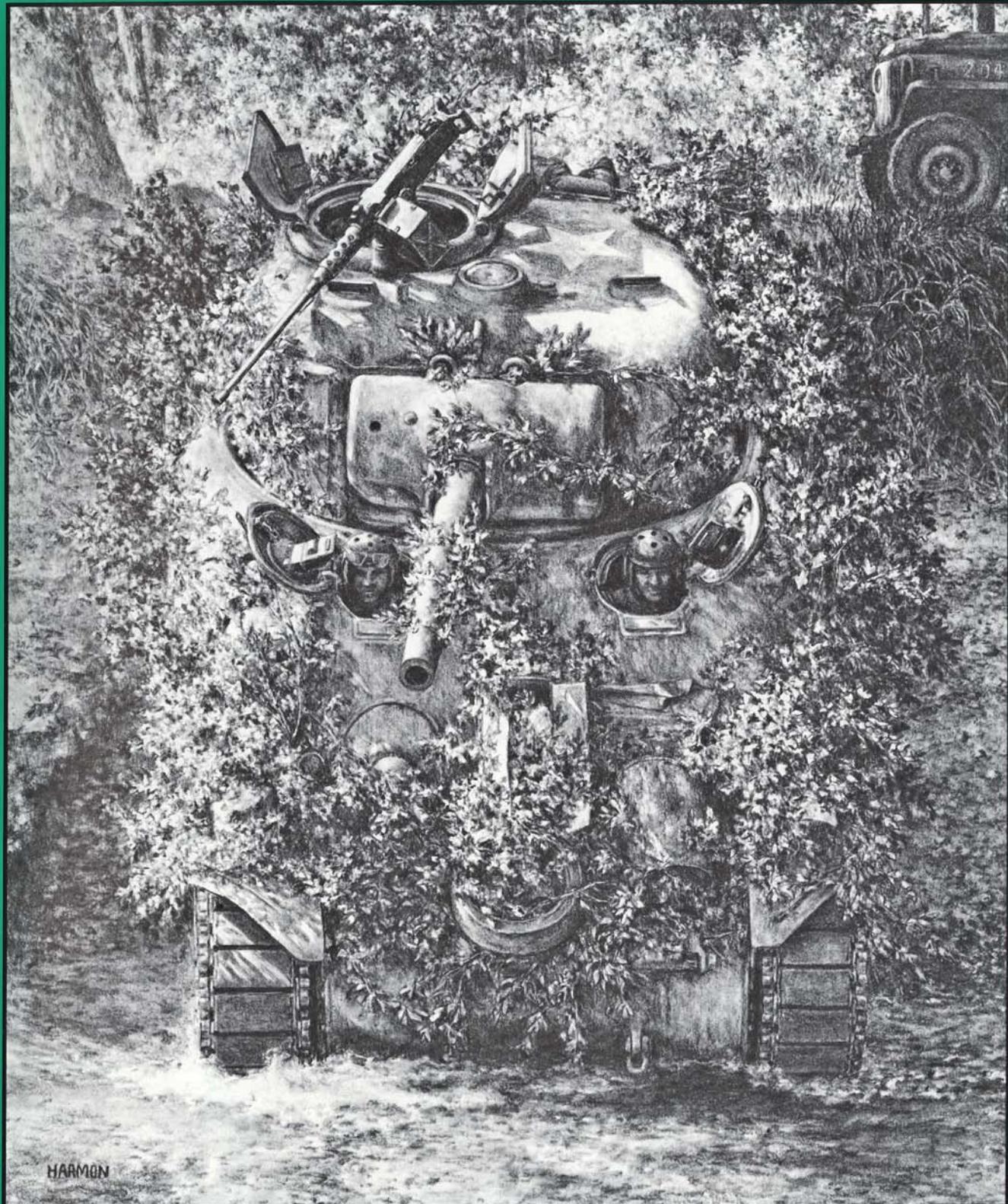


ARMOR



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Stand To

In your digitized movement forward toward Force XXI don't forget to report your progress. There are many issues remaining that require thoughtful discussion and consideration. What still needs to be developed? What do we have that doesn't work as advertised? What works better than expected? Where are the holes? What is solid? What haven't we thought of? These are basic questions, of course, but every armored advocate isn't currently serving in a position authorizing microprocessor implantation into his body. They are questions we must ask and answer. Render spot reports when necessary, for the Armor community needs to hear about your discoveries and your questions. Get the debate going, for until we have the discussion, we can't effectively move past the words and ideas phase into the equipment and implementation phases. Yes, I'm calling on you to help us at *ARMOR* do our part in ushering in the future.

As we rush toward the future, however, we can't ignore what we continue to see nightly on our television screens or read daily in the morning papers. Let's face it, some situations are hard to observe. For instance, the continued throes of Yugoslavian dissolution are painful to watch. According to the Secretary of Defense, it's possible that "an evacuation of U.N. forces from Bosnia may become necessary no matter what we do." That mission would obviously require employment of a portion of the armored force once all of the political initiatives are complete. Whether we will actually send tankers, scouts, or cavalrymen to help extract the multinational force that is in contact is unknown at this writing. The possibility is certainly real, though. But, whether the task is in the Balkans or not isn't the issue.

What should most interest us is that, in addition to our digitized movement to the future, and no matter what the conflict, we will move armored warriors onto a currently unfamiliar section of the battlefield. Most everyone agrees with that. So now we must think hard about what tasks a heavy unit can perform in a combat zone where the conditions fall far short of total commitment against an opposing tank or mechanized force, a la South West Asia. We can imagine the difficulties in operations other

than war (OOTW), and a few of us have even experienced them, but most heavy guys haven't: incoming fire from any direction; identification problems in discerning friendly force from foe, friendly noncombatants from hostile ones; language barriers between military forces and civilians, and amongst allied forces; restrictive rules of engagement; vehicle identification problems when both ally and potential foe use the same equipment. Our lighter warfighter brethren have dealt with these unconventional situations many times throughout the last couple of decades and have a maturing body of TTP. One need only think of Somalia and Haiti to know that across the entire spectrum of war there is a place for tankers and cavalrymen, so all of us armored warfare planners and executors better get busy.

Fortunately, learning how to handle these additional stresses is part of the curriculum for our heavy forces at our Combat Training Centers, but we are still ascending this learning curve. Of course, these operations are not the armored force's *raison d'être*, but the requisite skills are ones we must add to our kit bags, ready to pull out when needed. We've all seen the embattled peacekeepers looking up to the hills and mountains, dodging bullets and shells. They've vigilantly pointed their weapons, but their rules of engagement largely prevented them from toggling their guns on. A heavy dose of discipline and an equally heavy training requirement are necessary before we put ourselves in an area being shelled, and then ask our soldiers not to return fire simply because they aren't the target. Aimed fire is too often an oxymoron.

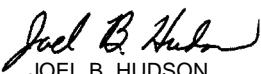
No matter how events unfold, we owe it to our soldiers not to grab hold of tar babies that we can't shake free. We owe them well-considered tactics, useful techniques, and rock-solid procedures. We owe them time to rehearse and time to learn. We owe them our attentions to the immediacy of the close fight while we simultaneously build and discuss the structures which will win our future deep fights.

— TAB

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Dismounted Scouts in Mechanized Cavalry Operations

Dear Sir:

Divisional cavalry organizations are "combined arms" units with the capability and flexibility to operate within a variety of operational concepts, today and in the future.

