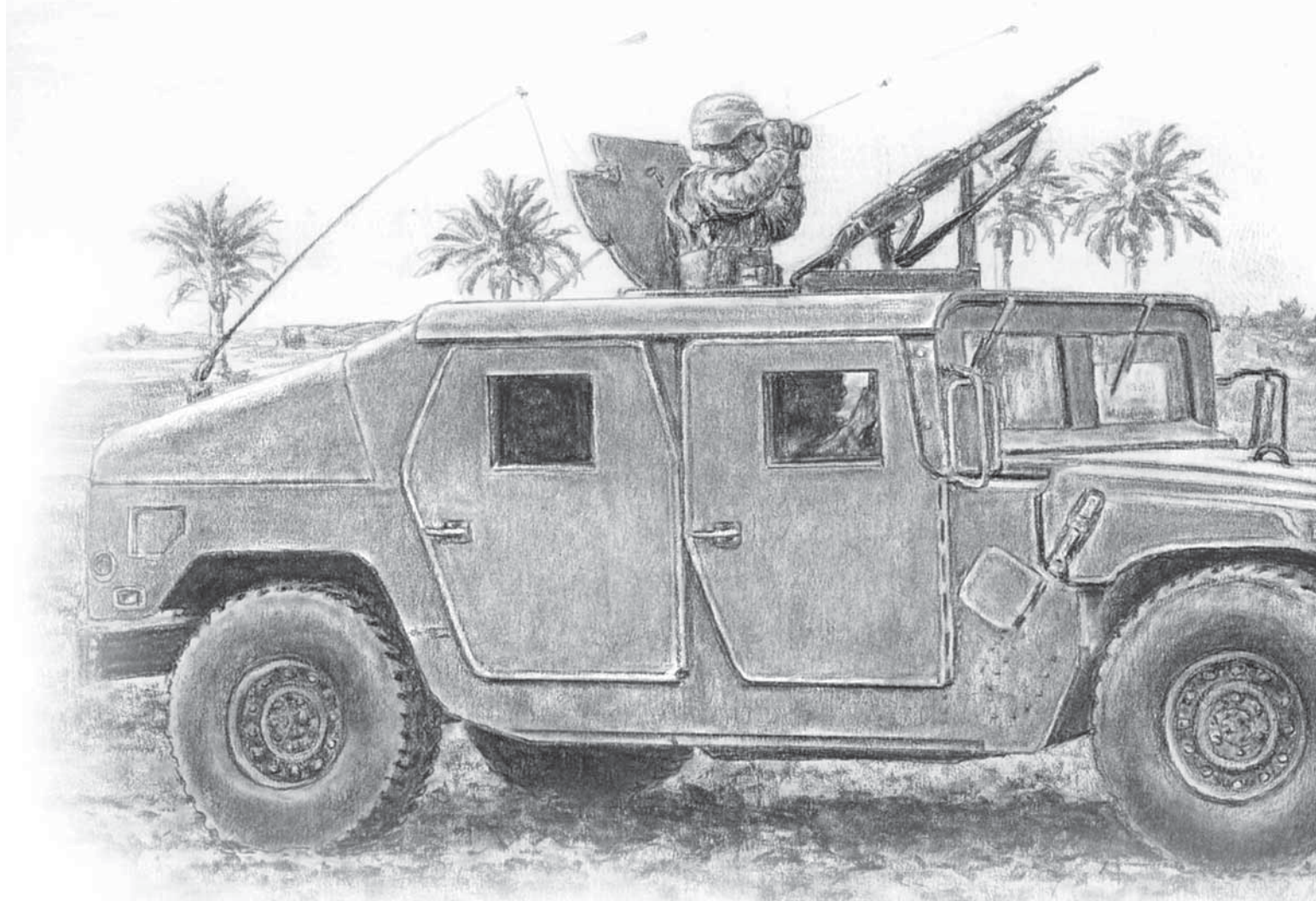
In March 2003, the start of Operation Iraqi Freedom sent heavy maneuver battalion scout platoons to war. Armed with a doctrinal emphasis on stealth and the evasion of hostile forces, they did so equipped largely with high-mobility, multipurpose wheeled vehicles (HMMWV). These platforms possessed minimum survivability. Unarmored, except for a Kevlar lining, they remained on the peripheries of the main effort during the drive into Baghdad. By 2004, improvised explosive devices (IED) and roadside ambushes characterized threat activities and underscored the vehicle's vulnerability. Casualties increased in direct relation to the soaring number of damaged and destroyed HMMWVs.

These losses triggered remedial measures. The most visible — and politically charged — included increased fielding of the up-armored M114 and the provision of add-on armor kits. Some maneuver battalions either exchanged their scout HMMWVs for M3 cavalry fighting vehicles (CFVs) or formed composite platoons of both vehicles. In some instances, HMMWVs, equipped with the long-range scout surveillance system (LRAS3), were

paired with M3s. The latter's armor and firepower protected the HMMWV, which identified targets from a safe distance. Ultimately, an institutional solution emerged: a reconfigured scout platoon with five HMMWVs, equipped with LRAS3 and three M3s. The new organization merged the stealth capabilities associated with the HMMWV and the firepower and survivability of the M3. In addition, the first steps were taken in 2005 toward a long-term solution through the acquisition of a new scout vehicle.

The HMMWV's inadequacy as a scout platform triggered these actions.

Although quiet, mobile, and sustainable, the vehicle's vulnerability to even small arms undermined its tactical value. Its inability to survive chance contacts with hostile forces, mines, and unexploded ordnance detracted from its ability to operate on a nonlinear battlefield where surprise encounters could be expected. Ironically, the recent adoption of the mixed M3/HMMWV scout platoon constitutes little more than a belated implementation of an idea repeatedly proposed since the 1980s. If the mixed platoon represents an optimal configuration, why did it take more than 15 years to field?



Battalion Scout Platoon

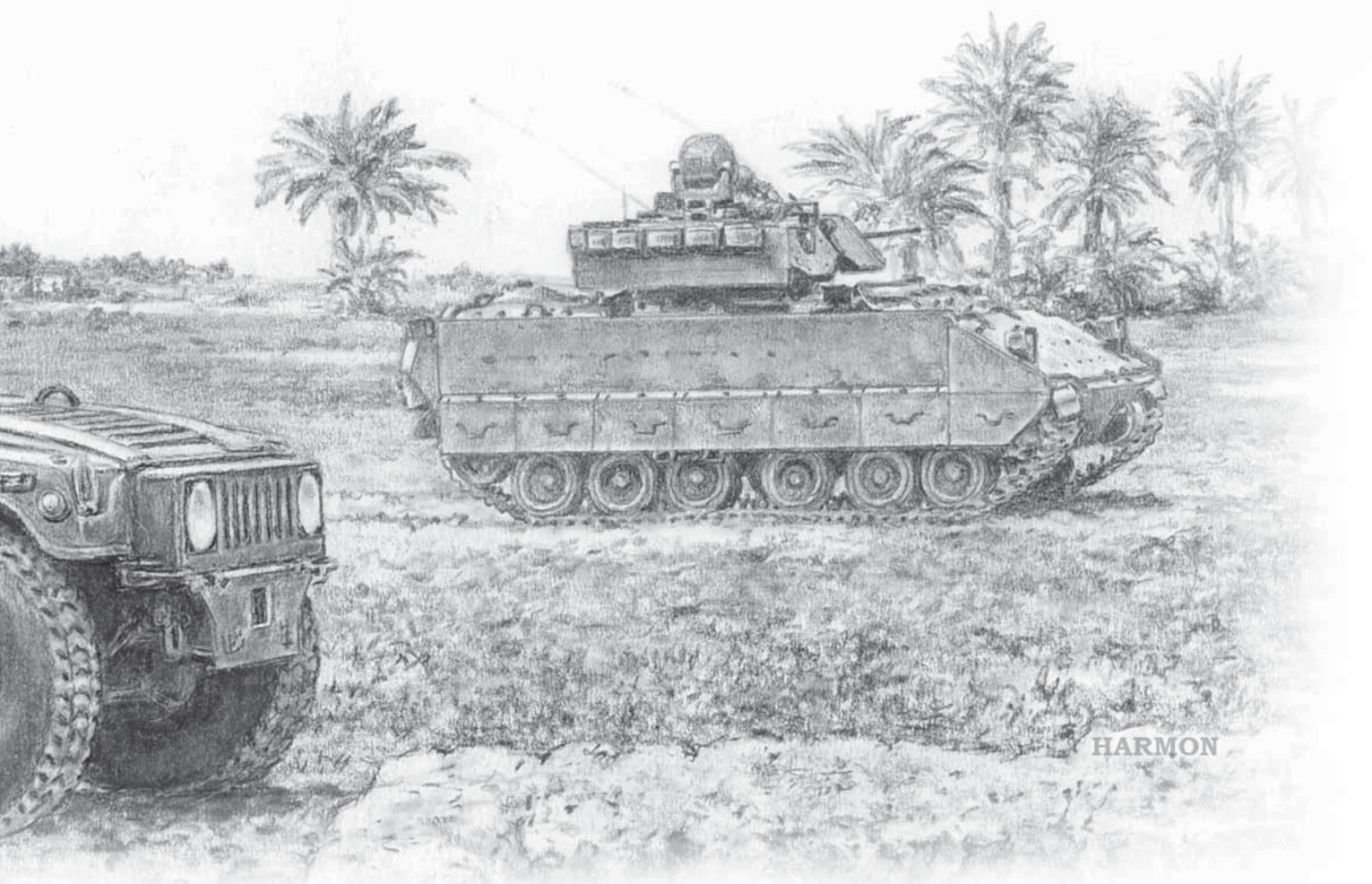
The answer lies in the studies that accompanied the initial decision to equip scout platoons with HMMWVs. These studies illustrate the pitfalls associated with insufficient attention to the heavy maneuver battalion's operational environment and reconnaissance needs, inadequate review of operational and historical experiences, and an overreliance on the results of modeling and simulation in an artificial environment. Current efforts to reorganize the scout platoon and acquire a new scout platform are the consequences of these shortcomings.

Before Operation Desert Storm

During World War II, unarmored jeeps equipped the scout platoons of tank and armored infantry battalions. Light and mobile, the jeep nevertheless suffered from survivability issues similar to those more recently experienced by HMMWVs. In response, maneuver battalions augmented their scout platoons with tanks to overwatch the jeeps and provide a measure of combat power. The jeep's vulnerability led to adopting an armored scout platform in the post-World War II era. The platoon also tended to become more robust, capable of fighting for information when stealthy operations proved insufficient.

Throughout the Cold War, however, controversy surrounded the heavy maneuver battalion scout platoon. Its configuration repeatedly alternated between a light organization optimized for stealthy recon and a more robust one capable of aggressive action in the presence of hostile forces.¹ In the 1980s, fielding the M3 CFV to scout platoons at first seemed to resolve this organizational and doctrinal confusion. Heavy maneuver battalion scout platoons began to reconfigure into six M3s and 30 men. Designed to operate in three sections, this organization benefited from the vehicle's survivability, mobility, and lethality. It possessed the means to engage hostile reconnaissance assets and survive unexpected enemy contact. The principal drawback of the new scout platoon lay in the size and large acoustic signature of the M3, which made stealthy operations unrealistic. Designed to operate on battlefields populated by mechanized forces and antitank systems, survivability and lethality outweighed stealth.

The M3's fielding permitted the gradual replacement of those scout platoons equipped with a mix of the M113 and M901 improved tow vehicle (ITV). They, too, included three sections and 30 men, but an M113 and an ITV constituted each section. This





“During World War II, unarmored jeeps equipped the scout platoons of tank and armored infantry battalions. Light and mobile, the jeep nevertheless suffered from survivability issues similar to those more recently experienced by HMMWVs. In response, maneuver battalions augmented their scout platoons with tanks to overwatch the jeeps and provide a measure of combat power.”

mix provided each section an antitank capability suited to operations against mechanized Warsaw Pact forces. However, the overcrowded ITVs struggled to keep pace with the M113s and suffered from low operational readiness. Moreover, the entire platoon proved slower than the Abrams tanks, which also began to equip heavy maneuver battalions in the 1980s.²

The M3 platoon constituted a significant improvement over the M113 and ITV mix. Its capabilities clearly reflected advocates of robust scout organizations capable of fighting for information. However, by the mid-1980s, analysis of training rotations at the National Training Center (NTC) began to show a recurring pattern of heavy scout losses and reconnaissance failure. Too often, scout platoons became engaged in combat and were destroyed. The direct correlation between reconnaissance effectiveness and maneuver battalion success gave these results a disproportionate impact.³

Therefore, the Army undertook a detailed analysis of the problem. In 1987, it commissioned the RAND Corporation to study reconnaissance at the NTC. A team of subject-matter experts observed mounted training, conducted a comprehensive assessment of reconnaissance operations, and developed recommendations for improvement. Their final report attributed the reconnaissance failures to multiple causes, which included faulty staff work, poor or nonexistent tracking of reconnaissance assets, a command tendency to execute plans without awaiting scout reports, doctrinal flaws, and training deficiencies. At the platoon level, scouts failed “to accomplish their reconnaissance tasks because they seldom survive initial contact with enemy forces.”⁴

The study embraced stealthy, dismounted patrolling and stationary observation as the most successful reconnaissance methods. Too often, however, scouts found themselves engaged in sustained firefights that disrupted their reconnaissance mission and often ended with their simulated destruction. Criticism of the new M3 platoons focused on their lack of dismounts, their tendency to focus on mounted operations, and an insufficient number of vehicles for the tasks and area coverage required. The platform proved too large and loud; it could not be used effectively in silent watch. Its engines had to be started regularly to recharge the batteries for its electrical systems, including the thermal viewer. Its use as a scout platform compared unfavorably to the HMMWV used by the opposing force (OPFOR) scouts. The study favored the lightness, mobility, and quietness of this vehicle, which permitted rapid, stealthy movement. Indeed, the HMMWV’s qualities were directly linked to the success of OPFOR reconnaissance.⁵

After the Rand Corporation study was completed, the Center for Army Lessons Learned (CALL) continued to collect data on reconnaissance operations at the NTC. It found a 50 percent loss rate among scouts and persistently low rates of successful reconnaissance missions. CALL attributed these findings largely to training and the absence of stealth in scout platoon operations. With the success of battalion task force operations resting on reconnaissance activity, these results were worrisome.⁶

CALL also encouraged greater reliance on stealth to avoid firefights and casualties. Experimentation with alternate scout platoon organizations followed. In 1988, the NTC hosted a demonstration of a 10-vehicle platoon that offered greater coverage and separation of the platoon headquarters from the scout sections for better command and control. The unit included a two-HMMWV command element; a heavy section of four M3s and four motorcycles; and a light section of four HMMWVs. In this manner, the platoon benefited from the stealth capability of the HMMWV and the combat power of the M3. The mixed vehicle set permitted a degree of tailoring to fit varied tactical situations, and also found support in an Armor School white paper.⁷

During the same year, 1st Battalion, 64th Armor tested a pure HMMWV scout platoon organization at the NTC. The unit achieved several successes through reliance on the HMMWV’s quietness and small size. Observation teams reached critical observation points undetected, where they reported on OPFOR activity. The vehicles often evaded contact through stealth and completed their mission — a refreshing change from the steady failure reports that previously characterized reconnaissance at the NTC. This event encouraged interest in a HMMWV scout platoon, especially given the vehicle’s reliability, mobility, and sustainability. Even its lack of firepower and armor were considered attributes, since their absence would encourage stealth rather than firefights. However, when encounters with the OPFOR did occur, they tended to result in the HMMWV’s destruction — an unpleasant fact lost amid the general enthusiasm generated by the platoon’s apparent success.⁸

Formal studies of alternate scout platoon organizations followed. In 1989, three platoon configurations underwent testing and comparison, which included a baseline organization of six M3s; a mixed platoon with four M3s and six HMMWVs; and one with 10 HMMWVs and four motorcycles. All were evaluated in combat training center environments and via Janus modeling. Analysis found the HMMWV platoon to be the most effective, least costly, and most sustainable organization. It outperformed the other two configurations in the execution of zone recon, area recon, route recon, screen, and passage of lines. More-

over, the report found the HMMWV platoon “to be the most survivable and most successful in providing the task force commander with information on second echelon threat activity.” In terms of providing the battalion task force with advance warning of pending enemy action, this characteristic was important.⁹

The larger size of the mixed and HMMWV platoons permitted them to absorb losses and continue their missions. However, the M3 proved more survivable, and the final report noted that “the vulnerability of the HMMWV and MILMO [military motorcycle] vice the M3 CFV as a scout vehicle was a concern to be resolved.” Nevertheless, this concern seemed minor when compared to the generally superior performance of the HMMWV platoon over its competitors. The HMMWV platoon was cheaper, more sustainable, easier to deploy, and required minimal adjustments to training and doctrine. Therefore, the Army opted to reequip its heavy maneuver battalion scout platoons with 10 HMMWVs organized into a headquarters section with two HMMWVs, and four scout sections with two HMMWVs each.¹⁰

This decision marked a return to the World War II era’s reliance on a wheeled, unarmored scout vehicle. In that conflict, survivability issues dominated scout operations and led to subsequent reliance on armored scout platforms. Adopting the HMMWV scout platoon reversed this trend based on modeling and simulation efforts that, however sophisticated, did not reflect a real-world experience. Neither the computer nor the field phase of the 1989 study, for example, offered a cluttered battlefield populated with bypassed enemy forces, unexploded ordnance, urban environments, civilian crowds of uncertain disposition, or varied terrain considerations. All of these factors had been part of the scout’s experience in World War II and every conflict since. In the event of a chance encounter with hostile forces, could the HMMWV scout survive? The question was not entirely explored. Instead, stealth became equated with survivability.