The versatility of divisional cavalry makes it the unit of tomorrow's Army, capable of sustaining operations as far as 100 kilometers forward of a division in a massive strike concept, such as DESERT STORM, or providing mechanized and air support of security operations in a lower intensity, small force concept which faces the Army and U.N. forces today. Another theater of operation for today's cavalry is its involvement in the support of counternarcotics operations. The divisional cavalry serves as the eyes, ears, and support element for joint task force operations on our nation's borders.

A divisional cavalry squadron's TO&E is ideally suited for these various missions, consisting of 28 M3 Bradleys, 18 M1 Abrams, and four mortars for ground operations, and eight AH1 Cobras, 12 OH58C Kiowa, and a UH1 Iroquois for aerial reconnaissance and group support.

The concept of security in speed (offensive) and security in depth (defensive) justifies the need for an additional element in the cavalry squadron, a dismounted scout platoon.

The dismounted team concept is not new to the cavalry. The "Blues Platoon" of the Vietnam era was very successful, and today's OPFOR ground scouts at the National Training Center (NTC) are highly successful in utilizing small dismounted "dirt teams" to gain intelligence and call indirect fires on unsuspecting rotational forces.

The mission of the dismounted scout platoon must be tailored to the conduct of operations forward of the cavalry squadron. This platoon would provide intelligence and security prior to the commitment of ground and air forces and would conduct battle damage assessment for aerial and indirect fires. It would also provide security, allowing ground and air elements freedom and speed of movement, security of downed aircraft sites, and extraction of downed aircraft crewmembers. The addition of these missions greatly enhances the squadron's survivability on the battlefield, buys more realtime, hard intelligence, and provides added security and support for ground and air forces moving into an area of operation.

Including this dismounted platoon as an element of the squadron alleviates the coordination needed with other ground forces not organic to the squadron, and allows the division to use those assets that would otherwise be attached to the squadron. Making the dismount scouts organic also allows

continuous dynamic training of the dismounted platoon within the squadron and allows cross-training with ground and air elements of the squadron to enhance mission success.

The assets needed to allow the platoon to accomplish its mission are currently organic to the squadron or easily attached from the aviation brigade. The modes of transportation for insertion and extraction would vary. Aerial support can be accomplished by the UH1 that is within the squadron, or by an attached UH60 provided by the brigade. Ground transportation can be accomplished by using ground force M3 Bradleys or HMMWVs. Another option is to simply move dismounted into the area of operation. Resupply is handled similarly, or by other creative options such as poncho parachute drops from OH58s.

The issue of sustaining communications with dismounted teams can also be handled internally. One option is to establish a series of observation posts with additional teams from within the platoon, each of these observation posts having an additional mission of acting as relay stations. Another option is to use helicopters or forward-deployed ground scouts to act as relay stations. Using these methods of communication must be rehearsed and perfected, which further justifies the need of this platoon to be an organic, not attached, element of the squadron.

The absolute need for the dismounted platoon's soldiers to understand cavalry operations, coordinate direct and indirect fires, conduct reconnaissance to support the squadron's operations and execute small team dismounted operations indicates the need for the team's members to be 19D scouts.

The need for such an element would best be demonstrated by employing them on a theoretical mission. I refer to LTC Douglas A. Macgregor's example in "Cavalry Operations in Limited Warfare" (printed in *Army Trainer*, Spring 93 issue) to display the possible use of the dismounted platoon.

In this scenario, an Army aviation brigade (-) has been deployed as the vanguard of the U.S. contingent. Sent as part of the U.N. forces, the brigade is to quell ethnic fighting between rival factions and push the Krasnovian forces back over the approved demarcation line in the region of Lydia, a province of Samaria. Upon deployment, U.S.-U.N. coalition forces establish an air-ground screen without interference from the hostile Krasnovian forces.

Intelligence then reports that the Krasnovian forces refuse to evacuate the area around the town of Krasnoye-selo due to its tactical and logistical importance. The townspeople, being primarily of Samarian descent, have voted themselves free of Krasnovian rule. The town lies within the Samarian boundaries, as set forth by the agreed upon demarcation line. Intelligence

also reports that several air defense batteries of S60 radar-directed guns, ZSU-23 cannons, and ZPU multi-barreled machine guns have been positioned in the valley around the town.

At this point, tactical planning by the coalition forces begins. This is also the time for dismounted scouts to become active, moving to positions overlooking the enemy's location to provide hard intelligence for the S2 and reports of enemy main logistical routes resupplying their forward units. This intelligence will greatly benefit the commander in his tactical planning.

The dismounted scouts will also pinpoint enemy built-up areas and preplot them for indirect fire. Resupply of cache sites by OH58 scout helicopters and other outgoing teams allows continuous operations by the dismounted teams.

At H-3 of mission execution, an MLRS battery fires on known locations of enemy ADA Batteries. Dismounted teams are used to assess battle damage and ensure there is no longer a threat from these units prior to committing aerial assets to the area. In addition, an Apache company is placed in reserve to help locate and destroy a missing ADA battery. With dismounted teams in the area days prior to mission execution, the missing enemy battery may previously have been located and marked for indirect fire, alleviating the need to tie up assets such as the Apache company. In the event the missing battery is discovered after the operation begins, a dismounted team can direct indirect fire and conduct battle damage assessment to eliminate the possible loss of friendly aircraft by direct fire. Later in the mission, the dismounts' battle damage assessment becomes vital because two friendly helicopters are lost to enemy air defense artillery fire. Lack of proper battle damage assessment of the MLRS fire on the enemy ADA positions can be directly attributed to these losses.

Upon committing of the ground forces (H-Hour), small dismounted teams located along the friendly main axis of attack would better be able to direct indirect fires, in turn, providing an increased level of security along the axis. The ground and air elements conducting the attack (using security in speed) have a greater level of success, while minimizing losses.

Dismounted teams are also used as search and rescue teams in the event of downed, friendly aircraft. Teams already located in the area of operations speed to the scene and provide security at the crash site. This will also help reduce the risk of capture, and allow quick evaluation of wounded air crews.

Upon completion of the operation, the squadron begins security and surveillance operations in which the dismounted teams,

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*BG (P) Lon E. Maggart
Commanding General
U.S. Army Armor Center*



Digital Warrior

Force XXI digital systems are redefining the way we will fight on the battlefields of the future. Mounted war-fighters must familiarize themselves with the new technological advances that are driving our Army into the 21st Century. This requirement is complicated by the necessity to conduct the day-to-day business of running platoons, companies, battalions, and brigades with non-digital systems.

We have come a long way in understanding the implications of digital operations and it is clear now that information age technology will profoundly change the way we fight in the next century. The challenge is to deal with the technological advances while addressing the daily problems of training, maintaining, and sustaining our tactical units.

The need to keep our units prepared and ready during this process is evident. I know this will be difficult over the next few years as we search for ways to reduce personnel turbulence. In fact, the number of armor and cavalry soldiers will be reduced by about one-third from that available in Operation DESERT STORM by the time we complete downsizing. The number of available company level commands will be reduced as will opportunities to serve as a battalion S3 and XO. However, the demand for branch qualified officers, particularly captains and majors, will remain about the same. Therefore, unless we carefully manage our human resources, young officers

will have less time in tactical units to develop the skills necessary to become quality battalion and brigade commanders.

For the foreseeable future, company command, S3, and battalion executive officer tours will be approximately twelve months in duration. There are many, competing demands on leaders in the Army of today, including an ever increasing requirement for joint and AC/RC duty assignments. If we are to continue building competent war-fighters for the future, all of us must find ways to teach our young officers critical warfighting and leadership skills quicker and more efficiently.

This will be a complex undertaking with no precedent to follow. However, there are some general guidelines which may provide insight into this dilemma. We can empower subordinates with relevant information, focus on teaching and mentoring, and redefine roles and relationships. We can take advantage of the information available on the Internet. Unit leaders can call the doctrine writers and the training and concept developers at the Armor School to find ways to assist subordinates in learning about new ideas and procedures.

Also, we cannot underestimate the power of talking to one another professionally and in frank, plain language. The ability to move information around in our organizations remains the single best way to ensure high performance. Clearly, we must establish priorities

and spend our precious time working only on the important tasks. *What we cannot change is the standard of performance in leading, training, maintaining, and caring for our soldiers and their families that we achieved during DESERT STORM.*

All of us will have to work hard to maintain currency on the emerging Force XXI developments while doing other important jobs. But the mounted force has faced periods of change like this before and has not only endured, but flourished. Innovation and teamwork remain core characteristics of the mounted force.

Dealing with the Army of today is not unlike preparing for a rotation at one of our combat training centers. We must focus on the important tasks, move authority to get things done down to the lowest level, and integrate our efforts if we are to be successful. We must do all of this without grinding our leaders and soldiers into the ground. There must be time for reflection, thinking, planning, and coordination if we are to operate at peak efficiency. We must make time for our families and for professional growth. There also has to be a place for fun. And lastly, we must accomplish the mission. All of this is possible, but not without effort. We can and must accommodate change in this period of turmoil and turbulence, and now is the time to start.

ON THE WAY!

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



The Cavalry Scout

Those whose job it is to pull triggers in war will tell you theirs is a dangerous business. Believe it! Those whose job it is to collect intelligence about the enemy without being detected, will tell you theirs is more dangerous. Then, there is the essence of danger...the scout.

Scouts are commonly referred to as the eyes and ears of the battlefield commander. As the commander's eyes and ears, scouts are considered the most highly trained soldiers on the battlefield. They are required to know more common and specialized skills than any other soldier to accomplish their mission and survive.

Survivability demands that scouts possess courage, strength, endurance, resourcefulness, and agility. These attributes are necessary for conducting their unique mission, operating close to and within enemy lines.

The manual, *Tactics and Techniques of Cavalry*, dated August 1940, provides a clear definition of the scout. "A scout is a trooper trained in the use of ground and cover; in mounted and dismounted movement from cover to cover; in marksmanship; in observation, and accurately reporting the results of his observation." A more current definition from Army Regulation 611-201 states that a cavalry scout, "leads, serves, or assists as a member of a scout crew, section, or platoon in

reconnaissance, security, and other combat operations."

Throughout history, scouts have been performing this unique mission. According to Lynn Montross's *War Through the Ages*, most armies have used scouts in one form or another. One of the earliest recorded accounts is in the year 331 B.C. in ancient Greece, during the time period Alexander the Great conquered Persia.

Cavalry scouts were used in the Americas as early as the 1750s, when the British were fighting the French. A colonial American, Robert Rogers, raised a company of rangers and used scouts to gather information in order to carry out his raids against the French. In that day and age, it wasn't called "going on a recon," it was called, "going on a scout." It is important to note that Rogers learned most of his scouting skills from Native Americans, many of whom served with him. It is believed those skills created the foundation for the scout's mission throughout U.S. Army history.

Cavalry scouts continued their usefulness from the Revolutionary War through the Civil War. Those familiar with American history can recall the exploits of Jeb Stuart's and John Buford's cavalry; most importantly Robert E. Lee's "blindness" on the battlefield at Gettysburg without Stuart's cavalry, and Buford's initial stand de-

laying the Confederate advance until the Union infantry arrived. Through the Indian Wars, World Wars I and II, and Vietnam, to their most recent role in DESERT STORM, scouts have continued to own the night and gather intelligence.

As intelligence gatherers today, the scout's unique mission is simple — find the enemy! This is considered the heart of his mission — providing the maneuver commander with his most critical information, combat intelligence, enabling him to achieve freedom of action, focus combat power, and overwhelm and decisively defeat the enemy. To do that, scouts perform two primary missions — reconnaissance and security.

During reconnaissance missions, scouts conduct route, area, and zone reconnaissance to obtain information about enemy forces and the terrain within the area of operations. When performing a security mission, scouts provide the maneuver commander early warning, enabling him to concentrate his combat power at the decisive place and time.

To ensure this reconnaissance and security mission, today's scouts use mounted and dismounted techniques and stealth to ensure their survivability.

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The Exploitation from the Dieulouard Bridgehead:

An Example of Maneuver Warfare that Applies Today

by Captain Donald E. Vandergriff

The exploitation from the Dieulouard bridgehead by Combat Command A (CCA) 4th Armored Division, 12-14 September 1944, offers valuable lessons if we are to adapt maneuver warfare as our Army's future doctrine. Employing the fundamentals of maneuver warfare, CCA achieved a difficult mission — exploitation to operational depth against a determined, well trained, equipped, and led enemy in rolling forested terrain inhabited by an unfriendly population.

CCA continually overcame complex problems because it possessed cohesion, solidified through two years of hard training, and a command climate that promoted mission tactics. Today's Army must take a hard look at aligning new doctrine (both operations and leadership) with the benefits produced by the new Intervehicular Information System (IVIS) in order to become as proficient as CCA 4th Armored Division.¹ The Army must encourage commanders to create a command climate that promotes mission tactics. The growing complexity, speed, and accuracy of weapons on today's battlefield, compounded by shrinking budgets that limit actual maneuver time, highlight the need to pursue better cohesion in tactical units.

With a vast array of potential and determined enemies to be fought on their home territory, the Army cannot afford to keep practicing the "break-the-glass-in-case-of-war" philosophy toward leadership that practices maneuver warfare.

The encirclement of Nancy, specifically the actions of CCA on 11-14 September 1944, provide many examples of rapid and decisive decision-making, from the individual to the combat command (brigade) level, that only an experienced, well trained, and maneuver warfare-oriented unit could accomplish.

The exploitation from the Dieulouard bridgehead demonstrated speed, "not just speed in movement, which is important, but speed in everything, called tempo."² Throughout the period, CCA, under Colonel Bruce C. Clarke, forced the Germans to react to the Americans' faster tempo. Examples of rapid decision-making, enabling units to act quickly, occurred throughout the exploitation. They included the flexibility of CCA as it changed its route from crossing the Moselle at Pont-a-Mousson to the bridgehead at Dieulouard, the actions of CPT Charles Trover and LTC Creighton Abrams along the route of march, their avoidance of strength at Chateau Salins, and COL Clarke's use of mission orders. This flexibility only came about because the unit and its leaders worked, trained, and knew one another for a long period of time.