Desert Storm, Contingency Operations, and Force XXI

Operation Desert Storm occurred before most maneuver battalion scout platoons received their HMMWVs. Therefore, many platoons entered combat with M3s, although smaller numbers of other configurations were also present, including six platoons equipped with HMMWVs. At least one platoon leader favored the new HMMWV unit. He appreciated the mobility, quietness, and small size associated with the HMMWV and relied on these qualities to move to and on the battlefield. While operating as a forward screen, his unit routinely identified targets for the parent battalion task force to eliminate. In periods of frequent contact, however, the HMMWV scout’s only option was to hide because he was lacking armor protection. To compensate, the battalion employed heavier assets to clear a path, making it safe for the HMMWVs to proceed.¹¹

Armor battalion and brigade commanders in theater proved much less sanguine about HMMWV scout platoons. They considered these units far too vulnerable, making their active employment on the battlefield too much of a risk. Therefore, HMMWV platoons were generally used to assist command and control functions and facilitate traffic movement, and were employed close to their parent battalions. Their role of forward reconnaissance was assumed by mechanized infantry or tank platoons temporarily thrust into the role of scouts.¹² Some commanders created ad hoc organizations to provide increased survivability to their scouts. In one instance, an improvised company team was created through the

concentration of a scout platoon, tank platoon, mechanized infantry platoon, and an engineer section. These units could be task organized, while tanks and mechanized infantry performed zone reconnaissance.¹³

Concerns over HMMWV vulnerability led the Armor School to request the cessation of HMMWV scout platoon fielding. Armor leaders sought further information on the employment of all scout platoon configurations in the Gulf War. They did not want to press the fielding of an organization that would either cost lives or be underused due to vulnerability concerns. Instead, they preferred a hardened vehicle for scouts, capable of surviving or destroying chance hostile contacts and moving through minefields and artillery.¹⁴ Further study occurred — but so did HMMWV platoon fielding.

Analysis of combat operations during Operation Desert Storm identified problems encountered by most of the principal ground reconnaissance platforms employed by the Army. The M113, the M901 (ITV), and HMMWV had difficulty keeping ahead of the Abrams tanks and Bradley fighting vehicles, which constituted the main body of their parent organizations. They advanced less to detect and identify enemy forces, rather than simply stay in the lead. Moreover, HMMWVs generally did not survive chance encounters with hostile elements. Scouts equipped with the M3, however, had little difficulty maintaining their lead station and they proved much more survivable. These findings led to recommendations for a revised maneuver battalion scout platoon that included a mix of HMMWVs and M3s with a greater dismount capability. This combination provided the means to conduct either stealthy operations or a more aggressive reconnaissance likely to trigger hostile contact.¹⁵

Meanwhile, CALL continued to observe repeated reconnaissance failures at the NTC between 1991 and 1993. Command and staffing problems accounted for much of the poor showing, but survivability remained an issue. In those instances where divisional cavalry did not precede the brigade, the latter’s battalion scouts became the first to encounter OPFOR counterreconnaissance.



“The M3 platoon constituted a significant improvement over the M113 and ITV mix. Its capabilities clearly reflected advocates of robust scout organizations capable of fighting for information. However, by the mid-1980s, analysis of training rotations at the National Training Center (NTC) began to show a recurring pattern of heavy scout losses and reconnaissance failure. Too often, scout platoons became engaged in combat and were destroyed.”

They proved unable to breach this security zone, survive counter-reconnaissance actions, reach their objective, and observe activities deep in the enemy's rear area. When time constraints prevented deliberate, stealthy operations, scout platoons often resorted to a more aggressive, mounted approach. With the likelihood of enemy contact increased, HMMWV survivability plummeted. However, the M3's large size and noise often announced its presence, making stealthy reconnaissance more difficult, and increasing the likelihood of ambush. Overall survival rates for both vehicles averaged a poor 50 percent.¹⁶

Changes in doctrine and training did generate performance improvements, but they also underscored the dilemma associated with using stealth instead of more aggressive scouting techniques, which were likely to trigger combat. Doctrine emphasized the importance of stealthy operations, coordination of reconnaissance activity into battalion and brigade planning, and allocating sufficient time for the completion of recon missions. Scenarios at the training centers, however, rarely permitted the slow, deliberate pace associated with stealthy reconnaissance. Hence, battalion commanders faced with a tight timetable often chose to commence operations either without awaiting the completion of reconnaissance missions or by reliance on rapid, mounted scouting.¹⁷ Such activity constituted a problem for HMMWV scout platoons, since they were not "to be employed in combat missions such as hasty attack or movement to contact."¹⁸

In 1995, the Army again commissioned the RAND Corporation to study reconnaissance at the NTC. The purpose of this study lay in determining the effectiveness of changes to heavy maneuver battalion scout platoon doctrine, materiel, and training implemented since the earlier 1987 analysis. Since that time, M3 and HMMWV platoons had replaced the interim M113 and ITV units, night-vision capabilities had improved, and considerable changes were effected in training to ensure scouts did not prematurely engage in combat. The new study found that scouts engaged in fewer firefights, tended to survive longer and complete more missions, and benefited from better operational readiness

rates. However, while the greater night-vision capabilities permitted scouts to reach destinations undetected at night, they were often found and destroyed during the daytime. The greater size of the HMMWV platoons permitted them to sustain greater loss rates and complete missions, but overall scout survivability still remained at an unacceptable 50 percent. The report noted that "the issue of scout survivability remains unresolved. Clearly, neither vehicle in use [M3 or HMMWV] is optimum for scouting. Either a new vehicle or a mix of vehicles may be a better solution."¹⁹

Neither suggested solution was new. The mixed scout platoon had been recommended since the mid-1980s, while design work on a new scout platform had been underway just as long. Dubbed the "future scout vehicle (FSV)," it offered improvements in survivability and lethality without compromising stealth. However, it remained a work in progress and did not evolve into an actual, fielded vehicle. Instead, the FSV was replaced by the future scout and cavalry system (FSCS), a joint program funded by the United States and Britain. The FSCS added the benefits of digitization and a sensor array, and became the desired replacement for both the M3 and HMMWV, neither of which had been designed exclusively for scout operations. By the late 1990s, the FSCS was expected to become the primary reconnaissance platform, while the older vehicles continued to serve as interim solutions. In actuality, funding constraints and Army Transformation ended the program.²⁰ Consequently, scouts continued to function in organizations built around the M3 or the HMMWV.

The 1990s also witnessed a change in the operational environment in which scouts operated. The end of the Cold War and the collapse of the Soviet Union eliminated the primary focus of Army doctrine for more than 40 years. Instead, the Army looked forward to a future marked by more frequent regional crises and a heightened involvement in a variety of peacekeeping, stability, and humanitarian activities quite different from the high-intensity combat associated with the Cold War. Army planners anticipated a battlefield characterized by nonlinear and noncontiguous operations against a variety of threats. The explosion of the internet and digital communications onto the market created both danger and opportunity. The Army sought to harness the capabilities of the new information age technology to tactical organizations in an initiative designated "Force XXI." Through the rapid acquisition and transfer of information, units would maneuver faster with greater precision. However, the new technologies placed a premium on information dominance, which, when coupled with a nonlinear battlespace and a higher operational tempo (OPTEMPO), meant an increased demand for reconnaissance and security at all levels.²¹

These developments did not augur well for heavy maneuver battalion scout platoons, which continued to have difficulty completing and surviving reconnaissance missions in the largely traditional scenarios used at the training centers. Overseas deployments in Somalia and Bosnia served only to underscore the problems associated with the HMMWV scout platoon. In Somalia, the presence of militant factions and hostile crowds created a dangerous environment for unarmored, wheeled vehicles. The threat became manifest during the fighting that erupted in Mogadishu in October 1993. This experience triggered a rapid procurement initiative to up-arm the HMMWV.²²

In Bosnia, U.S. forces also entered a tense environment ripe with the potential for outbreaks of violence with little warning. The widespread presence



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of mines added an additional danger, particularly for unarmored, flat-bottomed vehicles, including HMMWVs. These threats led to the development of the M1114, an up-armored HMMWV. It entered service in 1996 and was employed in Bosnia. The M1114 benefited from improved ballistic protection, which shielded the crew from artillery, small-arms fire, and mine blasts. Its strengthened chassis supported the heavier armor, but the increased weight reduced mobility and increased component wear. The M1114 proved better suited to roads, while its improved survivability came at a cost in mobility and maintenance.²³

In the Balkans, crowds were not deterred by the presence of a HMMWV, whether armored or not. The vehicle lacked the firepower and mass to deter hostile behavior. In many cases, crowds mobbed the vehicles, climbing on them, blocking doors, and destroying external features. The M1114 featured a hardened passenger cab, but the vehicle's weapon remained exposed and unprotected. Limitations to HMMWV effectiveness led the 1st Brigade, 1st Armored Division to organize two vehicle sets for operations. Low-risk and administrative actions became the purview of HMMWVs, while operations in high-risk environments were reserved for M3s and Abrams tanks.²⁴

Similarly, other units began to experiment with alternate organizations at platoon and troop levels to improve the HMMWV's survivability. The 1st Battalion, 33d Armor, for example, grouped its scouts with tanks, mechanized infantry, mortars, and engineers. A typical organization included the scout platoon, a tank platoon, a mortar section, an engineer section, and two infantry squads. This improvised company team performed various reconnaissance and security actions.²⁵ The hunter-killer team concept also provided a means of exploiting the small size and quietness of the HMMWV, while simultaneously protecting it from enemy action. In this arrangement, the scout worked with either a Bradley fighting vehicle or Abrams tank. The scout sought and identified targets through stealth. The more powerful vehicles provided overwatch for the scouts and engaged targets.²⁶

The fielding of digital systems associated with Force XXI offered the promise of greater capability. The future battle command brigade and below (FBCB2) and the LRAS3 provided enhanced situational awareness and a greatly improved ability to identify enemy activities from afar. These systems permitted scout platoons to maneuver more effectively and observe enemy activity while reducing the risk of detection and destruction. However, fielding occurred slowly and came at a cost. In the Force XXI division design, for example, maneuver battalion scout platoon size shrank from ten to six vehicles. The lost vehicles helped to equip the newly created brigade reconnaissance troop (BRT). This unit filled a gap in reconnaissance capability that had long existed between the battalion and the division. Conceptually, the improved capability at the brigade level, coupled with LRAS3 and FBCB2 fielding at the battalion scout level, mitigated the downsizing. However, the smaller scout platoon could not provide the same degree of coverage or absorb the losses of the larger, 10-vehicle unit it replaced. Moreover, despite the new capabilities, the scout platoon remained highly vulnerable to chance encounters with enemy forces.²⁷

Transformation and the Global War on Terror

The onset of Army Transformation in 1999 triggered a new series of force structure changes intended to improve deployabil-



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ity and responsiveness. Part of these changes included reshaping the field force into modular brigade combat teams that could be tailored to meet different operational environments. This transition was still ongoing when Operation Iraqi Freedom began. Hence, many organizations went to war largely unchanged since Operation Desert Storm, including the heavy maneuver battalion scouts.

The HMMWV's poor survivability in Iraq led the Armor Center to host a General Officers' Reconnaissance Integrated Concept Team in 2005. This event brought force designers and combat commanders together to discuss various reconnaissance issues, including the scout's platform. In general, the attendees considered the HMMWV, whether up-armored or not, an inadequate scout vehicle. They desired a better platform and wanted scout platoons capable of aggressive reconnaissance even in the presence of a hostile force. Although stealth remained the preferred method of operations, the ability to fight for information received much greater support. The M1114 remained in service as a scout platform — but only through the absence of an alternate vehicle.²⁸

The search for a replacement to the HMMWV followed. During the 2006 Current Forces Protection Initiative, an Army team reviewed various existing vehicles. The results helped shape the requirements for a new reconnaissance platform that would incorporate proven technology and design features. In particular, consideration was given to the use of a v-shaped chassis to improve mine resistance. However, concept development continued throughout the year without a new vehicle in sight, although considerable interest was shown in the Cougar and Buffalo armored trucks, made by Force Protection, Inc. These mine-resistant vehicles held the promise of better survivability against mines and other typical threats.²⁹

Acquiring a HMMWV replacement required time, but combat operations overseas continued. Therefore, the Army began reconfiguring its scout platoons into a mix of five HMMWVs and three M3s. This arrangement permitted the operation of a separate command element of two HMMWVs and three scout sec-

tions, each including one HMMWV and one M3. Alternatively, the HMMWVs and M3s could be grouped into separate heavy and light sections. This platoon organization used platforms already in the field and retained the same 30-man personnel strength as prior configurations. It marked an improvement over the pure HMMWV platoon, which had proven too vulnerable to hostile activity. However, the mixed organization possessed only limited dismount capability. It offered less coverage than the 10-HMMWV scout platoon and less combat power than the M3 platoon.³⁰

The new scout platoon organization marked the belated implementation of similar proposals repeatedly recommended since the 1980s. The intervening years witnessed two wars and numerous contingency deployments that underscored the limitations of the pure HMMWV scout platoon and the related danger of associating stealth with survivability. Interest in the HMMWV as a scout vehicle arose from its quietness, small size, and mobility. However, the inability to survive chance encounters with hostile forces or unruly crowds effectively nullified these qualities.

Perfect situational awareness — let alone situational understanding — is an illusion that has never existed. Clausewitz's friction of war remains very much a characteristic of information age military operations, particularly against an adaptive threat unconcerned with force protection measures or rules of engagement. No means exist to track every hostile combatant or pre-empt all attacks on friendly forces. In the current nonlinear operational environment, these realities ensure the likelihood of a sudden encounter with an IED or ambush.

To function in such circumstances, heavy maneuver battalion scouts require greater survivability. Stealth will characterize much of their activity, but during surprise encounters with hostile forces, the availability of more traditional ballistic protection and weaponry will ensure their survival and ability to continue their mission. Developing a scout platform requires a careful balance of survivability, lethality, mobility, sustainability, and stealth. In the HMMWV's case, mobility, sustainability, and stealth received great emphasis at the expense of platform survivability and lethality.

Determining the correct balance of qualities in any future scout vehicle must include a rigorous, objective analysis of historical and recent operational experiences. Modeling and simulation results must be assessed and understood from this real world frame of reference. No matter how sophisticated, modeling and simulation — including rotations at the combat training centers — cannot depict the full range of conditions in which scouts operate. At best, they provide an estimate of effectiveness that may not survive contact with the enemy.

The importance of the scout platoon to maneuver battalion operations makes such a broad and more critical analysis of potential platform capabilities imperative. The cost of not doing so is evident in the HMMWV scout platoon's story. This unit developed as a solution to an NTC trend. In retrospect, platform survivability did not receive sufficient attention before fielding began. Later, when operational experience suggested the HMMWV's unsuitability as a scout platform, alternative solutions — such as the mixed M3/HMMWV platoon — were left unexplored until recent combat operations made abandonment of the pure HMMWV scout platoon unavoidable. In the Balkans and again in Iraq, chance encounters on a nonlinear battlefield proved much more frequent than anticipated in the simulated field conditions initially used to justify the HMMWV's use as a scout platform.