The 3d Army plan called for an offensive across the width of the sector.³ General George S. Patton speculated that the Germans were still reeling from their defeats in Normandy. He ordered both the XX and XII Corps to seize Metz and Nancy, respectively, and prepare to continue the advance to the Rhine. Specifically, the XII Corps planned a double envelopment. The two prongs of the corps, led by CCA and CCB, 4th Armored Division, were to seize the high ground around Arracourt, and isolate the Germans defending Nancy.⁴ CCA was to conduct one of the war's first forward passages of lines, through 80th Infantry Division as it seized a planned crossing site of the Moselle River in the vicinity of Pont a



U.S. infantrymen haul an assault boat to the banks of the Moselle River. This unit was crossing near Metz, north of the Dieulouard bridgehead at about the same time the 80th Infantry Division seized the crossing exploited by CCA, 4th Armored Division.

Mousson. When the division was repulsed there, it changed its focus of effort further south, and with the assistance of careful deception and preparation, seized a bridgehead at Dieulouard.

Through 80th Division's rapid seizure of a crossing site at Dieulouard, CCA was able to demonstrate its ability to adapt to a rapidly changing situation.⁵ COL Clarke, upon hearing of the infantry crossing at a different crossing site than planned, quickly dispatched his reconnaissance troop, under CPT Trover, with the appropriate liaison officers, toward the bridgehead. As the troop approached the Moselle, it marked the route, thus facilitating the rapid movement of the brigade through the first of many difficult and complex missions of the exploitation.

COL Clarke and his subordinate commanders were able to make rapid decisions. As he foresaw and wargamed the upcoming mission, his staff quickly and efficiently dealt with current problems.⁶ The experience and teamwork within the CCA staff overcame the difficulty of the first part of the mission, getting hundreds of vehicles and personnel to the Dieulouard crossing point and conducting a forward passage of



General Patton, the Third Army commander, ordered his two corps to attack Metz and Nancy preparatory to a Rhine crossing. The crossing at Dieulouard and the sprint eastward toward Arracourt isolated the Germans in Nancy and led to control of the high ground farther east.

lines against an expectant enemy. Each staff officer understood his mission and, more importantly, received the latitude to make decisions in support of the commander's intent. CCA's focus of effort received total support and coordination through an experienced and confident cross-talking staff.

When CPT Trover and his troop arrived at the Dieulouard bridgehead, they found it under a German counter-attack that threatened the very bridges CCA planned to use. After reporting the situation to CCA, and being delayed by a crossing control officer, CPT Trover led his troop across the river and immediately eliminated the threat to the bridges by destroying the attackers. As the troop moved away from the bridgehead, CPT Trover identified assault gun units too strong for his reconnaissance troop to handle. He halted, assumed a hasty defense, and reported his situation to CCA headquarters.⁷ During this first phase of the crossing, CPT Trover conducted an effective advance guard mission for CCA and enhanced its movement to, through, and out of the bridgehead.⁸

The actions of CPT Trover led to a decision-making conference attended by representatives of XII Corps, 80th Division, CCA, and the TF 37th Armor commander, LTC Creighton Abrams. Asked his opinion on a course of action, LTC Abrams pointed toward Germany and said, "That is the shortest way home."⁹

Immediately, COL Clarke backed his subordinate by ordering him to proceed with the next mission, conducting a forward passage of lines and penetrating the enemy defenses.

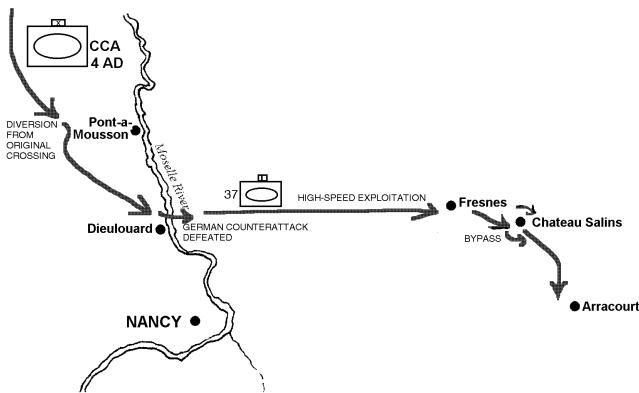
Both COL Clarke and LTC Abrams understood the situation created by

CPT Trover's defeat of the German counterattack. They made a rapid decision that took advantage of "thriving on chaos."¹⁰ As confusing as the situation seemed to the Americans, the unexpected arrival of American armor threw the Germans into a temporary trauma, offering an immediate opportunity only experienced and highly trained ~~bad~~ ^{bad} leaders recognize.

LTC Abrams' task force rapidly penetrated the ring of German units surrounding the bridgehead using effective combined arms teamwork, then exploited into the German rear using a paved highway. As Task Force Abrams pressed the confused Germans, light tanks from CPT Trover's troop and D Company of 37th Armor quickly established flank screens north and south of

intelligence about the enemy. The follow-on units — the 53d Armored Infantry task force and an engineer column — provided their own security. COL Clarke and the leaders of CCA worried more about what they were going to do to the Germans than what the Germans could do to them.¹²

With speed and focus, CCA overcame any German unit it encountered as it moved to seize the high ground around Arracourt. Once the leaders made the decision to move faster than the Germans, subordinate units, time and time again, executed drills that destroyed the enemy and prevented the Germans from establishing a coherent defense. From Benicourt to Fresnes, Task Force Abrams expertly handled the advance guard mission for CCA. LTC Abrams, taking advantage of a surprised enemy, did not slow his unit to deploy as they ran into and around German units. Emphasizing shock, the task force minimized casualties through its ability to conduct its action drills, enhanced by indirect fire support, before a German unit could deploy. To execute such rapid drills with no fratricide, the unit practiced established SOPs repetitively.¹³



the rapidly moving column.¹¹ This phase of the operation, the exploitation, demonstrated the effective use of designating the main effort. COL Clarke chose his best subordinate to lead the attack through the German rear and supported him with everything else within CCA (a sharp contrast to what was occurring at the operational level). LTC Abrams took decisive action, and COL Clarke ruthlessly focused combat power at any enemy weakness that CCA encountered. COL Clarke made this decision based on his experience and strong character. He took risk in focusing on a single route, despite little

As mentioned earlier, CPT Trover's troop and D Company provided the flank screen as CCA advanced deep into the German rear. Given their mission orders, these units confused the Germans because they provided the CCA commander with "multiple thrusts." These "multiple thrusts" generated more enemy confusion and served to disguise LTC Abrams' task force as the main effort. As long as the two units supported the main effort toward Arracourt, the company commanders made whatever decisions were necessary to accomplish their missions and thus support COL Clarke's intent.¹⁴

The next rapidly changing situation was reported by LTC Abrams' task force and observed by COL Clarke, who flew over the battlefield in his small airplane. As the CCA neared Chateau-Salins, increased artillery fire from the town fueled COL Clarke's suspicion that a larger German unit occupied the town. CCA did not want to fight Germans defending a built-up area. So, as September 13th drew to a close, CCA — following one of its accustomed drills at the close of a march — moved into a coil formation that provided a 360-degree defense. As units arrived in the laager, they immediately assumed an assigned place within the perimeter under the watchful eye of the CCA executive officer. Follow-on units of the CCA, under the charge of CCA staff, assumed the same formation. The field trains beat off German patrols with internal resources without weakening the main effort. CCA maintained tempo even as maneuver slowed in hours of limited visibility. To maintain relentless pressure on the Germans, three battalions of CCA artillery fired onto every suspected enemy attack position or assembly area.¹⁵

As the CCA trains closed up to and resupplied the main body on 14 September, increased artillery fire from Chateau-Salins confirmed a decision by 4th AD commander, General John "P" Wood, to bypass the town. Task Force Abrams left the main road, taking an indirect route through heavy forests to reach the CCA objective of Arracourt. The stress and strain of the previous two days continued to prevail over German units as Task Force Abrams overran more units, to include the headquarters of the 15th Panzer Grenadier Division. Even blown bridges did not slow the tempo of the advance, as reconnaissance assets of the CCA simply found alternate crossing points. All these events occurred under the observation of COL Clarke without units having to ask his permission or halt to await decisions from "higher."

On 14 September, CCA seized its objective in and around the high ground at Arracourt. It did not settle down to await German efforts to regain the initiative. Units from the different task forces fanned out from Arracourt to continue harassing and paralyzing the German command, and affected a link-up with CCB, moving up from the south. These roaming units always made certain that CCA's artillery could effectively support them as they at-



A 37th Tank Battalion crew gets a few moments rest near Chateau Salins on September 26, 1944. This town had been bypassed in the drive toward Arracourt.

tacked German units, and did not go outside the artillery's range.¹⁶

To top off the training and the effective leadership that made the exploitation by CCA seem easy, it was the 4th Armored Division commander, MG Wood, who created CCA's climate of success. During all phases of the CCA advance, General Wood's command style of trust promoted rapid decisions, enabling the commanders at combat command and task force level to decide a course of action "up front," without awaiting permission. General Wood pressed his corps commander, General Manton S. Eddy, to employ the entire division in the exploitation. Failing this, he pushed both commands toward reuniting the division's combat power at Arracourt. During the operation, General Wood pushed reinforcements to further CCA's exploitation, and did not interfere with the decisions made "on the ground" by subordinate commanders.¹⁷

The commanders of both the division and combat command did not rest on the laurels won with the encirclement of Nancy. They immediately looked beyond Arracourt, proposed the seizure of Saarbrucken, and continued to focus on how to defeat and destroy the enemy.¹⁸ This was exactly what the Germans feared. No reserves were present to shore up their tattered front.

Unfortunately, the designated focus of effort stopped with 4th Armored Division and the tactical level of war. The

corps commander, General Eddy, needed to eliminate bypassed Germans and tidy up his flanks, so he stopped the forward movement of the armored division.¹⁹ Thus the Germans regained the initiative and did not give up until November. The fault cannot rest with General Eddy, for General Patton ordered attacks across the entire front of the 3d Army, and stretched its limited resources so no success could be exploited. Patton's 3d Army strategy reflected General Eisenhower's broad front policy — a policy that accepted no risk and took away scarce resources to feed the British army's lackluster advance into Belgium and Holland.²⁰

Several valuable lessons from this dramatic operation still apply. The advent of digital technology intensifies the need to practice maneuver warfare. Future conflict pits our smaller but more expensive forces against numerically larger but slower-reacting adversaries. We will likely be operating over vast distances. Maneuver-oriented operations, such as the exploitation from the Dieulouard bridgehead, must become commonplace in order to limit politically unacceptable casualties and end conflicts quickly. Units that find themselves fighting widely dispersed, to avoid strikes by enemy nuclear and chemical weapons, must be able to come together as D Troop, D/37 Armor, CCA, and CCB massed around Arracourt. They must be prepared to destroy high value enemy targets pinpointed by our vast intelligence-gather-



LTC Abrams, at left, with LTC Harold Cohen, CO of the 10th Armored Infantry Battalion.

ing systems and relayed by digital technology, or move quickly to further exploit an enemy weakness. As units “fight to move,” commanders, through communications links, will have to make rapid decisions. Units will have to be well trained and capable of executing drills that will destroy enemy units surprised by our unexpected approach.²¹

Today, the Army practices antiquated warfare (e.g., the massed division wedges employed during DESERT STORM). We must change to bring tactical and operational doctrine in line with newly created technology.²² In order to achieve the kind of cohesion that laid the foundation for CCA’s teamwork, the Army must drastically change its personnel system and policies. We need to promote stability, instead of the constant turmoil and careerism that accompany frequent rotations. When officers are assigned in keeping with their talents and character traits, the result will be units such as CCA.²³

Given our “come-as-you-are-now” warfighting situation, the Army does not have two years to train units to be as proficient as Combat Command A.

Finally, to create maneuver tacticians, the Army must eliminate the zero defects mentality that leaders of weak character inflict on subordinates. The current system works against every value that sustained COL Clarke’s and LTC Abrams’ success in warfare. It is not likely that we will face as incompetent an opponent as we did in our last

conflict, and even less likely that next time we will have the time to “learn on the job.”

Notes

¹Major Dean A. Nowowiejski, “Achieving Digital Destruction: Challenges for the M1A2 Task Force,” *ARMOR*, Jan-Feb 1995, p. 21.

²William S. Lind, *The Theory and Practice of Maneuver Warfare*, Presidio Press, 1993, p. 7.

³Dr. Christopher R. Gabel, *The Lorraine Campaign: An Overview, September-October 1944*, Combat Studies Institute, February 1985, p. 14.

⁴Gabel, pp. 16-17.

⁵Dr. Christopher R. Gabel, *The 4th Armored Division in the Encirclement of Nancy*, Combat Studies Institute, April 1986, pp. 13-14.

⁶Commanders and Staff of Combat Command A, 4th Armored Division, U.S. Army, *The Establishment and Defense of the Nancy Bridgehead*, Military History-Battle Analysis, Combat Studies Institute, 1994, p. Lsn 3-2-19.

⁷Gabel, *Encirclement of Nancy*, p. 14.

⁸Headquarters Department of the Army, Field Manual 71-2, p. 3-45.

⁹Gabel, *Encirclement of Nancy*, p. 14.

¹⁰Lind, p. 8.

¹¹Gabel, *Encirclement of Nancy*, p. 14.

¹²Lind, pp. 12-13.

¹³Commanders and Staff of CCA, p. Lsn 3-2-25.

¹⁴Lind, p. 14.

¹⁵Commanders and Staff of CCA, p. Lsn. 3-2-26.

¹⁶Gabel, *Encirclement of Nancy*, p. 16.

¹⁷Gabel, *Encirclement of Nancy*, pp. 5 and 15.

¹⁸Lind, p. 12.

¹⁹Gabel, p. 17.

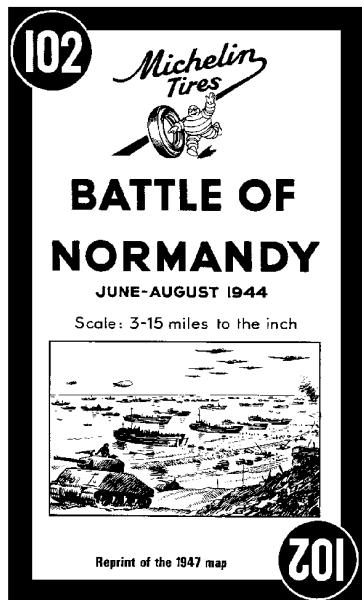
²⁰Gabel, p. 33.

²¹Lieutenant Colonel Mark P. Hertling, “The Battle of Oom Chalouba, 17 June 2008,” *ARMOR*, Jan-Feb 1995, p. 34.

²²Hertling, p. 34.