Analysis of the experiences of jeep-mounted scouts in the 1940s and their abandonment in the post-World War II era should have led to a more critical appraisal of the HMMWV platoon in the 1980s. Instead, fielding of the organization continued, despite

growing criticism of its effectiveness in Somalia, the Balkans, and Iraq. Ironically, a World War II precedent also existed for the mix of combat and stealth capabilities found in the new scout platoon organization. More effective and realistic solutions to force design and platform problems are possible through greater attention to similar issues in the past. It remains to be seen if the past will indeed be used to develop better future systems or whether attractive concepts will be retained long after they have outlived their utility — such as the HMMWV scout platoons in the heavy maneuver battalions.



Notes

¹For a comprehensive review of maneuver battalion scout platoon organization, doctrine, and materiel from World War II through the 1980s, see Major (P) Craig S. Harju, Sr., "White Paper—A Study of the Maneuver Battalion Reconnaissance or Scout Platoon," 18 September 1989, U.S. Army Armor School, Fort Knox, KY. This item is available via the Defense Technical Information Center (DTIC), report number ADA214798.

²Ibid., pp. 78-80; U.S. Army Armor School, "Armor Reference Data, Special Text 17-1-1, Vol. I," Fort Knox, KY, 1981, p. 255.

³Anne W. Chapman, *The Origins and Development of the National Training Center 1976-1984*, Center of Military History, Washington, D.C., 1997, p. 107.

⁴Major John D. Rosenberger, "An Assessment of Reconnaissance and Counterreconnaissance Operations at the National Training Center," Fort Knox, KY, February 1987, pp. 1, 8, quotation from page 8.

⁵Ibid., pp. 8-9, 16.

⁶Lieutenant Colonel Thomas C. McCarthy, "U.S. Army Heavy Brigade Reconnaissance During Offensive Operations," School of Advanced Military Studies monograph, Fort Leavenworth, KS, 1994, pp. 18-19.

⁷Directorate of Combat Developments, U.S. Army Armor School, "Cavalry/Reconnaissance Net Assessment—Master Plan," Fort Knox, KY, 31 August 1988, pp. 2-10, 2-11.

⁸Major Barry Scribner, "HMMWVs and Scouts: Do They Mix?" *ARMOR*, July-August 1989, pp. 33-38.

⁹Directorate of Combat Developments, U.S. Army Armor School, "Proponent Evaluation Report for the Concept Evaluation of the Maneuver Battalion Scout Platoon," Fort Knox, KY, 12 March 1990, pp. 1-3, 13, quotation from p. 13. This document is available from DTIC, report number ADA224363.

¹⁰Ibid., pp. 16, 32-34, quotation from p. 16. The use of motorcycles within the platoon was found to have considerable value, but they did not become part of the table of organization and equipment. Safety and training issues surrounded motorcycle use. In addition, adopting the motorcycle would have required a new acquisition effort.

¹¹U.S. Army Armor Center, "Desert Shield and Desert Storm Emerging Observations," (FOUO), Fort Knox, KY, 7 October 1991, p. 1-4; First Lieutenant (P) Charles W. Gameros Jr., "Scout HMMWVs and Bradley CFVs: Gulf War Provides a Comparison of Scout Vehicles and MTOEs," *ARMOR*, September-October 1991, pp. 21-25.

¹²"Desert Shield and Desert Storm Emerging Observations," (FOUO), p. 4-7.

¹³McCarthy, pp. 24-25.

¹⁴"Desert Shield and Desert Storm Emerging Observations," (FOUO), pp. 4-7, 4-8.

¹⁵McCarthy, p. 31.

¹⁶Ibid., pp. 19-24.

¹⁷McCarthy, pp. 27-29.

¹⁸U.S. Army Field Manual (FM) 17-98, *Scout Platoon*, U.S. Government Printing Office (GPO), Washington, D.C., 1994, p. 3-14.

¹⁹Martin Goldsmith, *Battalion Reconnaissance Operations at the National Training Center*, RAND, Santa Monica, CA, 1996, pp. 12-14, quotation from p. 14.

²⁰Directorate of Force Development, U.S. Army Armor Center, "Reconnaissance Update," Briefing, 1998; "Future Scout and Cavalry System (FSCS), Tactical Reconnaissance Armored Combat Equipment Requirement (TRACER), Armored Scout and Reconnaissance Vehicle (ASRV)," internet article, accessed 6 February 2007 at <http://www.globalsecurity.org/military/systems/ground/fscs.htm>.

²¹Directorate of Force Development, "Reconnaissance Update."

²²Lieutenant Colonel John C. Woznick, "The Scout Vehicle," *ARMOR*, September-October 1994, pp. 31-34.

²³First Lieutenant Wayne T. Westgaard, "Will the New Brigade Reconnaissance Troop Be Adequately Protected?," *ARMOR*, March-April 1999, pp. 27-29.

²⁴Lieutenant Colonel Michael Prevou, "HMMWVs Lack the Firepower and Protection for Bosnia Role," *ARMOR*, January-February 1998, pp. 36, 56.

²⁵Lieutenant Colonel Henry M. St-Pierre and First Lieutenant Jamie E. Warder, "TEAM RECON: A New Approach to Armored TF Reconnaissance," *ARMOR*, March-April 1999, pp. 24-26, 29.

²⁶This teaming of light scouts and heavier platforms dates back to World War II. Mechanized cavalry units were organized accordingly, while maneuver battalion scout platoons developed an ad hoc teaming by mixing tanks with jeep scouts.

²⁷Directorate of Force Development, "Reconnaissance Update;" Headquarters Department of the Army and U.S. Army Armor Center and Fort Knox, "FKSM 71-2 (2005): The Armored and Mechanized Infantry Battalion Task Force (Coordinating Draft)," Fort Knox, KY, 1 November 1999, pp. 1-2, 1-5, 1-6, 1-7.

²⁸General Officers' Reconnaissance ICT, Notes, 24-25 August 2005, Armor Branch Archives.

²⁹David Wood, "Better Armor Lacking For New Troops in Iraq," *Baltimore Sun*, 10 January 2007.

³⁰U.S. Army Armor Center, FKSM 71-8: Armor/Cavalry Reference Data," Fort Knox, KY, August 2005, pp. A-16, A-17.

Robert S. Cameron is the armor branch historian.



Armor in Vietnam

by Lieutenant Colonel Raymond R. Battreall, Jr.

(Reprinted from May-June 1966)

“You can’t use Armor in Vietnam!” This often-heard pronouncement has been widely believed, especially in view of the obvious difficulty of Vietnamese terrain, the elusive nature of the insurgent enemy, and the tragic failure of French armor in the area. It has, in fact, been so widely believed as to severely inhibit serious thought on the subject. But for all its dogmatic strength and apparent credibility, the assertion simply is not true. It is not even true that you can’t use medium tanks in Vietnam, which is what most people really mean, although medium tanks are in fact seriously limited and probably could not measure up to a cost-effective study, except in the Central Plateau.

Need for Armor

But armor is not the medium tank or any other specific machine. It is a concept: the concept of mobility, firepower, and shock effect on the battlefield. And the need for mobility, firepower, and shock effect is an inherent part of warfare, which does not depend on either the century or the geographical area in which the war is fought. This need has been filled in various times and places by light, swift horsemen; by heavily armed and armored knights; by chariots; by elephants; and more recently, by a wide variety of armored vehicles. The need exists in Viet-

nam just as urgently as it has existed elsewhere. The question is how best to meet the need, for if it is not met, there will be needless infantry casualties. Let me make this point very clear. This article is not to glorify armor, but to explain how armor can and does contribute to the overall effort — and how it could contribute still further — for the simple reason that every time armor could contribute, but does not, infantrymen die without need.

Terrain Considerations

Vietnam is divided into four distinct terrain areas — the Delta, the Mountains, the Coastal Plain, and the Central Plateau — each with different effects on vehicular mobility (Figure 1).

The Delta. There are two Deltas, the old and the new. To most, the term connotes the new Delta from the Saigon River to the southern tip of the country. This heavily populated rice bowl is a vast, utterly flat region of paddies traversed by a few roads and crisscrossed by a dense network of deep, steep-banked canals and broad tidal rivers. It contains the desolate Plain of Reeds and is punctuated by the Seven Mountains near the southwestern tip of Cambodia, the U Minh Forests near the Gulf of Siam, and dense mangrove swamps along the coast of the South China Sea. Each of these is, for different rea-

sons, a poor place for offensive military operations and is, therefore, a VC base area. The old Delta generally north of Saigon is, by contrast, somewhat higher, devoid of canals and major rivers, and covered by large forests and rubber plantations. It contains the notorious War Zones C and D.

The Mountains. The northern two-thirds of the country consists of the rugged, jungle-covered, sparsely populated Annamite Mountains. Land communications are limited to a very few inferior and easily interdicted roads and trails, and to the stream lines along the narrow floors of deep valleys, which are occasionally interrupted by sheer waterfalls impassable to vehicles. Vehicular movement off of the very scarce roads and trails is nearly impossible, and even foot movement is exceedingly difficult. The mountains offer refuge to the VC.

The Coastal Plain. The Coastal Plain is discontinuous, being segmented by mountain spurs reaching to the sea. Small segments surround Phan Thiet, Phan Rang, Nha Trang, Tuy Hoa, and Qui Nhon. Continuing northward, major segments extend from Quang Ngai to Da Nang, and from below Hue north across the 17th Parallel. The plain is heavily populated and is tied together by Highway 1 and a single-track, frequently interdicted rail-

road. From the coast to its maximum inland depth of about 20 miles, the plain consists of a narrow sandy strip backed up by rice paddies and separated from the mountains in most instances by a single range of open hills called the Piedmont. The segments are further compartmented by several unfordable rivers.

The Central Plateau. The Central Plateau extends along the Cambodian border from Kontum through Pleiku to Ban-Me-Thuot. It is thinly populated and lacks significant rivers. It is covered by vast forests, especially in the north, and savannah areas of tall grass. Although roads are scarce, cross-country mobility outside the forests is excellent.

Effects on Combat Vehicles

Armored cars. Armored cars are road-bound everywhere except on the Central Plateau, and during the dry season, in certain areas of the Coastal Plain. In these areas, they are useful as relief forces for small outposts and for limited offensive combat. Their primary — and vital — mission, however, is highway security and convoy escort. They are invaluable in this role and, when present, discourage all but the largest and best organized of ambushes. U.S. forces have no armored cars. The Vietnamese have three troops plus separate platoons organic to the sectors (provinces). Many more are needed. Because of the post-World War II hiatus in American armored car development, the V100 “Commando” appears to be the only reasonably available, modern U.S. car for the purpose.

Tanks. As previously mentioned, medium tanks are severely restricted in Vietnam. They are able to negotiate coastal sand, Piedmont hills, the Central Plateau, and — surprising to some — rice paddies without difficulty. When they are able to bring the Cong to engagement, the results are terrible to behold. They have been, therefore, useful adjuncts to the defense of such vital areas as Da Nang and have even enjoyed some limited offensive success in both the 3d Marine Division and 1st Infantry Division sectors. We expect considerable ben-

efits from a recently arrived battalion in the Central Plateau. The nemesis of the tank, however, is the unfordable water obstacle. Current model tanks cannot swim and existing highway bridges are more often than not too weak or too narrow to support them. Engineer tactical bridging is truck-mounted and, therefore, useless away from the highways. AVLBs, being wider than medium tanks, cause more problems than they solve during on-highway movements.

Light tanks suffer the same limitations as medium tanks, but being lighter and narrower, they are able to make better use of existing bridges. This allows them access to larger and more widespread operational areas and increases their opportunities to engage Viet Cong (VC). The 76-mm gun of the M41A3 is no less deadly than the M48’s 90mm against troops and field fortifications and, surprisingly, the M41 stands up every bit as well as the M48 against VC’s shaped-charge type antitank weapons. Light tanks are, therefore,

markedly more useful than medium tanks in the Coastal Plain and the northern or “old” portion of the Delta and are just as good as medium tanks in the Central Plateau. Neither type can function in the mountains or in the “new” Delta. It is one of the minor tragedies of our time that the U.S. Army phased out the M41 without producing a timely replacement. The result is that U.S. forces in Vietnam have no light tanks while the Vietnamese have only five troops of M41s. What is needed, of course, is a semi-amphibious tank, such as the General Sheridan, which would not be stopped by rivers and canals.

Armored personnel carriers (APC). The M113 APC is the backbone of Armor in Vietnam for one simple and overriding reason — it can move! In the summer of 1962, two troops of M113s were introduced experimentally into the new portion of the Delta. They were successful beyond all expectations. The two troops were able to negotiate the Delta’s rivers and canals and, between 11 June and 30

September 1962, killed a total of 502 VC and captured 184 more while losing only 4 of their own men killed and 9 wounded. The M113 force has, therefore, been expanded to its present strength of one U.S. mechanized battalion and 24 Vietnamese troops. And more could be used.

M113s are found everywhere in Vietnam except the jungle-covered mountains. They work hand-in-glove with the infantry, but not as personnel carriers. Rather, mobility has proven much more important than firepower in the face of this particular combination of terrain and enemy, and the M113 has become the main battle tank of Vietnam. Firepower, of course, is not to be ignored, and the M113 has been locally modified by the addition of gunshields and hatch armor for the protection of .50-caliber gunners (see Figure 2) and by mounting a .30-caliber machine gun on each side of the cargo hatch. Three vehicles in each troop mount 81mm mortars and two carry 57mm recoilless rifles in lieu of one of the machine guns. This adds up to such an impressive array of fire-

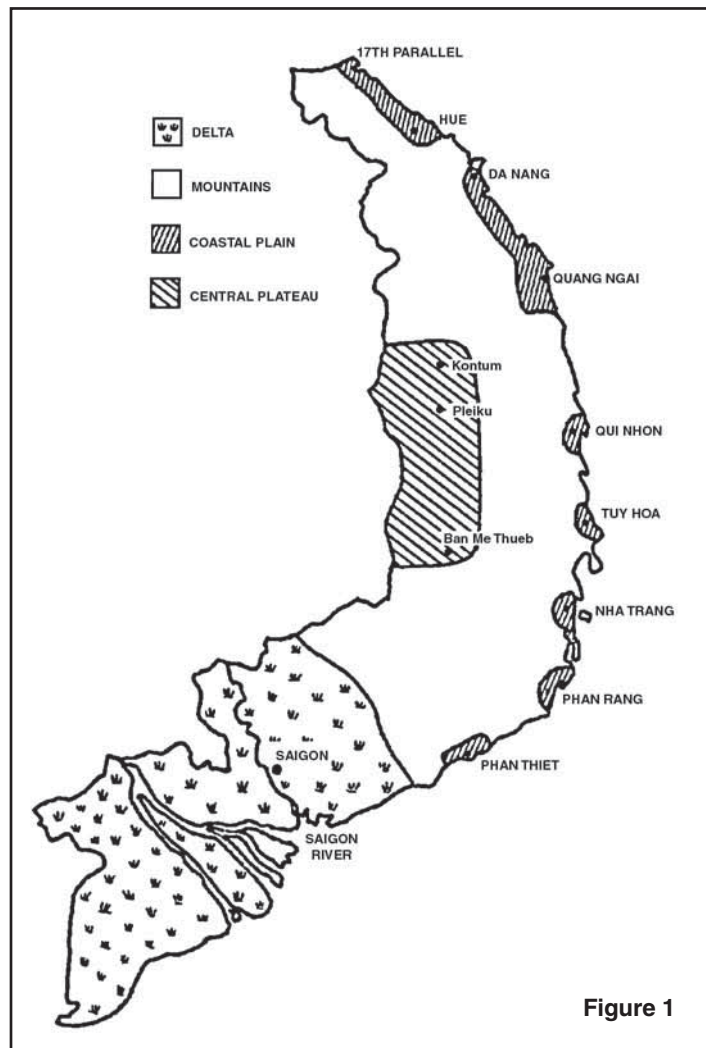


Figure 1

power that VC show great reluctance to engage even a single troop of M113s with less than a full battalion well dug in along some antitank obstacle and heavily reinforced with recoilless rifles, bazookas, and the like.

Cynics discounted the M113's early success and predicted it would come to an end as soon as VC acquired antitank weapons. This has not proven to be the case. VC has long since distributed 57 and 75mm recoilless rifles, 3.5" rocket launchers, and 82mm Chinese "Panzerfausts" to battalion level in considerable quantity — as many, in fact, as he can carry and supply with ammunition, as long as he remains tied to foot mobility. The result has been the replacement of "cowboy and Indian" antics by sound armor tactics while Vietnamese armor has piled up an impressive 15.8-to-1 kill ratio from 11 June 1962 through 31 December 1965 (6,275 VC confirmed dead — the real total is doubtless much higher — against 397 friendly killed in action). No armored vehicle can ever be invulnerable, but the M113 is demonstrably better protection than a fatigue shirt for its crew. True, a goodly number are penetrated from time to time, but less than one out of seven penetrated vehicles is destroyed and the eight- to twelve-man crews suffer only about .8 personnel losses per penetration.