²³Lind, p. 14.

Captain Donald E. Vandergriff enlisted as a Marine in 1981 and served in the 4th Engineer Battalion, 4th Marine Division. He then entered the Simultaneous Membership Program and served as a tank commander in the 278th ACR, Tennessee Army National Guard. Upon being commissioned in 1983 from the University of Tennessee, he served as a cavalry platoon leader with G Troop 2-278th TNARNG. A 1984 graduate of the University of Tennessee, he has attended AOBC, the Marine Corps Amphibious Warfare School (honor graduate), the Cavalry Leader’s and M1A1 Tank Commander’s Courses, and Combined Arms and Services School. He served as a tank and scout platoon leader and tank company XO with 1-72 Armor, scout platoon and battalion staff observer trainer for the Dragon Live Fire Team, and as chief of reconnaissance for the 32d Guards MRR (OPFOR) at the NTC. As commander, A Co, 3-77 Armor, he deployed his company with the task force on “Operation Positive Force” in Kuwait. He was also commander of HHC, 3-77 Armor. Under the “Bold Shift” program, he became part of the Readiness Training Detachment, 1-303d Armor Regiment, Washington National Guard. He is currently pursuing his graduate degree in Military History through the American Military University. He has published several articles concerning reconnaissance.



D-DAY

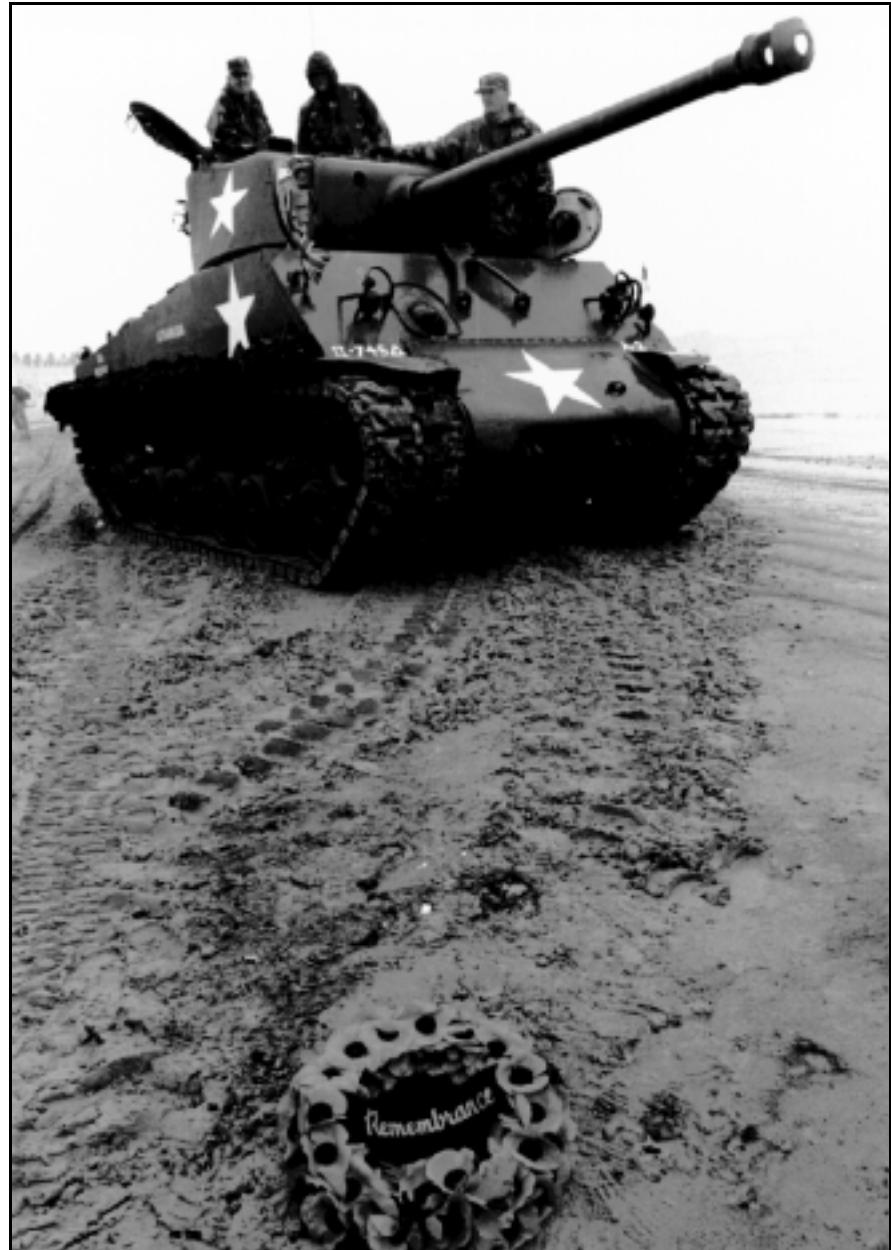
Old vehicles and old soldiers return to the Channel ports for the 50th anniversary of their greatest adventure

by Lieutenant Colonel John Gillman

LTC Gillman, Light Dragoons, commands the British Army's Armoured Trials and Development Unit - Ed.

American Army personnel from Fort Knox were heavily involved in supporting the British Army's Royal Armoured Corps Centre and Bovington Tank Museum activities during the 50th Anniversary commemorations of D-Day. A large number of American veterans traveled to Europe to commemorate D-Day, many visiting the Bovington, Weymouth, and Poole area in the South of England before departing for France.

The main event was the presentation by Major General Jordan from Fort Knox of a set of General Patton's uni-



form stars to the Tank Museum at Bovington, supported by the firing of a salute from an American Sherman tank by an honor guard tank crew from Fort Knox. Major General Jordan then took the salute at a large commemoration parade at Weymouth, the jump-off port for the main American forces 50 years previously.

The choice of vehicles used on the commemorative parades was complicated by the need to be able to drive on tarmac roads through Weymouth and Poole without damaging the tarmac. This effectively prevented the use of British vehicles, such as Cromwell and Churchill, or any medium American tanks using steel chevron tracks. Another factor considered was the need for reliability, as it was estimated that

track mileage would be in excess of 35 miles per vehicle. It was therefore decided to concentrate efforts on fielding Sherman tanks fitted with rubber padded tracks, an M5 Stuart light tank, again with rubber padded tracks, and the Museum's halftrack, which was already fitted with rubber tracks. A 1944-vintage Ford Universal Carrier, despite having steel tracks, was considered light enough not to cause road damage.

Margaret Gillatt, from Retford, provided her father's M4 Sherman, following months of preparation, especially fitted with new rubber chevron track. The Patton Museum at Fort Knox provided the markings for this tank, depicted as being in the U.S. 1st Infantry Division, 745th Armor. Fort Knox sent over a comprehensive color scheme for



Along the beachfront at Weymouth, one of the D-Day embarkation ports, residents, visitors, and returning veterans cheer the parade. At left, the author in his restored Ford Universal Carrier.

At right, an M5 Stuart, called "Honeys" by the British soldiers who also used them.

Most of the vehicles were privately owned by collectors. Unless a tank had rubber tracks, it was not permitted to appear in the parade.



the tank, including paint swatches and a full description of markings. It was decided to use the M4A2E8 Sherman, stored at the Tank Museum. The tank was a 76-mm gunned, 1944-vintage twin diesel-engined Sherman with HVSS suspension. However, it was fitted with unsuitably aggressive steel chevron track. The track was exchanged with the rubber chevron track fitted to the Museum's M74 Sherman Armoured Recovery Vehicle by Armoured Trials and Development Unit (ATDU) personnel testing the latest designs of track tools issued for the new Challenger 2 battle tank. The ATDU workshops also fitted new fuel filters to both engines, rebuilding the old filter elements using modern Challenger components. The vehicle was painted

to conform to markings suggested by the Patton Museum, again for the 1st American Infantry Division. This choice of American markings for both Sherman tanks may not have sounded very patriotic to the British vehicle restorers, but it should be borne in mind that over 541,000 Americans departed for France through the port of Weymouth, with yet more Americans going afloat from nearby Poole.

The first event, the May Bank Holiday Military Vehicles Trust Ralley held on Southsea Common from 27 to 31 May, saw both Sherman tanks displayed, together with an American M5 Stuart light tank, a British Matilda 1 Infantry Tank, and a Priest, all organ-

ized by the Friends of the Tank Museum, Bovington. The Friends' display was joined by the American Honor Guard crew from Fort Knox, led by Captain Kevin Emdee, serving at Fort Knox, together with his brother, Sergeant Major David Emdee, U.S. Army, Mr. Bill Stallworth, and Mr. Ted Salter, ex-U.S. Marine Corps. Their participation had been arranged during a visit a year previously from England to Fort Knox by Lieutenant Colonel John Gillman, with crewing details agreed while waiting at the check-out queue in Fort Knox's PX! It had been a long queue and the arrangements agreed survived the test of time. A group of Royal Armoured Corps volunteers from ATDU helped with vehicle crewing, with the Americans concentrated on the



At left, MG Larry Jordan, then Chief of Armor, is greeted by an unidentified British veteran. The Lord Mayor of Weymouth, at right, wears her ceremonial robes.

In photo above right, the author's wife, at left, with Margaret Gillatt who had to repair the track of her father's Grizzly, a Sherman variant made in Canada.

Inevitably, a bagpiper led the parade. How very British!



M4A2E8 Sherman and Margaret Gillatt on the older M4 Sherman. Camping facilities were provided by ATDU, but life was complicated by having to camp on extremely boggy ground between very large pools of water, as it had been raining non-stop for the previous 10 days. Sadly, it also meant that vehicle movement was therefore restricted to the barest minimum. The Americans quickly settled down into the routine of showing British schoolchildren through the M4A2E8, dodging rain storms, and trying to poison the British with MRE ration packs.

The Matilda 1 proved to be of great interest, although it was not a D-Day vehicle. In May 1940, a counterattack by 48 of these tanks cut through Rommel's 7th Panzer Division and halted the German advance outside the Dunkirk evacuation port. On 31 May,

the majority of MVT exhibitors departed for France while the Friends' Shermans, Stuart, and Matilda 1 all returned to Bovington.

The Museum hosted a reception for Major General Jordan on 1 June. Major General Jordan and the Master General of the Ordnance, Major General Sir Jeremy Blacker, were driven into the Hall in the American halftrack from which they made their speeches. Major General Jordan presented the RAC Centre with a set of General Patton's stars. The reception culminated in a band recital and beating of the retreat by the band of the Royal Scots Dragoon Guards. The concert culminated in a salute fired by the M4A2E8, crewed by Captain Emdee and his American honor guard.

Friends of the Tank Museum fielded six vehicles for the commemorative parade at Weymouth on 2 June. The pa-

rade featured a long, two-mile drive along the seafront at Weymouth, followed by a static display and reception. The Friends' vehicles were led by the Ford carrier, followed by the halftrack, Dingo scout car, M5 light tank and both Shermans. Most of these vehicles were showing their age by the time the parade started. The Dingo had a fuel leak, the carrier's right hand brake jammed on. Margaret Gillatt spent three hours removing the track and drive sprocket in order to free the brake. Her Sherman needed a link taken out of each track, and the M4A2E8 was suffering from lack of engine synchronization. Despite these problems, the vehicles all completed the ceremony without a hitch. The salute was taken by Major General Jordan, half-way down the seafront in Weymouth, a poignant reminder that this was the main American departure port. At the end of the parade, the tanks

all lined up by the Pavilion at the end of the seafront, where they were besieged by crowds of interested onlookers from the estimated 20,000 people who had lined the streets of Weymouth to cheer the parade. There were a great many American veterans visiting, as well as many serving American soldiers and sailors, as an American cruise liner and Marine assault ship were lying close offshore.

The enforced lack of vehicle movement enabled the crews to synchronize the M4A2E8's diesel engines and adjust the throttle settings so that both engines ran at the same boost. During this exercise, there was no shortage of advice from veterans, with no fewer than seven American mechanics offering their services. They had done this same job many times 50 years previously. Major General and Mrs. Jordan were then invited as guests of honor to the mayor of Weymouth's lunchtime reception at the Pavilion, where they met many older townspeople who had been present 50 years previously to witness the embarkation of the main body of American forces for the invasion of France. After tea, both Shermans were driven back around the seafront, two miles through the town traffic to Lodmoor Car Park, where they were loaded to be transported to the Royal Marine Barracks at Poole.

The parade at Poole on 3 June began with both Shermans following a marching parade for a mile and half through Poole to the Quayside, where they formed a static line in front of a series of marching parades. Again, the majority of those parading appeared to be American veterans. During the afternoon, both vehicles were driven back to the Royal Marine Barracks, loaded, and transported back to Weymouth. They were both then driven around the seafront to the Pavilion Car Park, ready for the church service the following day.

The church service on 4 June was held on the beach at Weymouth, despite very wet weather reminiscent of the actual weather suffered 50 years previously. Friends helped crew both Shermans, the M5, the Dingo, the halftrack and the Universal Carrier. Vehicle Squadron from Bovington also provided Challenger 1, Warrior, CET, CRARRV, and Scimitar. Despite the weather, a large number of American veterans attended. Following the service, full advantage was taken of the op-



A privately-owned M16 halftrack, followed by a Weasel tracked carrier, parade in Weymouth.

portunity to drive vehicles up and down the empty mile and a half long beach front at Weymouth. The Universal Carrier was in great demand, as its hot engine louvres quickly dried people's clothes, even the local traffic wardens queuing up to get dried out. By the end of the afternoon, it had covered over 22 miles transporting people up and down the sands.

Much consternation was caused by the crew of the Combat Engineer Tractor, who drove into the sea and proceeded to swim their vehicle out towards an American cruise liner about 500 meters offshore. At the end of the afternoon, all vehicles drove back around the seafront to Lodmoor Car Park where they were loaded for transport to the Tank Museum, to be ready for the Concert Day on 5 June. The American honor guard crew was put on board the Poole-to-Cherbourg ferry to visit the French invasion beaches, carefully briefed to revert to driving on their usual side of the road. (This appeared not to confuse Captain Emdee at all, as he had only ever been observed to drive down the middle of the road throughout the previous week.)