Command and reconnaissance vehicles. The familiar quarter-ton truck is entirely roadbound in Vietnam and is therefore little or no use for command and recon operations. The M114 command and recon vehicle was introduced shortly after the M113s, but unfortunately fell flat on its face. (Almost literally — the major problem was that its front slope protruded beyond the track and dug into dikes and canal banks before the track could get a foothold, thereby preventing the M114s exiting from paddies or canals.) There is at present no satisfactory command and recon vehicle in Vietnam. It would be interesting to see what the new M113½ — a scaled-down M113 with a three-man crew — could do.

Tactical Employment

General. At first glance, armor tactics in Vietnam may seem highly unorthodox. If you will consider what has been said about the various vehicles, however, you will see that the APC has simply assumed the orthodox role of the main battle tank. By the same token, the light tank has, in those areas where it can operate, taken

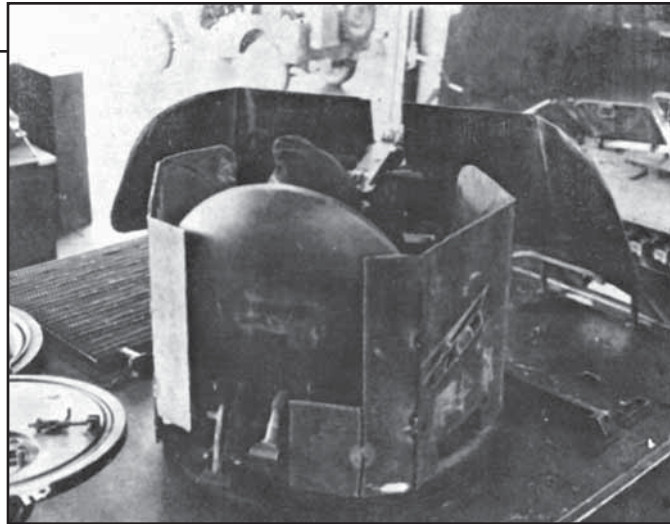


Figure 2

on the role of the main battle tank supporting the actions of the M113 by heavy firepower and, where possible, adding weight to the assault. With these substitutions in mind, standard doctrine becomes applicable. Armor in Vietnam, as presently equipped, is capable of the full range of normal armor operations. It performs best, however, when employed on offensive missions in close cooperation with infantry. The ultimate tactical objective of the Vietnamese trooper is to physically overrun the enemy and crush him beneath his tracks. All of his efforts are directed to this end and the psychological — or "shock" — effect on the enemy of this armor equivalent to "the spirit of the Bayonet" is very great indeed.

Reconnaissance. In close country against an enemy who hides or flees rather than fights in the face of odds, reconnaissance

becomes a detailed search by large numbers of dismounted personnel for which armor is not especially well suited. Armored cavalry or armor with attached infantry can, of course, search relatively open areas, but the likelihood of finding significant enemy forces in such areas is slight. In general, then, infantry reconnoiters for armor in Vietnam.

Strike force. The usual Vietnamese "search and destroy" operation finds an infantry regiment deployed as skirmishers to conduct a detailed, hole-by-hole and bush-by-bush search with an armor troop held well forward in reserve. When a significant enemy is found, however, it is unlikely that the deployed friendly infantry will have a preponderance of force at the point of contact. The armor troop is, therefore, committed to the assault to destroy the enemy.

Encircling force. As an alternative, an armor troop or squadron may be dispatched to encircle the area to be searched and block escape there from. If the enemy attempts to flee, he is destroyed by fire. If he stands his ground, the armor is committed as before — only this time from the rear — to the assault.

Sweep. The armor "sweep" is used in the absence of firm intelligence or as an economy-of-force measure in hostile terrain. It is also useful to check on security and

Continued on Page 39



The M113 APC is the backbone of armor in Vietnam for one simple reason — it can move!

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

PHOTO: CW2 Gerhard P. Turner

During Operation Desert Storm, the 2d Squadron, 3d Armored Cavalry Regiment (ACR) conducted a hasty attack on the Ar Rumaylah Southwest Airfield in southern Iraq. This article is written from the viewpoint of the cavalry troop executive officer and scout platoon leader.



Ar Rumaylah Airfield Succumbs To Hasty Attack

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

(Reprinted from September-October 1991)

On 28 February 1991, 2d Squadron, 3d (2/3) ACR culminated its 400-kilometer assault into Iraq during Operation Desert Storm with a hasty attack that captured the Ar Rumaylah Southwest Airfield in southern Iraq, part of a complex that made up the largest ammo supply point in the Kuwaiti theater of operations. In the course of the attack, the squadron captured nearly 300 enemy prisoners of war, destroyed tons of Iraqi equipment, and most importantly, suffered no friendly casualties.

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

Background

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

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

word on future offensive operations and a possible cease-fire.

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

Timeline — 28 February

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

On this morning, G Troop's mission-capable vehicles included eight out of nine tanks, all assigned Bradleys, and one of two mortar vehicles. Both inoperative vehicles had been evacuated to the squadron's unit maintenance collection point (UMCP) for repairs, but the UMCP was

still on the move, trying to catch up with the rest of the squadron, and repairs on the vehicles had not been possible.

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

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

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

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

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

At this time, the G Troop combat trains consisted of the troop XO in his M577A2 command post vehicle, the troop first sergeant in his M113A2 APC, the medic armored personnel carrier (APC), maintenance APC, M88A2 recovery vehicle, a ground surveillance radar (GSR) APC, two M998 HMMWVs, and two heavy expanded mobility tactical truck (HEMTT) fuelers.

About 4 kilometers beyond the line of departure, E Troop reached the crash site and moved forward to secure it. The helicopter was totaled, with wreckage everywhere, and the fuselage showed signs of antiaircraft fire.

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

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

The squadron continued its movement east and began to encounter unoccupied fighting positions and unexploded munitions from allied bombing. As the

squadron moved closer to the airfield, it became very apparent that enemy forces occupied the airfield.

As 1st Platoon, E Troop, came within 3 kilometers of the airfield, one of the Bradley commanders spotted a chain-link fence surrounding the airfield. The lead scout sections assumed overwatch positions and a close inspection quickly revealed the fence was not booby-trapped or mined. After inspecting the fence, the platoon visually acquired two tanks and five antiaircraft positions. It appeared that the crews were running to man them.

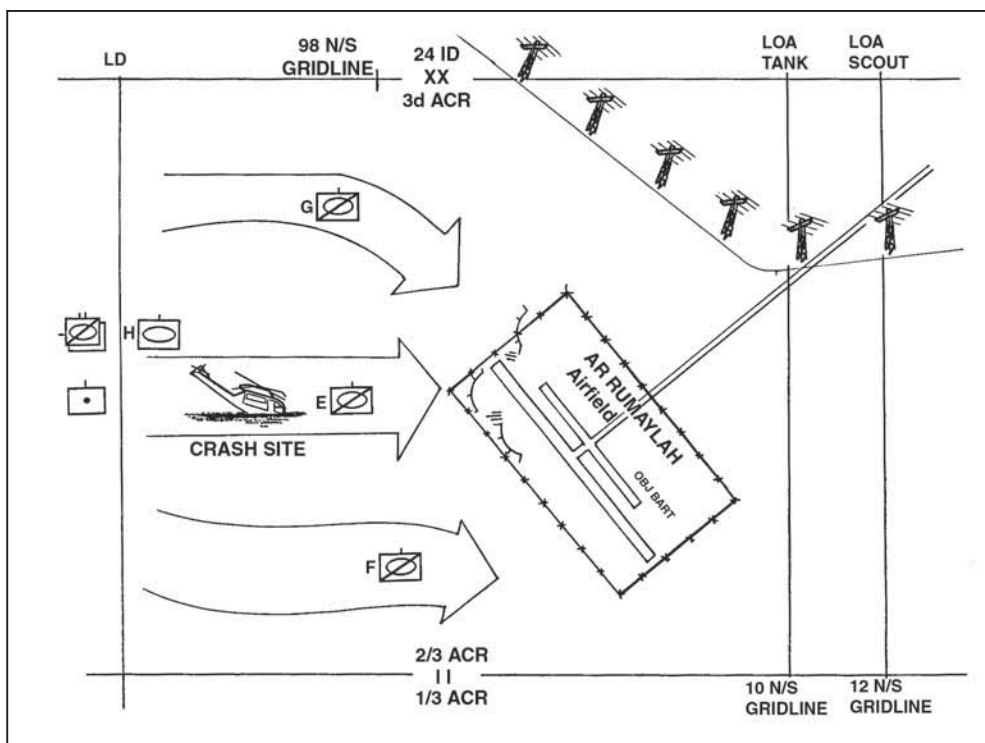
Wanting to take advantage of the surprise, 1st Platoon called for 2d Platoon's mine plow tank to crash the fence. 2d Platoon quickly responded, sending the tank at a high rate of speed through the fence, tearing a gaping hole. 2d Platoon now took the lead through the fence due to the presence of enemy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

At 1027 hours, E Troop responded to live fire from several ZSU 23-4s and quickly destroyed the weapons systems. The troop continued to push through the airfield, 1st Platoon engaging the air defense weapons, and 2d Platoon dealing with the armored threat. The Bradleys soon came under direct small-arms fire. A rocket propelled grenade (RPG) round streaked just a few feet above a 2d Platoon tank, and another passed by within

6 feet of one of 1st Platoon's Bradleys. Scouts reported dug-in machine gun positions in zone and the platoon quickly massed fires to destroy the positions.

G Troop received its first enemy fire when 3d Platoon was taken under fire by machine gun positions. In a hasty assault of the position, 3d Platoon destroyed three air defense guns, three trucks, and captured twelve Iraqi soldiers. The combat trains moved forward to assist with Iraqi casualties and link up with 3d Platoon, whose combat lifesavers had begun basic first aid on wounded Iraqis. After the medics and additional combat lifesavers from the troop first sergeant's vehicle arrived on station, they began to treat the wounded prisoners. Once the prisoners were stabilized, a scout section from 3d Platoon escorted the medics back to the squadron forward aid station so the casualties could receive further treatment and be evacuated.

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



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



PHOTO: CPT A.A. Puryear

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

seam between the two troops. These two platoons, along with 2d Platoon, E Troop, received the mission to destroy some abandoned artillery pieces.

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

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

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

Both E and G Troop continued to conduct clearing operations, capturing more Iraqi soldiers and destroying weapons caches filled with hundreds of AK-47s, grenades, and RPGs. The squadron halted its movement about 28 kilometers west of the city of Basra.

Over the next several days, the squadron continued clearing bunkers, rounding up

EPWs, and destroying enemy equipment. These operations continued until the regiment received orders to return to Saudi Arabia on 7 March 1991.

Observations

Maneuver

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

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

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

The troop must have an A3 equivalent chassis for these M113-series vehicles so these critical support assets can maintain pace with the rest of the troop.

Fire Support

Sustain: The troop fire support officer (FSO) controls the movement of the troop mortars, a task that used to be assigned to the troop XO. With the mortars under

his control, the FSO can provide mortar fire support more quickly when needed, and the XO is free to perform his command and control tasks.

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

Mobility/Counter-mobility/Survivability

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

Improve: The troop commander's and maintenance section's M998 HMMWVs proved to be critically important to the accomplishment of numerous missions during the course of the attack. However, these vehicles, along with Stinger team vehicles and others, would have been very vulnerable to any type of direct or indirect fire. The argument is that these vehicles belong in rear areas and not near the front lines, but the reality is that these vehicles are needed forward. These vehicles should be outfitted with Kevlar armor packages similar to the armament carrier model HMMWVs used by the light infantry, battalion scouts, and military police. This addition would provide the needed survivability for these vehicles to operate forward where they are needed.

Air Defense

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

Intelligence

Sustain: While enemy intelligence had been sketchy during the assault into Iraq, the intelligence before that attack on the airfield was good. The templated positions on the airfield were very accurate

in terms of general location and type of unit, but little was known about the actual percentage strength of enemy forces. The troops also received an accurate estimate of enemy morale and probable course of action when told to expect small pockets of enemy forces that would resist at first, but quickly surrender when pressed.

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

Combat Service Support

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

of the first sergeant, while the XO assists the commander in the command and control of the troop and manages the flow of combat information between troop and squadron.

Command and Control

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

Improve: At times during the attack, it was very difficult to get an accurate location, due to the lack of easily identified terrain and the use of operational control measures based only on grid lines. Without question, there is great need for more satellite navigational devices for use during desert operations. Too often, the troops found themselves in places with barren, featureless terrain that made determining an accurate location nearly impossible, even for the best map readers. Each troop had three satellite navigational devices, one to the troop commander and one to

each scout platoon leader. The rest of the troop relied on them for accurate grid locations. The troops need more of these systems in both the combat and service support elements to aid in the quick and accurate reporting of current location.

Conclusion

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



Captain A.A. Puryear is a 1986 graduate of Washington and Lee University. A graduate of AOBC, he has served as a tank and scout platoon leader, and a cavalry troop executive officer. He was assistant S1, 2/3 ACR, when this article was published in 1991.

Lieutenant Gerald R. Haywood, II, is a 1988 Distinguished Military Graduate of Brigham Young University. A graduate of AOBC and SPLC, he has served as a tank and scout platoon leader. He was assistant S3, 2/3 ACR, when this article was published in 1991.

Vietnam from Page 35

“show the flag” in presumably friendly areas. Essentially a reconnaissance in force, this mission must be undertaken only by elements sufficiently powerful enough to take care of themselves if significant enemy is found — at least a full troop with an attached rifle company and preferably a squadron or task force. The sweeping armor may find the enemy, in which case it attacks and destroys him. More likely, the enemy will hide. In this case, he is not doing what he had intended to do, and the sweep will have a marked “spoiling” effect. By continuing to move unpredictably about, armor can dominate a very large area, keeping the enemy off balance and foiling his plans for extended periods. As a byproduct of such operations, civilian morale is greatly enhanced by the reassuring sight of powerful government forces.

Area security. Even when an area has been cleared, the threat of VC raids from outside the area remains. Local militia are responsible for guarding hamlets, bridges, and the like, but they must be support-

ed by a relief force strong enough to destroy the raiders and mobile enough to arrive in time. Armor is ideal for such service. With good communications, ingenuity, and freedom to act, a troop can adequately cover an infantry regimental sector once the VC main-force units have been cleared out. When the enemy has finally been driven to the mountains where armor cannot follow, this will become armor’s final — and perhaps most vital — contribution. Each troop so employed frees an entire regiment of regular infantry to pursue the enemy and complete his destruction in the mountains.

Conclusions

Vietnam may not be an ideal locale for armored divisions, but that does not mean that armor cannot make valuable contributions to the overall effort. Properly equipped and employed, armor can minimize friendly infantry casualties while ensuring the destruction of the enemy in the Delta, Coastal Plain, and Plateau. Once these are won, armor can hold them se-

cure while the infantry, thus freed, finishes the job in the mountains. To fail to capitalize on armor’s potential is to condemn infantrymen needlessly to death. To fully develop its potential, armor in Vietnam needs: more M113s to kill more VC; more light tanks on preferably a new semi-amphibious tank to kill VC more efficiently; more armored cars to secure more vital highways; and last, but by far most importantly, armor needs more understanding of its capabilities so that its units will be more fully and appropriately employed to help the infantry by closing with and destroying the enemy!



Lieutenant Colonel Raymond R. Battreall Jr. has contributed to *ARMOR* in the past. He is a 1949 graduate of the U.S. Military Academy and received a Master’s Degree from the University of Pennsylvania. A graduate of the U.S. Army Command and General Staff College, he was senior advisor, Armor Command with the U.S. Military Assistance Command, Vietnam, when this article was published in 1966.



TANKS AND “SHOCK AND AWE”

by Captain Jay D. Pellerin

(Reprinted from September-October 2003)

When I first heard the term “shock and awe” that was used to describe the initial bombing of Baghdad aimed at destroying Saddam Hussein’s regime during the first days of Operation Iraqi Freedom, I admit to initially being slightly incensed. The first thing that came to mind as I watched the explosions on the television news was, “here we go again.” I remember thinking about Kosovo and NATO’s “air war.” It had peeved me then to think that the news agencies and, subsequently, the public would be overemphasizing airpower.

Of course, we know the outcome of that operation, and all of it without a single ground unit. I believed Iraq was different. Instead of coercing a government to come to an agreement, Iraqi Freedom meant regime change and possibly urban warfare. I recall hearing, “the size of California” more than once, in regards to controlling the territory of Iraq.

The term “shock and awe” took my memory back to a welcome packet I received from my former National Guard unit. Inside the packet was a piece of paper with a drawing of a tank, and under

the tank were three words — “shock, overwhelm, and destroy.” Tanks are fine examples of applying shock and awe, I decided. After searching through a bookstore and online, I quite by accident ran across a link to what I first believed was an article, but is in fact a book titled, *Shock and Awe: Achieving Rapid Dominance*.¹ The book was published in December 1996, nearly 7 years before Iraqi Freedom, which intrigued me.

What is this book about? The authors wanted to “explore alternative concepts for structuring mission capability packages around which future U.S. military forces might be configured.” What does this have to do with anything that might be considered shock and awe? It has to do with the latter part of the title — achieving rapid dominance.

Rapid dominance is really a theory about a new way to use the military. Instead of the slow buildup of heavy forces, which the authors term the “decisive force,” such as occurred in Operations Desert Shield/Storm, the U.S. military could use a regime of shock and awe to basically intimidate the enemy into submission.

This idea is not new, but the various types of shock and awe and how today’s military forces might apply them is quite intriguing. It appears that based partly on various news coverage of this concept and the odd (and largely inaccurate) antiwar online hysterics about this new policy, and to paraphrase, “that promotes nuking countries to get our way,” that the ideas in this book do form some basis for current operations in Iraq and possibly national defense as a whole.

This article discusses the idea of shock and awe and how the main battle tank remains relevant — first, as a part of the rapid dominance concept, and secondly, the forms of shock and awe that it best fits. This, coupled with current events, will show that rapid dominance by shock and awe can work, and that tanks contribute to its success.

Rapid Dominance

In its base form, rapid dominance is merely a reaction to tough times. With the end of the Cold War (yes, it apparently still haunts the military), there is no consensus on how we should fight. Related to

that is the ever-shrinking defense budget. However, with information and other technologies being developed by the free enterprise system, perhaps there will be a positive run over, or available technologies with military application that the Department of Defense can buy off the shelf at a reasonable price.

Tied in with all of this is the fact (based again on 1996 events) that the U.S. military remains deployed worldwide, with no foreseeable decrease in its operating tempo. The decisive force concept is too slow and too expensive. What the rapid dominance concept seeks to do is to promote a revolutionary change in the way wars are fought, in addition to doing it quickly and cheaply. Rapid dominance is the long-sought strategic goal of affecting the will, understanding, and perception of an adversary. In short, destroy his will to resist before, during, and after the battle.

Rapid dominance has the ability to achieve this goal by using the necessary levels of shock and awe. Important to achieving shock and awe is integrating strategy, technology, and innovation. It is important to note that rapid dominance requires both physical and psychological effects. The rapid dominance force must also contain knowledge, rapidity, control of the environment, and brilliance.

So where does the main battle tank fit in? The traditional military aims to destroy, defeat, or neutralize the enemy's military capability, and this remains a fundamental concept. The tank is already well suited for this role, in addition to providing a real physical threat that can be seen and heard. In this way, the tank fulfills both the physical and the psychological effects needed to affect the enemy's will to fight. By violently applying the tank's capabilities, further psychological effects can be garnered. In other words, knowing a tank is coming can be scary. Seeing tanks destroy a fellow mechanized infantry company is paralyzing. This gives tanks the ability to dominate the enemy's will. Tanks can also be rapid during all phases of an operation. Although the tank is noted as being difficult to move and maintain, various places around the world maintain tanks and other equipment ready for combat. Just fly in crews and this heavy weapons system can be on the attack in a matter of hours. It is also tactically fast and well suited for maneuver warfare, although some have criticized its logistics tail. Along with the intended paralysis caused by psychological dominance, the tank's ability to physically occupy terrain aids in rapid dominance's need to control the battlefield environment at all levels.

When compared to the decisive force model, it is easily seen how the tank traditionally operated in that environment. Massive amounts of force were used, with psychological and other effects providing an ancillary role. The primary destructive means were based on force-on-force and attrition, with a margin for error. The problems with this model is the time required to assemble overwhelming force, and an enemy that may not actively use its technological or traditional military as the United States does. It focuses primarily on destroying military targets, especially armored vehicles. On a tactical level, tank operations remain the same. The point is that the tank, in supporting the objective of controlling the adversary's will to fight, also fulfills some of the technological requirements of a rapid dominance model. The force size where tanks have to fight a numerically superior enemy has been a part of U.S. military strategy since the days of the Cold War. Because the tank has been designed for this role, in conjunction with other forces, it is able to also maintain lower casualties that rapid dominance also requires, since the model lacks the standard buffer of larger number of forces in theater.

While seeking knowledge of the environment and the enemy, tank forces and other armored vehicles have been used effectively in the reconnaissance role. Even with the logistics tail, the tank can be maintained and operated for long periods of time, which provides rapidity. In con-

trolling the environment further, the tank has often been used in a counterreconnaissance role, and by its very presence, can often deceive the enemy as to what kind of force it is immediately facing.

In institutionalizing brilliance, the armor community is well equipped to learn and execute new tactics, techniques, and procedures to make the tank more capable. As for empowering individual elements, the combined arms in which tanks fight and train under, provide a flexible platform that can tailor tanks to fit the operation at any specific place and time.

As discussed, rapid dominance depends on the application of appropriate levels of shock and awe. Shock and awe are the means by which to intimidate and compel the enemy into accepting our strategic and political goals. Although, there are roughly nine forms of shock and awe, this article addresses only those forms best fitted for the tank. These forms are largely historical in description and often take their names from particular events. There are roughly five forms in which I see tanks performing: overwhelming force, Blitzkrieg, Haitian, Roman Legions, and the Royal Canadian Mounted Police.

Overwhelming Force

To a large extent, we are all familiar with overwhelming force and the decisive force concept as discussed earlier. How it fits within rapid dominance largely has to do with applying the force across a broad-



"The traditional military aims to destroy, defeat, or neutralize the enemy's military capability, and this remains a fundamental concept. The tank is already well suited for this role, in addition to providing a real physical threat that can be seen and heard. In this way, the tank fulfills both the physical and the psychological effects needed to affect the enemy's will to fight. By violently applying the tank's capabilities, further psychological effects can be garnered. In other words, knowing a tank is coming can be scary."

er spectrum of leverage points to impose shock and awe. Here, the tank continues in its traditional role, but does not have to completely destroy the enemy to be victorious. Instead of continuing to fight, the enemy is sufficiently cowed into surrendering, fleeing, or in other words, defeated.

Blitzkrieg

The Blitzkrieg form probably provides the best way to use tanks. In Blitzkrieg, an enemy's line is penetrated and mass is achieved in a narrow salient. An enemy that is dependent on maintaining his lines to protect his otherwise vulnerable support assets and command and control nodes, basically panics when faced with large numbers of tanks when he has little or ineffective antitank capability. On a tactical level, this is synonymous with conducting a breach and providing a point of penetration in which the majority of forces attack through and not just to the rear of the immediate defensive line. Just to reiterate, you can see how the tank's real and physical destructive power allows it to achieve a psychological effect.

Haitian

The Haitian form is based on a show of force against the French during the 1800s in Haiti. In today's terms, it would involve parading the same tanks over and over again to provide the illusion of a larger force. This form of deception also works for making nonmission capable tanks seem mission capable, whether due to maintenance or the lack of training. It is important to note that many communist countries have done this, and some, such as North Korea, still do (that is if you believe their equipment is nonmission capable or their tankers are not trained). A better example of an operational setting was in 1991: if Iraq's mili-

tary had caused the U.S. and its allies not to attack because on paper its army was the 4th largest in the world, then shock and awe would have been achieved by the Iraqis through psychological means.

The Roman Legions

The Roman Legions form might also be called "ultimate retribution." Romans made little distinction between the enemy's military and society; however, the idea of tanks rolling over civilians is too repugnant. Furthermore, the Romans were perceived as being invincible. If America's military power is perceived as invincible, then the loss of a few tanks will not enter the equation, as it is certain even the Romans had casualties. The public sees tanks as being invincible, and despite the bravado shown by certain Iraqi officials near destroyed American tanks, they would not be anywhere near one otherwise.

The big difference between this form of shock and awe and the others is that the enemy or nation in question knows that it will lose, and even if the operation is limited, its military will be destroyed. Whether for personal security or to ensure its neighbors do not take advantage of its sudden weakness, heads of regimes cannot afford to lose their militaries. The United States has many sea and air assets to use to conduct reprisals. The closest tank may come from the U.S. Marine Corps, but U.S. Army tanks are a sign of American resolve and commitment, which we failed to achieve in Somalia. To the point, tanks on the ground mean those who challenge the might of the United States face that might at their own peril.

The Royal Canadian Mounted Police

The last form refers to the unofficial motto of the Royal Canadian Mounted Police, "never send a man where you can

send a bullet." This refers obviously to standoff capability and more so, because this will do it. More attune to airpower, tanks nonetheless may find themselves in places where they have standoff and can effectively destroy the enemy with impunity. However, this form is extremely limited for tanks when standoff is being considered beyond the tactical level.

From what we have seen in Iraq, the United States defeated a country the size of California within a matter of weeks. This fact is not important — the way in which it was done is important. Much to the alarm of some former general officers, the war kicked off with one Marine Expeditionary Force and one Infantry Division (Mechanized), apparently using the Blitzkrieg form of shock and awe, while airpower used another form of shock and awe to decapitate Saddam Hussein's regime. Some thought there needed to be more troops on the ground or that we absolutely had to have that northern front coming out of Turkey. Recent events have proven that the U.S. military can achieve rapid dominance by using heavy units — 3d Infantry Division tanks rapidly attacked north.

Despite sand storms and a long logistics tail, U.S. forces remained flexible and ultimately victorious with low casualties and an enemy that could not and would not fight.

History will judge if this rapid dominance achievement was purely luck and/or simply a victory over an incredibly incompetent foe. In any case, deficiencies normally cited regarding tanks in a decisive force role do not detract from their role in rapid dominance — in fact, they contribute to the success of any new military operation.



Notes

¹Harlan K. Ullman and James P. Wade, *Shock and Awe: Achieving Rapid Dominance*, National Defense University Press Book, December 1996.

CPT Jay D. Pellerin was an operations officer, S3, 1st Armored Training Brigade, Fort Knox, KY, at the time this article was published in 2003. He received a B.A. from California State University, Long Beach. His military education includes the Combined Arms and Service Staff School, Armor Officer Basic Course, and the Armor Captains Career Course. He has served in various command and staff positions, to include battalion liaison officer, and battalion assistant S4, 1st Battalion, 34th Armor (1-34 Armor), Fort Riley, KS; tank platoon leader, B Company, 1-34 Armor, Fort Riley; scout platoon leader, A Company, 4th Squadron, 7th Cavalry, Camp Garry Owen, Korea; and tank platoon leader, A Company, 1st Battalion, 185th Armor, Corona, CA.



"In institutionalizing brilliance, the armor community is well equipped to learn and execute new tactics, techniques, and procedures to make the tank more capable. As for empowering individual elements, the combined arms in which tanks fight and train under, provide a flexible platform that can tailor tanks to fit the operation at any specific place and time."

Platoons of Action: An Armor Task Force's Response to Full-Spectrum Operations in Iraq

by John P.J. DeRosa

(Reprinted from November-December 2005)

What died on the battlefields of Iraq was the vision held by many of a homogenized army — one in which units would largely resemble one another. Instead, the Army of the future will require a large kit bag of capabilities that it can deploy and fit together, sometimes in the middle of battle, to meet the many exigencies of this new era in warfare.¹

For decades, warfare experts have predicted that the nature of warfare will change in the 21st century. The nature of warfare has already changed dramatically. As the U.S. Army continues to move toward changes that will conceive, shape, test, and field an army prepared to meet the challenges of full-spectrum operations, Chief of Staff, Army (CSA) General Schoomaker asked, "I want to know if he [division commander] can turn his three brigades into five maneuver brigades, and if I provide the right equipment, could they be one and a half more lethal than before..."² Specifically, CSA Schoomaker asked for the best war-tested concepts of deploying and fighting, adding that proposals must be lethal, balanced, and modular. As the armor force is steeped in innovation and transformation, a parallel debate in *ARMOR*, raised the question, "Why not start with a combined-arms team at the platoon level and only scramble when necessary, rather than continually re-task organize? What follows are four different answers to the challenges of full-spectrum operations centered on platoon level "units of action."³

Intelligence Preparation of the Battlefield

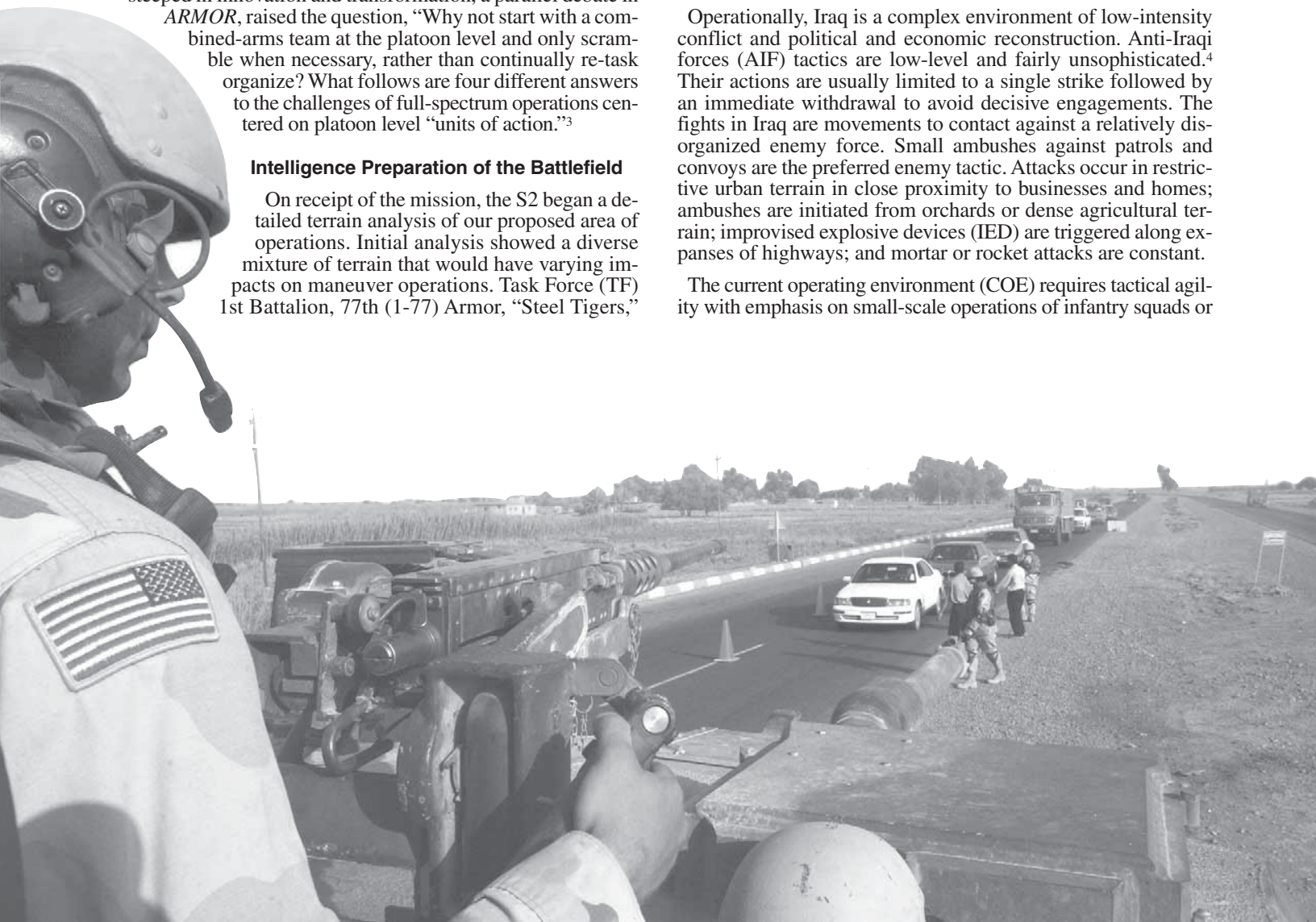
On receipt of the mission, the S2 began a detailed terrain analysis of our proposed area of operations. Initial analysis showed a diverse mixture of terrain that would have varying impacts on maneuver operations. Task Force (TF) 1st Battalion, 77th (1-77) Armor, "Steel Tigers,"

was assigned a total area of over 1,000 square kilometers, and it was immediately apparent that company zones would each require their own unique approach to task organization based on terrain. From the open desert area south of Highway 1, to the jungle-like vegetation of Al Zourr, and the confined streets of Balad, each company would have unique terrain challenges.

The one terrain feature that would have the most impact, regardless of company zone, was the canal system. The Balad area is very agrarian and an endless system of canals criss-cross the entire region. These canals vary widely in depth and width but are not fordable and can only be crossed at existing bridge sites. The small canal roads present an additional challenge to the maneuverability of armored vehicles. In most cases, they cannot support the weight or width of the M1 Abrams. The M2 is also constrained by these canal roads, although it does enjoy slightly more freedom of movement than the Abrams. Based on this analysis, the commander decided to weight his tracked assets onto the main supply routes/alternate supply routes and the open terrain south of Highway 1.

Operationally, Iraq is a complex environment of low-intensity conflict and political and economic reconstruction. Anti-Iraqi forces (AIF) tactics are low-level and fairly unsophisticated.⁴ Their actions are usually limited to a single strike followed by an immediate withdrawal to avoid decisive engagements. The fights in Iraq are movements to contact against a relatively disorganized enemy force. Small ambushes against patrols and convoys are the preferred enemy tactic. Attacks occur in restrictive urban terrain in close proximity to businesses and homes; ambushes are initiated from orchards or dense agricultural terrain; improvised explosive devices (IED) are triggered along expanses of highways; and mortar or rocket attacks are constant.

The current operating environment (COE) requires tactical agility with emphasis on small-scale operations of infantry squads or



TF 1-77 Steel Tigers Troop to Task (U.S.)

As of 24 Aug 04

Task/Location	Requirement (# Squads/Platoons)*	Frequency (Daily/Weekly)	Priority
Combat Patrol - LSAA Zone A - consisting of: Route Clearance NAI Overwatch Observation Posts React to Indirect Fire (as necessary) R&S vic LSA Anaconda	4 Platoons	Daily	High
Counter-Mortar Patrol – N. Balad – consisting of: Route Clearance NAI Overwatch Observation Posts Traffic Control Points React to Point of Origin (POO) (as necessary)	2 Platoons	Daily	High
Counter-Mortar Patrol – S. Balad – consisting of: Route Clearance—ASRs Linda & Amy NAI Overwatch Observation Posts Traffic Control Points React to POO (as necessary)	2 Platoons	Daily	High
Route Clearance – MSR TAMPA-ASR LINDA- ASR AMY-ASR PEGGY including: Observation Posts Traffic Control Points	3 Platoons	Daily	High
Combat Logistics Patrol, consisting of: Route Clearance	1 Platoon	1-2 times daily	High
QRF – FOB PALIWODA	1 Platoon	Daily	High
QRF – LSA ANACONDA	1 Platoon	Daily	High
EOD Escort	1 Platoon	As necessary	Medium
Force Protection – FOB PALIWODA	1 Platoon	Daily	High
Iraqi National Guard (ING) Training	3 Platoons	2-3 times weekly	High
Detainee Transfer to FOB Remagen	1 Platoon	1-2 times weekly	High
SOI Engagements including: City Council Meetings- Balad & Yethrib Police Station Visits	1 Platoon	3-4 times weekly	High
Iraqi Police Service (IPS) Training	1 Squad	2-3 times weekly	High
Fuel Escort to FOB Tinderbox	1 Platoon	1 weekly	High
Detention Center Ops	1 Fire Team	Daily	Medium
Mayoral Cell FOB Maintenance Iraqi Civilian/Contractor Escorts	1 Squad	Daily	High
Security / JCC (HHC – Balad)	1 Squad	Daily	High
Crater Analysis	1 Squad	As necessary	Medium
Civil-Military Operations Center (CMOC) Ops CMO (S-5/CA) ING LNOs IPS LNOs	1 Squad	Daily	High
TF Mortars	1 Platoon	Daily	High
TF TAC Personnel Security Detachment (PSD) T6 PSD: 1 x SCT SEC, HQ66 Crew T3 PSD: 2 x MTR SQD, HQ63 Crew T7 PSD	1 Platoon	Daily	High
TF M109A6 Platoon Firing PLT HQ PLT	2 Platoons	Daily	High
10 PLATOONS ON HAND — 23 PLATOONS REQUIRED			
*Annotate requirement in terms of a 24-hour period of time			

Figure 1

tank sections actioning on contact. The porous nature of the COE allows AIF to become expert “exfiltrators,” avoiding death or capture. Therefore, instant transition to pursuit is a necessity. More often than not, the pursuit is preceded by a transition from mounted to dismounted elements.

During operations in Iraq, it is also critical that all of a task force’s elements perform reconnaissance. Operation Iraqi Freedom has accelerated the transition of the concept of the battlespace in replacing the concept of the battlefield. The COE produces critical requirements that demand commanders know their battlespace. The concept of battlespace requires commanders to navigate under limited visibility conditions, to move rapidly over great distances and synchronize their movement and communicate both vertically and horizontally. In this brief review of required capabilities, the experiences in Iraq demand an internal capability to perform dismounted operations and extensive reconnaissance.

Mission

The Steel Tigers’ mission presented a non-traditional role for an armor battalion. Route clearance, counter-mortar/IED patrols, reconnaissance and surveillance, traffic control points, and raids constituted the bulk of operations. Everyday missions remained small in scale, notably by paired-down platoons. The Steel Tigers’ mission set included: route clearance; counter-mortar patrols; observation posts; traffic control points; quick reaction force (QRF) for Logistics Support Area (LSA) Anaconda; civil affairs, psychological operations (PSYOPS) and human intelligence (HUMINT) escorts; TF indirect fires; explosive ordnance disposal (EOD) escort; forward operating base (FOB) protection; named areas of interest (NAI) overwatch; counter-IED patrols; react to indirect fire; convoy security; QRF for FOB Paliwoda; spheres of influence engagements; TF tactical command post (TAC); detainee transfers; and FOB mayor requirements.

As shown in Figure 1, TF 1-77 Armor required 23 platoons to meet mission requirements. However, the current TF task organization only afforded 10 platoons, as shown in Figure 2.

The Steel Tigers’ combat power was a mixture of armor (M1A1), motorized tank platoons (M114), mechanized infantry (M2A2), light infantry (M114), engineers (M113), and field artillery (M109A6). Specific mission requirements also required the additional task organization of civil affairs,

tactical PSYOPs teams (TPT), tactical HUMINT teams (THT), and aviation assets (AH-64/OH-58). In sum, the task organization of TF 1-77 Armor created severe tactical problems, which were outside the Legacy Force structure.

**Team Pain —
C Company, 1-77 Armor**

At task organization, Team Pain deployed with two motorized tank platoons of four M1114s each and one mechanized platoon of four M2A2s. Following the initial deployment, the division deployed two additional companies of M1A1s of which Team Pain received two platoons. One of Team Pain's tank platoons would subsequently be task organized elsewhere in support of the brigade combat team (BCT). Therefore, Team Pain's final task organization was a mechanized infantry platoon of four M2A2s and two M1114s (Red), a tank platoon of two M1A1s and four M1114s (Blue), and a headquarters platoon of two M1114s, two up-armored M998s, and two M113s (Black). To increase the manning capabilities of Blue, Pain 6 attached an infantry fire team from Red.

Some examples of common missions and how Team Pain's platoon of action (POA) was organized are shown in Figure 3.

Team Pain's M1A1s initially were used for armored protection during their Main Supply Route (MSR) Tampa clearing mission. The M1A1's superior optics and armament made it ideal for scouring the road for suspicious activity or objects. Additionally, the added armor protection was a valued deterrent against the enemy; not too many AIF are willing to taunt a 120-mm gun. The deterrent value of the M1A1 also allowed a patrol to slow its movement through dense IED locations, thus clearing the routes properly while minimizing risk. Team Pain's M1s were also very effective at traffic control points to demonstrate

Task Organization

FOB PALIWODA		LSA ANACONDA	
B/1-77 AR (REGULATOR)		C/1-77 AR (PAIN)	
2/C/9 EN (RED)	(3 M113, 1 M1114)	3/C/1-77 AR (BLUE)	(4 M1114)
2/C/1-18 IN (WHITE)	(4 M1114)	2/C/1-26 IN (RED)	(4 M2A2)
3/D/2-108 IN (BLUE)	(4 M1114)	HQ/C/1-77 (BLACK)	(2 M1A1)
HQ/B/1-77 (BLACK)	(2 M1A1)		
C/1-26 IN (ROCK)		HHC 1-77 AR (HELLCAT)	
1/C/1-26 IN (RED)	(4 M2A2)	SCTS/1-77 AR (SABER)	(8 M1025/26)
3/C/1-26 IN (BLUE)	(4 M2A2)	1/B/2-108 (HAMMER)	(4 M1114)
1/C/1-77 AR (GREEN)	(4 M1114)		
		FIELD TRAINS	
HQ 1-77 AR (TIGER)	(2 M1A1)	TOC	
MTR/1-77 AR (THUNDER)	(4 M1025/26)		
1/B/1-7 FA (BULL)	(3 M109A6)		
S3 PSD	(4 M1114)		
CDR PSD	(4 M1114)		
TAC			

Figure 2

an overwhelming presence. The thermal sights were great for standoff against AIF, who often used the wood line to conduct ambushes.

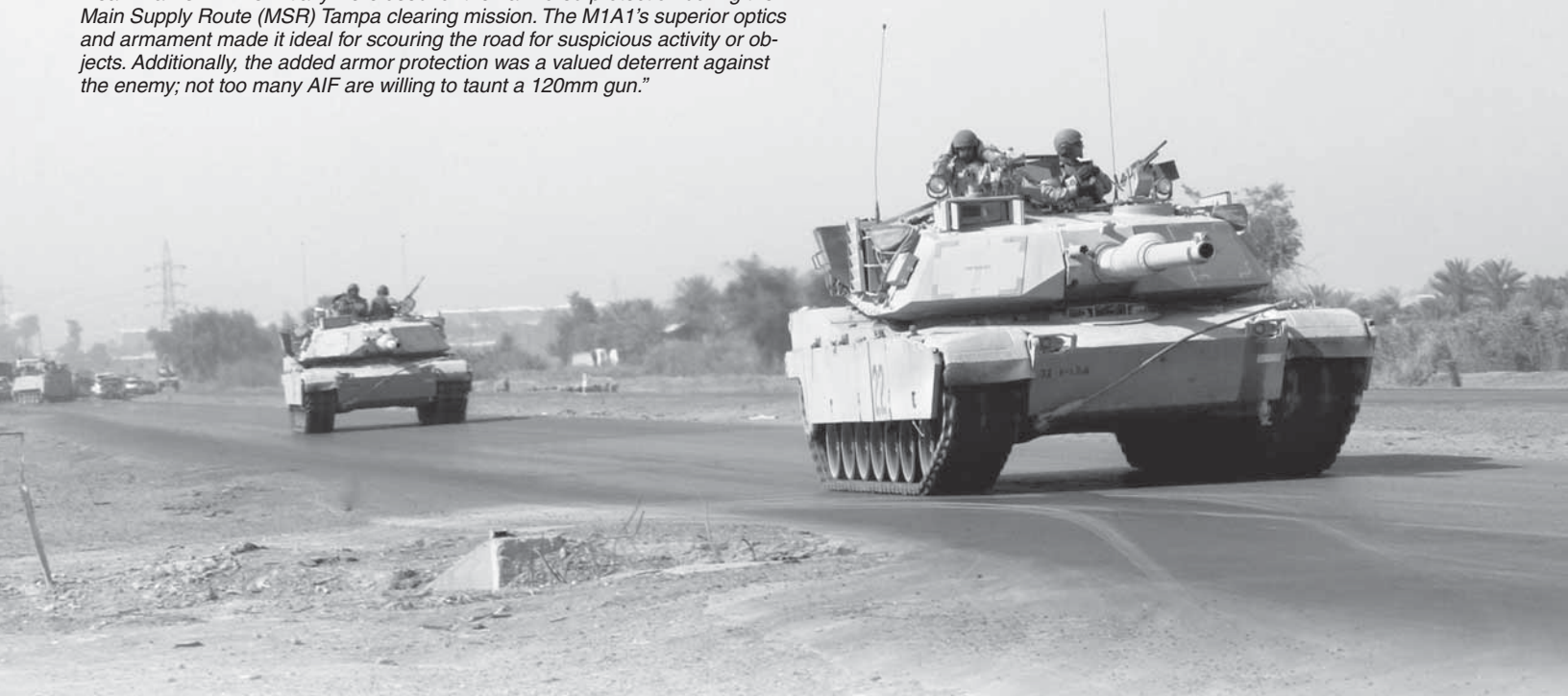
Distinct tactical problems arose with Team Pain's tank platoon. Primarily, tank platoons, given their modified table of organization and equipment (MTOE), do not have the equipment to perform dismounted missions, even with M1114s. The MTOE authorizes a tank platoon eight rifles, no M203s, no manpack radios, and no crew-served weapons. Through the initiative of several company armorers and executive officers, the task force converted several of its M240s into improvised M240Bs, and leader vehicles were stripped of their second radios that were used as manpacks for dismounted operations.

To satisfy requirements of dismounted operations, Team Pain placed challenges on its mounted elements. Dismounting M240s reduced the mounted elements' overwatch firepower. Stripping radios reduced leaders' dual net capability. Moreover, Pain 6 realized that initially, his tank platoon leaders were at a disadvantage because they now had to maneuver both a mounted and dismounted element. However, the POA had several benefits: each platoon could conduct multiple missions, which gave the company greater flexibility; platoons were not forced to concentrate on one specific op-



"The Steel Tigers' mission presented a nontraditional role for an armor battalion. Route clearance, counter-mortar/IED patrols, reconnaissance and surveillance, traffic control points, and raids constitute the bulk of operations. Everyday missions remain small in scale; notably by paired-down platoons."

“Team Pain’s M1A1s initially were used for their armored protection during their Main Supply Route (MSR) Tampa clearing mission. The M1A1’s superior optics and armament made it ideal for scouring the road for suspicious activity or objects. Additionally, the added armor protection was a valued deterrent against the enemy; not too many AIF are willing to taunt a 120mm gun.”



eration based on weapons platforms; platoons could maneuver on a variety of terrain; platoon leaders could task organize at the platoon level for varied mission requirements; the POA ensured platoon integrity throughout the deployment; and the commander was not required to rearrange the company for every operation.

Team Rock — C Company, 1st Battalion, 26th (1-26) Infantry

One of the more innovative solutions to the challenges of task organization belonged to Team Rock. As the deployment was viewed as a marathon and not a sprint, Rock 6 did not believe that the standard 16-man tank platoon could withstand exhaustive patrol cycles, support FOB force protection requirements, or conduct independent raids.⁵

Therefore, to create parity within the task organization, Rock 6 detached one M2A2 and one fire team from each of his organic M2A2 platoons and attached them to his motorized armor

platoon (M1114). In turn, he detached an M1114 and its assigned tank crew to each of his organic M2A2 platoons. This increased the personnel strength of his motorized armor platoon from 16 personnel to 30. Each platoon was then able to conduct balanced patrol cycles, cycle through FOB force protection, and conduct independent raids.

Team Rock took this integration a step further by implementing an M2A2 Bradley certification program for his 19-series soldiers. Through an intensive train-up, Team Rock executed a modified Bradley Table VIII to certify tankers as M2A2 drivers, gunners, and Bradley commanders. The motorized armor platoon leader, equipped with cross-trained soldiers, could then accommodate the company’s mission set.

A highlight for armor leaders is the new skill set developed by the armor platoon leader. Trained at Fort Knox, Kentucky, to command a tank platoon, these lieutenants are now proficient at integrating mounted and dismounted tactics in reconnaissance, raids, and convoy security. The POA platoon leader has a deeper appreciation for full-spectrum operations. He was also given the challenge of leading twice the number of soldiers than a tank platoon.

The mixture of vehicles in the Team Rock POA highlights the advantages of each weapons system. Initially, Team Rock conducted route clearance of Highway 1 with a full M2A2 Bradley platoon. The intensive maintenance requirements of such employment were a serious maintenance and service burden on the M2A2s. Deploying a platoon of two M2A2s and two M1114s on route clearance reduced the overall company M2A2 mileage, minimizing the wear and tear on a high-tempo weapons system.

The M2A2 is best suited for operations in Iraq, offering firepower, maneuverability/agility, crew protection, and a dismounted infantry-carrying capacity. However, its shortcoming for not accommodating for the high mileage in the route clearance of MSR Tampa (Highway 1) was complemented by a section of M1114s. The M1114 enabled the POA platoon leader the ability to maneuver in restrictive urban terrain and continued to provide crew protection. Moreover, Team Rock integrated the com-

Mission	POA Organization
Route Clearance	4 x M1114 (BLUE or BLACK)
	2 x M2A2 and 2 x M1114 (RED)
	2 x M1A1 and 2 x M1114 (BLUE)
Reconnaissance and Surveillance (Terrain Dependent)	Open Desert or Agricultural Fields 4 x M2A2 (RED); 2 x M2A2 and 2 x M1114 (RED); or 2 x M1A1 and 2 x M1114 (BLUE)
	MSR and ASRs 2 x M1A1 and 2 x M1114 2 x M2A2 and 2 x M1114
	Urban Terrain 4 x M1114 (BLUE) 2 x M1114 (RED) and 2 x M1114 (BLACK)
Convoy Escort	4 x M1114 (BLUE)
	2 x M1114 (RED) and 2 x M1114 (BLACK)
Cordon and Knock (One to Two Houses)	4 x M1114 (BLUE)
	2 x M2A2 and 2 x M1114 (RED)
	2 x M1A1 and 2 x M1114 (BLUE)

Figure 3. TEAM PAIN: Missions vs. POA Organization

pany's M113s, giving the POA platoon leader the freedom of maneuver that lighter personnel carriers offer for bridge crossings. The M113 offers the maneuverability/agility and troop-carrying capacity of the M2A2 with a decreased height and width profile required in urban operations.

Team Regulator — B Company, 1-77 Armor

Team Regulator conducted a relief in place with a fully manned M2A2 Bradley company from 3d BCT, 4th Infantry Division. The terrain of Team Regulator's new sector demanded the extensive use of dismounts (to which its predecessor had adequate access) to clear orchards, buildings, and to man observation posts. Therefore, the dismount requirement dictated the vehicle set of Team Regulator's platoons.

For Team Regulator, the POA changes occurred during task organization. Team Regulator lost her three organic M1A1 tank platoons to support the BCT.⁶ Team Regulator would receive an engineer platoon of three M113s, one M998, and one M1114 (Red), a motorized infantry platoon of five M1114s (White), and a light infantry antitank platoon of four M1114s (Blue). The headquarters platoon of two M1A1s, two M998s, and two M113s would remain and be supplemented with two M1114s.

One of Team Regulator's enduring challenges was a sector of distinctly varied terrain — the urban streets of Balad. This Shi'a enclave of 75,000 is set along the Tigris River. Manmade structures of walls, canals, and dikes, and thick vegetation of orchards, foliage, and agriculture fields limited their maneuver space. Operations in urban Balad were decentralized and avenues of approach limited the use of Team Regulator's M1A1s. Compounding maneuver limitations was the transition from the urban al-

leys and streets of Balad, to the jungle-like terrain paralleling the Tigris, to the expanse of arid land alongside of MSR Tampa.

To increase White's dismounted infantry-carrying capabilities, the company modified its two ambulance M113s into troop carriers and added company headquarters' and maintenance M113s into the patrol cycle.⁷ Green carried with the same constraints as discussed above with the motorized tank platoon; therefore, Regulator 6 regularly supplemented Green platoon with M113, M1114, or M1A1s from headquarters platoon. Red alone operated within its normal platoon capabilities.

Due to the varying vehicle capabilities and soldier skill sets, each platoon had regular patrol requirements. Red, with its inherent EOD capability, primarily conducted counter-IED patrols and route clearance. White, with its dismount capabilities, focused on NAI overwatch to maximize the use of dismounted observation posts. Finally, Green, supplemented with either the headquarters tank section or M113s, conducted route clearance of the MSR and alternate supply routes (ASRs).

In reflection of the use of his headquarters tank section, Regulator 6 relied on the M1A1 to provide lethal direct fire overwatch, thermal optic capability, and act as a show of force. The restrictive terrain of Team Regulator's sector and the exhaustive requirement for dismounts limited his tank section to lethal direct fire in larger company raids or TF missions (movement to contact).

Tiger TAC — B Battery, 1st Battalion, 7th Field Artillery

The addition of an M109A6 Paladin platoon to the task force allowed the TF commander to use the TF mortar platoon (Thunder) as an additional motorized infantry platoon. Attaching a



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mortar section to the TAC was originally planned to offer indirect fires capability to the TAC while in sector. However, the limitations of Thunder's M1064s, most notably speed, forced the increased use of M1114s and up-armored M998s. Moreover, the risk inherent of rolling a section of M1064s loaded with their high explosive basic load in a sector of IEDs, mines, and rocket-propelled grenades reduced their deployment in sector.

Therefore, to increase the number of TF platoons, Thunder was required to revert back to its infantry roots. With its MTOE M998s given add-on armor and the addition of two M1114s, Thunder took on missions, such as convoy escort, crater analysis, traffic control points, counter-IED/counter-mortar patrols, reconnaissance, QRF, and TAC personal security detachment. Moreover, Thunder provided two sections of mortars and its fire direction center (FDC) to support the TF fires mission.

The greatest challenge to Thunder 6 was to manage the troops-to-task issue. Over a 24-hour period, the mortar platoon provided a gun crew for indirect fires, fire direction control/platoon command post operations, QRF, FOB force protection, and personal security detachment for the TAC. To effectively manage his platoon and to keep his soldiers' skills sharp, Thunder 6 rotated his personnel through duties. Due to the troops-to-task, the TAC, for the most part, had to remain mounted.

In review of operations in Iraq, Thunder 6 recalls his soldiers definitely spent more time behind their M4s than behind their 120mm mortar tubes. He attributes their success here in Iraq to the mission focused training program conducted prior to deployment; it allowed the platoon to refine already present infantry skill sets.

Task Force 1-77 Armor's task was to shape her warfighting capabilities to changing circumstances. The old warfighting paradigm, which focused primarily on the military capabilities of a small set of potential adversary states, no longer addressed the entire threat spectrum. In this COE, traditional concepts of mass, speed, firepower, and maneuver were inadequate. The TF adapted in response to these new conditions just as our enemies pursued new ways to diminish our overwhelming power, as experienced AIF seldom presented a target set that an M1A1 tank platoon could fully exploit to influence the tactical fight. The tank platoon was designed for a different war on different terrain. Retired Israeli army General Yehuda Admon said of the use of Israeli armor in the urban fight, "This is not a normal way of using the tank for a low-intensive conflict. If we had something else to use, we would use it. Tanks are for mass fights."⁸ The tank continues to make a presence on the urban battlefields of Iraq.

AIF tactics, coupled with its task organization, created severe tactical problems, which were outside the Legacy Force structure. As tactical innovation occurs only where tactical innovation is required, four different commanders of TF 1-77 Armor applied innovation to distinct tactical problems. Where tactical innovation was not required, the commanders stayed with the tried-and-true applications of the armor platoon. In sum, the tactical problems spawned a tank platoon fighting split section with two M1A1s and two M1114s; a tank platoon fighting cross-trained as M2A2 Bradley crewman fought split section with two M2A2s and two M1114s; a headquarters tank section cross-attached with a light infantry antitank platoon forming a platoon of two M1A1s and two M1114s, or two M113s and two M1114s; and the creation of two additional platoons to resolve the TF troops-to-task of two headquarters tanks, a scout section, and two mortar squads operating in M1114s.

The POA, in reflection, allowed the platoons to break down into combat effective sections that could both move over narrow ground, yet maintain lethal standoff with an effective weapons system (either the M2A2's 25mm or the M1A1's 120mm). Setting the heavy tracks stationary, the lighter vehicle could maneuver under the watchful cover of the upgraded sights on both the M1A1 and M2A2. Bottom line: the POA provided commanders flexibility to accomplish mission sets.

The leaders of the POA faced varied challenges outside of those presented by the enemy. The POA platoon leader faced the challenge of knowing and understanding mounted and dismounted operations and the employment of his equipment to suit each operation. For the armor POA platoon leaders, they were forced to operate without M1A1s and introduced to M2A2s, M113s, and M1114s. Thus, tank crews must heavily train on their new equipment to be proficient.

No system to date has risen to become a war winner. However, innovative commanders routinely win battles by employing highly skilled soldiers in nontraditional formations. Reflecting on the 1973 Arab-Israeli War, General William E. DePuy noted that the Israeli tank crews (often using the same equipment their opponents used) were between three to six times more effective, "during the next 10 years, battlefield outcome will depend upon the quality of the troops rather than the quality of the tanks."⁹ True to form, the gauntlet was thrown, and the soldiers and commanders of TF Steel Tigers answered the call to arms.



Notes

¹Major General Rober H. Scales, Statement before the U.S. House of Representatives, Senate Armed Services Committee, Washington, D.C., 21 October 2003.

²Speech by General Peter J. Schoomaker, Chief of Staff, Army, at the annual Association of the U.S. Army Convention, Washington, D.C., October 2003.

³Colonel Bruce B.G. Clarke, "The Stryker Company and the Multifunctional Cavalry Platoon," *ARMOR*, July-August 2004, pp. 24-28.

⁴During the task force deployment, designation of enemy forces morphed from insurgents to anti-coalition forces to anti-Iraqi forces, signifying shifts in authority from coalition forces to the interim Iraqi government.

⁵The current operating environment often required the TF's platoon to transition from their pre-planned missions of reconnaissance and surveillance into hasty raids. The standard "motorized" tank platoon cannot support both a mounted security element and a dismounted assault element as required of urban operations.

⁶The 2d Brigade Combat Team, 1st Infantry Division originally deployed with one M1A1 tank company, which was parceled across six task forces. The division would later deploy two additional tank companies of which TF 1-77 Armor would ultimately receive a platoon.

⁷Modifying the medic M113s included painting over the red crosses or using "flip-style" red-cross designations that could be lifted up or down to display or not display the crosses. Brigade and division legal advisors confirmed that all modifications were compliant with the Law of Land Warfare.

⁸John Brosky, "Tank Still Has Role, But Future Uncertain," *Defense News*, 24 June 2002, p. 6.

⁹Richard Swain, ed., *Selected Papers of General William E. DePuy*, U.S. Army Command and General Staff College Press, Fort Leavenworth, Kansas, 1994, p. 71.

John P.J. DeRosa is an operations specialist, National Command Center-Raven Rock Mountain Complex, Adams, PA. He received a B.A. and an M.A. from California State University-San Bernardino. His military education includes Armor Officer Basic Course, Battalion Maintenance Officer Course, Maintenance Leader Course, Unit Movement Officer Course, Signal Support Systems Specialist Course, Basic Combat Training, and Airborne School. He has served in various command and staff positions, including assistant operations officer, Iraqi Security Forces, Task Force 1st Battalion, 77th (1-77) Armor, Balad, Iraq; executive officer, Headquarters and Headquarters Company, 1-77 Armor, 1st Infantry Division (ID), LSA Anaconda, Balad; assistant operations officer, 1-77 Armor, 1st ID, Schweinfurt, Germany; battalion maintenance officer, 1-77 Armor, Camp Monteith, Kosovo; and tank platoon leader and tank company executive officer, 1st Battalion, 185th Armor Battalion, 81st Separate Infantry Brigade (E), San Bernardino, California.

Abrams Training Aids Devices Simulators and Simulations

by Lieutenant Colonel Benjamin Harris

"I engaged the enemy with that new canister round at 1,100 meters but it had no effect!"¹ Live and virtual gunnery training, prior to deployment and employment could have prevented this, but we have struggled to implement either. As the user representative for the Abrams fleet and armor crewman, part of our charter is to manage and prioritize improvements to the Abrams training aids, devices, simulators, and simulations (TADSS). We struggled to get canister added to the standards in training commission (STRAC); it is now there, even if limited to only two rounds per crew.

Currently, Abrams gunnery devices are being upgraded with the canister round capability. Ideally, this should have been completed 6 months prior to fielding the canister round in Iraq, but the round was rushed to theater based on an urgent operational needs statement (ONS). This is but one example of the improvements we have been working on with our acquisition partners in the Product Manager (PM) Abrams Office, Warren, Michigan, and Program Executive Office Simulations Training (PEO STRI), Orlando, Florida.

Several new capabilities are being made available to the field and the Armor School, which include additions to the M1A2 SEP advanced gunnery training system (AGTS) and later to the M1A1 conduct of fire trainer (COFT)-AGTS, an investment of over \$7 million. PM Ground Combat Tactical Trainers (PM GCTT)/PEO STRI recently added a military operations on urbanized terrain (MOUT) database for section and platoon training to the M1A2 SEP AGTS. The U.S. Marine Corps developed this database for their M1A1 COFT-AGTS using Joint Readiness Training Center urban terrain. The Army borrowed this software and integrated it into the AGTS. It is not perfect; an unaware tank commander will hit buildings or poles, if he is not careful with the tank's main gun orientation, and end the exercise sooner than

planned. By doctrine, it is limited to section or platoon as the Armor Center does not support tanks operating individually in urban operations for survivability reasons.

The PM GCTT also added a Korean terrain database to the M1A2 SEP AGTS. In its latest software upgrade to the AGTS, PM GCTT will add five special-purpose exercises for canister training using the following databases: desert, European, Korean, and urban. With this upgrade, crews will quickly learn when it is appropriate to use canister as they learn the round's capabilities and limitations. During these special-purpose exercises, the crew will have access to the MOUT database. The AGTS software will also be upgraded with the joint combat identification marking system (JCIMS), the M829A3 sub-designation, and later be aligned with the new gunnery manual yet to be published.² Lastly, a long-range goal is to upgrade many of the AGTSs to the mobile configuration. Two mobile AGTSs (MAGTS) are in Baghdad, Iraq; one is at Fort Bliss, Texas, for the 1st Cavalry; and one is at Fort Carson, Colorado, for the 4th Infantry Division. Another four have been contracted for 3d Armored Cavalry Regiment at Fort Hood, and one is scheduled for delivery in 2008 to Fort Bliss, Texas, to support the experimental brigade combat team and the 1st Armored Division.

The M1A1 COFT-AGTS is also scheduled to be upgraded alongside the AGTS with a more complex "Middle Eastern" MOUT database, which was also developed by the U.S. Marine Corps. The image generator in the current AGTS cannot process this database and requires additional funding for a future upgrade; the M1A1 COFT-AGTS will have new image generators installed, completing a re-hosting effort that began several years ago. The M1A1 COFT-AGTS will also finally get some of its initial production "bugs" corrected. Beginning in April 2007, the COFT-AGTS will have the correct .50-caliber sound; a more



Above, a mobile AGTS; at right, inside the mobile AGTS.



At left, an M1A1 AIM/ED HOTT; above right, an M1A2 SEP HOTT

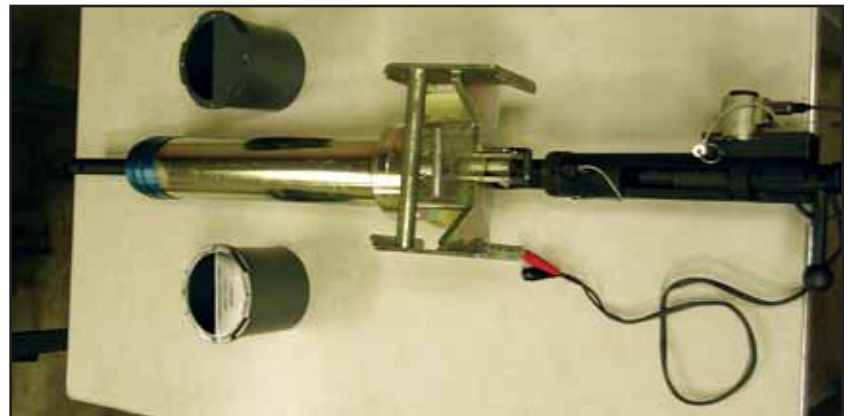
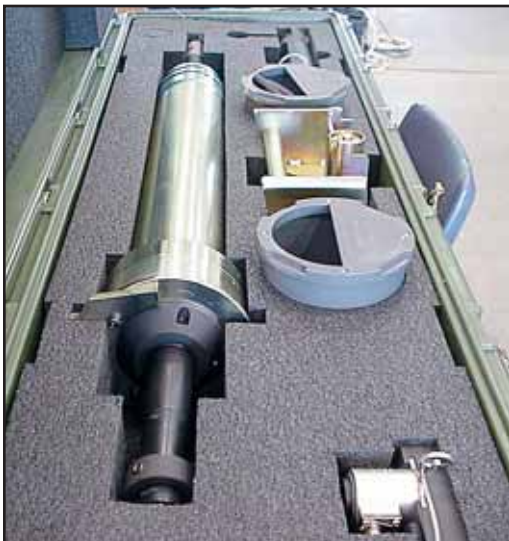
realistic limit on the amount of .50-caliber ammunition available; long-range, special-purpose exercises limited to below 4,000 meters in accordance with the tank's limitations; corrected gunner's auxiliary sight reticle size and color; corrected forward unity periscope; and all of the improvements highlighted for the AGTS.

Work has also started to add the canister capability to the close combat tactical trainer.

Other TADSS improvements for the armor force and Armor School are forthcoming. The PM procured 61 improved through site video recording (TSVR) systems primarily used with the M1A2 SEP. These new systems are being fielded and Fort Bliss and Fort Carson will each receive 14; Fort Hood will receive 28; and Fort Benning and Fort Knox will each receive 2. The system will work on any variant of Bradley or tank, but is required to capture the commander's independent thermal viewer (CITV) imagery of the M1A2 SEP. The system is in final testing stages and requires additional hardware to work with the Bradley. Once this work is complete, over the next 6 to 12 months, these systems will be available at the fielded installations' training support centers (TSC) for use on gunnery tables for video augmented after-action reviews.

For the Armor School and 63A-series advanced individual training (AIT), the PM recently installed a digital M1A1 Abrams integrated management (AIM), with embedded diagnostics (M1A1 AIM/ED), virtual classroom. Even though fielding for the M1A1 AIM/ED began in mid-2002, the school had no way to train 63A mechanics on the tank's upgrades other than with four "for training only" M1A1 AIM/ED tanks. The actual tank is not the best way to crawl, walk, run an AIT student, and four tanks could not support the increasing student demand for M1A1 AIM/ED training. Within the past year, the PM delivered an additional eight M1A1 AIM/ED tanks, a more than \$16 million investment to improve the 63A course. The PM has also contracted PEO STRI to convert five M1A1 hands-on turret trainers (HOTT) to the M1A1 AIM/ED configuration, which will support the walk phase of 63A training, an \$11 million investment. Again, better late than never, the situation is gradually improving. Future plans include converting the last M1A2 HOTT to the M1A2 SEP configuration as the last M1A2s in the Army have been turned in for conversion to the M1A2 SEP.

Congress has also directed that the Army procure and field an in-bore subcaliber training device for the Abrams called the advanced in-bore marksmanship training enhancement system for tanks (AIMTEST). This device can be used during gunnery training in lieu of dry-fire or the tank weapons gunnery simulation system (TWGSS), and for remedial training when there is a shortage of 120mm training ammunition or when surface danger zone



The AIMTEST in-bore .50-caliber training device

issues are present. The PM has already procured 209 AIMTEST devices, and this year, will procure an additional 173. The distribution plan for this device by the end of FY07 is:

Fort Benning.....	22
Fort Bliss.....	56
Fort Carson.....	42
Fort Hood.....	84
Fort Irwin.....	8
Fort Knox.....	8
Korea.....	14
Kuwait.....	24
Fort Riley.....	28
Fort Stewart.....	42
Gowen Field — 116th HBCT.....	8
Fort Indian Town Gap — 28th HBCT.....	8
Camp Shelby/Fort Polk — 155th HBCT.....	12
Fort Campbell/Smyrna — 278th HBCT.....	8
Fort Lewis — 81st HBCT.....	8
Fort Bragg — 30th HBCT.....	8
Aberdeen Proving Ground.....	2

The only training device that will not be upgraded any time soon is the Armor School’s tank driver trainer (TDT). Fielded in 1990, and last upgraded in 1995 with the M1A2 enhancements, this simulator has saved millions of operational tempo (OP-TEMPO) dollars safely training Abrams drivers.

The TDT uses very large and energy inefficient image generators, which have been out of production for several years. Recently, the Kuwait Land Forces upgraded their Abrams driver simulators, which resulted in extra repair parts for the U.S. systems. Additionally, since the size of the armor force decreased due to the conversion of several Army National Guard Abrams units to light infantry, the student through-put has decreased, resulting in two systems that can be consumed for repair parts. This practice is not the long-term solution for the TDT; it could also use a database improvement similar to the COFT-AGTS MOU upgrade. To do this, TSM Abrams submitted a budget request for \$4 million in 2008-2009 to upgrade these extremely valuable simulators.³

Soldiers face many challenges when searching for time to conduct traditional tank training, current operating environment training, Warrior task training, and added cultural training —

we understand that time is the limiting factor. We are also trying to reduce the amount of time it takes to mount all of these appended training devices. The goal is to embed some limited capabilities to better support those unscheduled “training” opportunities. A limited embedded, thermal only, gunnery training capability is currently under development. The system would use the maintenance support device to access the information operations functions, similar to the AGTS and COFT-AGTS, and allow for after-action reviews from within the tank. This capability would also better support sustainment training while deployed to places such as Iraq, where it is frequently a combat mission to transport armor crewmen to the few mobile gunnery simulators located at Camp Victory or in Kuwait.

Ultimately, every soldier wants a tank that can support training and requires no set-up time. Future force-on-force and force-on-target technology exploration has begun, but it is too early to predict an expected fielding date or to assess how much time would really be saved. For the immediate future, do not hesitate to voice any concerns you have about the current suite of Abrams TADSS to TSMABRAMS@knox.army.mil.



Notes

¹Recent complaint from soldier in OIF.
²JCIMS is the new term for the combat identification panels (CIP) first used during OIF; and M829A3 is the newest kinetic energy round for the Abrams 120mm cannon.
³In December 2005, the Army prepared its budget request to the President for the years 2008-2013.

Lieutenant Colonel Benjamin Harris is currently the assistant Training and Doctrine Command Capability Manager HBCT, Fort Knox, KY. He received a B.S. from the U.S. Military Academy and an M.S. from Central Michigan University. His military education includes Airborne School, Armor Officer Basic Course, Armor Officer Advanced Course, and U.S. Army Command and General Staff College. He has served in various command and staff positions, to include assistant product manager for large caliber (Abrams) ammunition, Picatinny Arsenal, NJ; administrative contracting officer, Lima Army Tank Plant, Lima, OH; combined arms team armor advisor, 42d Army National Guard, Fort Dix, NJ; commander, HHC, 1st Battalion, 70th Armor, 194th Separate Infantry Brigade, Fort Knox, KY; and scout platoon leader, D Troop, 4th Cavalry, 197th Separate Infantry Brigade, Fort Benning, GA.



The Abrams Tank Driver Trainer



2007 Armor Warfighting Conference:

“Armor: Strong Today — Strong Tomorrow”

The U.S. Army Armor Center is preparing for the 2007 Armor Warfighting Conference to be held at Fort Knox, Kentucky, from 29 April through 3 May 2007.

The theme for the conference this year is “Armor: Strong Today — Strong Tomorrow.” In keeping with that theme, there is a dynamic and varied agenda. There will be a mixture of subject-matter expert (SME) briefings, focused discussion panels, and work product panels. Major General Williams and Command Sergeant Major Smith have invited leaders from across the battlefield spectrum to offer presentations on current and future operations for the force. Major topics include lessons learned from the current operating environment and the future of the Armor Force.

The heart of the conference will be the focused discussion panels and work product panels. Based on feedback from previous years’ events, the panel format has been improved. Work product panels will not only discuss key issues, but also provide detailed, documented feedback for future initiatives. Some panels will focus on the heavy brigade combat team (HBCT) formation and structure; others will review the current status of armor core competencies in full-spectrum operations. Other topics for the discussion panels include counterinsurgency operations and the new counterinsurgency field manual (FM 3-24), master gunner training and issues, and initial entry training.

The Armor Trainer Update will precede the Armor Warfighting Conference on 29 April 2007 and focus on the Army National Guard (ARNG) and its role as a mounted force. Presentations include transformation of force structure; feedback on mobilizing ARNG units; Army Reconnaissance Course; infantry update; career management field 19-series reclassification training programs; master gunner update; training aids, devices, simulators, and simulations (TADSS) update; and Regional Training Institute/Total Army School System update. There will also be a no-host social at the end of the business day.

The Franks Award will be presented during the conference. The award recognizes an active duty or reserve officer, noncommissioned officer, or Department of the Army Civilian who has demonstrated a long-time contribution to the warfighting capabilities of the U.S. Army. In keeping with the example demonstrated by the award’s namesake, any soldier in the Army

can recommend another soldier or civilian. In line with the theme, “Armor: Strong Today — Strong Tomorrow,” this year we will give special consideration to the nominees’ contributions toward the transformation of our mounted force to fight in full-spectrum operations. This award is a great chance to recognize someone who has worked hard to make the armor branch and our Army better. Additionally, nominees should possess two or more of the following characteristics of duty performance during the year or years preceding the award:

- Offered a vision for the future of the mounted warfighting force that significantly improved combat survivability, lethality, maneuverability, or mobility;
- Developed an innovation in equipment, material, or doctrine that significantly enhanced the effectiveness of mounted elements of the combat arms;
- Exemplified professional excellence in demeanor, correspondence, and leadership on issues relevant to mounted warfare;
- Displayed a love of soldiering through skills, recognition of the sacrifice and achievements of subordinates, and attention to the intent and directions of higher commanders.

The Armor Warfighting Conference is a great opportunity for the Armor and Cavalry community to celebrate the achievements of the greatest mounted combat force in history. Please visit the Fort Knox website at www.knox.army.mil/armorconf/ for more information.

Event	POC	Phone*
Armor Conference	MAJ Raymond Smith SFC Sheldon Johnson	(502) 624-4560 (502) 624-2564
Armor Trainer Update	LTC Scott Fowler	(502) 624-1315
CSM Update	SGM Kirk Baldwin	(502) 624-1321
External Scheduling Conf.	Bob Stubblefield	(502) 624-2591
Vendor Displays	SSG Michael Blake	(502) 624-4386
Armor Association	COL(R) Don Appler Connie Stiggers	(502) 942-8624 No DSN
VIP Billeting	Reservations Desk	(502) 624-6180
On-post Housing	Carolyn Burton	(502) 943-1000 (502) 624-3491
		* DSN Prefix: 464

2007 Armor Warfighting Conference and Armor Trainer Update

29 April - 3 May 2007

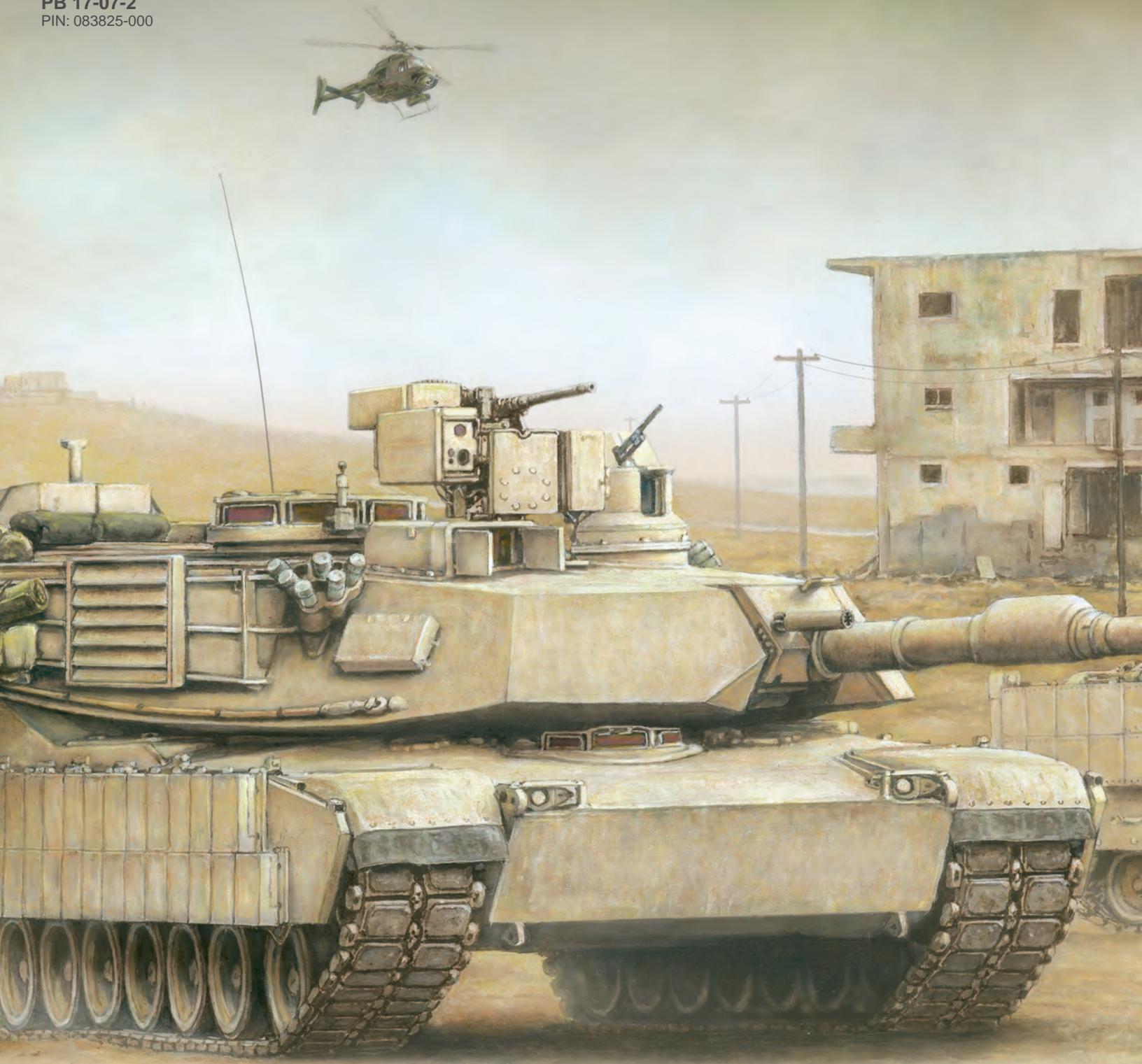
“Armor: Strong Today – Strong Tomorrow”

TIME	EVENT	HOST	LOCATION
Saturday, 28 April			
0900-1600	Vendor Setup		Skidgel Hall
Sunday, 29 April			
0800-1700	Registration		Gaffey Hall
0830-1700	Armor Trainer Update	SACG	Haszard Auditorium
0900-1600	Vendor Setup		Skidgel Hall
1800-2000	Armor Trainer Update No-Host Social	SACG	Leader's Club
1830-2000	CSM's No-Host Social	CSM, USAARMC	Leader's Club
Monday, 30 April			
0730-1700	External Unit Scheduling Conference	DPTMS	TBD
0800-1700	Registration		Gaffey Hall
0830-0900	CG's Opening Remarks	CG	Haszard Auditorium
0900-1000	Guest Speaker	CG	Haszard Auditorium
1000-1600	Vendor Displays		Skidgel Hall
1030-1300	Honorary Colonels and Sergeants Major of the Regiment *	OCO A	Chaffee Conference Room
1030-1600	CSM Update	CSM, USAARMC	Leader's Club
1030-1630	Brigade and Battalion Commander's Conference *	OCO A	Rivers Auditorium
1730-2100	Stable Call	OCO A	Patton Museum
Tuesday, 1 May			
0800-1700	Registration		Gaffey Hall
0830-0930	Guest Speaker	1ATB	Haszard Auditorium
0930-1630	Subject-Matter Updates/Panels	Varied	Gaffey/Boudinot Halls
1000-1600	Vendor Displays		Skidgel Hall
1700-2100	CG's Garden Party	CG	Quarters One
Wednesday, 2 May			
0800-1700	Registration		Gaffey Hall
0815-0830	Armor Association Annual Meeting	Armor Association	Haszard Auditorium
0830-0930	Guest Speaker	1 ATB	Haszard Auditorium
0930-1630	Subject-Matter Updates/Panels	Varied	Boudinot/Gaffey Halls
1000-1600	Vendor Displays		Skidgel Hall
1300-1400	Guest Speaker	1ATB	Haszard Auditorium
1800-2100	Armor Association Banquet	Armor Association	Leader's Club
Thursday, 3 May			
0800-1700	Registration		Gaffey Hall
0830-0930	Guest Speaker	1 ATB	Haszard Auditorium
0930-1630	Subject-Matter Updates/Panels	Varied	Boudinot/Gaffey Halls
1000-1600	Vendor Displays		Skidgel Hall
1030-1130	Guest Speaker	1ATB	Haszard Auditorium
1130-1300	Former Commandant and CSM Luncheon	OCO A	Leader's Club

* Indicates an "invitation only" event.

An expanded schedule will be available at registration or up-to-date information is available
at the Armor Warfighting Conference website: www.knox.army.mil/armorconf/

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