June 6th, the 50th Anniversary of D-Day, saw the majority of Friends of the Tank Museum returning to work for a rest, following a hectic weekend. The first casualty returned from France: Ted Salter, the co-driver from the American honor guard crew of the "Easy Eight" Sherman. He had taken the ferry to Cherbourg and then a train to Bayeux. Unfortunately, the train's driver opened the door on the wrong side at Bayeux and Ted fell onto the railway track, breaking his arm fairly comprehensively. So, a mere 30 hours after leaving Bovington, he found himself back in the officer's mess, his arm in a cast and having "done" France. He reported that the main British/American campsite near Arromanches, organized by

the Military Vehicles Trust, had suffered days of continuous rain and was a quagmire. A number of tanks taken to France still had their steel tracks fitted, so the French had banned their movement onto the roads. After two days of rest, he was able to fly home and phoned to report that his arm was mending well, the French doctors having done an excellent job of setting his arm despite multiple fractures.

Following the D-Day anniversary activities, the vehicles used were serviced and then returned to their home bases. Repair work on the cooling system of the "Easy Eight" Sherman was undertaken at ATDU and revealed that a return pipe had cracked between the two GMC diesel engines. It was a simple fault to repair but required over 30 hours work to gain access to the pipe! The Carrier was washed down and greased, but the sea water from Weymouth Beach still managed to seize all the steering and brakes within days. Driving the vehicle through the local fresh-water pond a few times seemed to wash most of the salt and freed the steering and brakes, although the vehicle and driver became rather smelly as a result.

The participation of Fort Knox's Major General Jordan and his Honor Guard crew under Captain Emdee were much appreciated by the veterans of D-Day and the local people who turned out in their thousands to commemorate the American commitment to peace in Europe. It was especially fitting that the parade at Weymouth, the embarkation port for 541,000 American troops in 1944, should have been taken by Major General Jordan from Fort Knox. The American commitment 50 years ago, continued in Europe to the present day, was honored and acknowledged. For those who embarked never to return, we must remember them and remain forever in their debt.

Armored Expeditionary Forces

by Ralph Zumbro

Gentlemen, in order to be effective in the 21st century, we're going to have to learn how to fly, not only strategically, but on a tactical level as well. There is precedent, from the glider assaults of WWII to the successful movement of 22-ton M41s in RVN reported by Colonel Battreall. It is also known that there were 13 M24s with the French Foreign Legion at Dien Bien Phu, but most people don't realize that they were broken down into planeloads, flown in, and assembled in place. Used a bit more aggressively, they might have prevented that particular debacle.

So, we can fly light armor into any place with relative ease. It's the airborne deployment of the heavies that gets sticky. But do we need the Abrams or even an M60 in most small-scale operations? The Rangers in Somalia could have been extracted by mech infantry supported by ACAVs. What we desperately need is a TO&E in which light armor is so embedded in a combined arms unit that it CAN'T be left behind by some bureaucrat. That means that the APC must be able to act in the light armor role as well as being a battle taxi.

This postulated unit needs to be easily deployable by air, in self-sustaining, tactically-viable combined arms groups. It must have armor, infantry, artillery, and heavy lift helicopters in the TO&E. We're going to need this capability in the near future, both because of America's worldwide interests and the growing needs of our diplomatic stepchild, the United Nations. What we require is an American based and commanded force that can be used at will by our government or "loaned" to the U.N., but still under American control, keeping our national interests as its basic operating tenet. In other words, we need a permanent Armored Expeditionary Force.

To that end, we should develop doctrine and test it in the field. *ARMOR* is the forum in which these ideas are being discussed and refined, but we need to get some hardware out in the hills and test these developmental concepts. The old rule is "you go with what

you've got," and what we've got are the new AGS, the Bradley, and the many permutations of the old, reliable M113. Properly used and modified, they can do 90 percent of the work that we'll be seeing in the next few years, including establishing an airhead and seizing an airfield that will allow, if necessary, the insertion of enough Abrams tanks to secure the area against any unpleasant surprises. We need, however, to get combined arms, including integral airlift, as low in the table of organization (T.O.) as possible and there's precedent for that, too.

The old "Blackhorse" T.O. of the Vietnam era serves as a jumping-off point, and if it is combined with the Pentomic organization of the late fifties and early sixties, it might just serve as the perfect framework, at least for experimentation. In *Ringed in Steel*, available from Presidio Press, COL Michael Mahler, who was the squadron exec back then, briefly describes that organization. Basically, it was the standard cavalry squadron of the times. Each troop owned nine tanks, 23 assorted ACAVs, three mortar tracks and a retriever. The kicker was the squadron aviation troop!

Right down there at squadron/battalion level, was a troop that owned nine scout birds, 11 UH1B slicks and three Huey gunships. A tracked armored cavalry unit had its own air force! Unfortunately, although the system worked, next higher command took their air away from them most of the time and used it at brigade level. When the birds came home, though, the squadron was the unit that maintained them. The cavalry squadron was their home, because that's where the mechanics were. Hal Spurgeon informs me that, as recently as 1985, he commanded a sabre troop in 1/18 Cavalry and that the squadron operated an air troop, under a major. Now 2ACR is experimenting with air squadrons and the Quarterhorse is using air troops along with ground troops. But we're using the wrong helicopters.

Supporting armor requires BIG birds, not utility choppers. Getting ammo and fuel to a moving armored task force

cannot be done with Hueys or scout choppers; even the Blackhawk simply can't lift the amount of combustibles that ACAVs and tanks can burn. One Chinook, however, can lift a basic load for a tank, AGS, or Bradley platoon, plus a couple of fuel bladders, MREs and the mail. What is needed is an air troop with CH-47s, and this opens up a whole new box of capabilities. We've all seen the pictures of a CH-47C lifting a mired ACAV out of a paddy, and the photos of a CH-47D hauling a 13-ton rapid deployment force/light tank through the air. That combination has possibilities.

The connection needs to be made that heavy choppers can LIFT light armor. If the armor in question is M113-based ACAVs, they can be made to fly. If we use that old squadron T.O. and assign choppers big enough to lift the ACAV portion of our force, we've got battlefield mobility like no other force in history. And with the CH-47, we've also got the availability of a gunship that makes an Mi-24 look like a light observation helicopter!

Back in 1967, the 1st Air Cav in Bin Dinh Province, RVN, got two new gunships to test. Technically, they were designated ACH47As but the troopers called them "Go-Go" ships. They were described by General Tolson, who commanded the Air Cav then, in an article in *Vietnam Combat* magazine, #2, 1988. Basically, they were CH-47s that carried a pair of 20-mm Vulcans, a pair of 2.75-mm rocket pods, a 40-mm automatic grenade launcher and "assorted light machine guns." It could also be used as an impromptu bomber by rolling fuzed drums of napalm off the tail ramp. That is serious air support, and the big ships can carry enough ammunition to set down away from the contact area and reload their rocket pods.

If we keep the basic aviation company T.O. and retain the light observation choppers, we've got aerial scouts. Remove the utility choppers and replace them with the heavy ships, and there's enough airlift for any humanitarian mission that we can see coming

up. If the mercy birds are fired on by intransigent warlords, they simply lift the refugees out and ferry back a few ACAVs, supported by a Go-Go ship. That should take care of whatever international "varmicide" necessary to clear the way for the humanitarian missions or non-combatant rescue. The aviation company or troop should be able to equip the big ships with as many assault kits as necessary for developing situations.

Since most of the areas where this type of unit would be used present no MBT threat, an ACAV will serve the light tank role. The nine tanks in the T.O. can be replaced with Bradleys, and suddenly we've got an armored force that is fully amphibious without preparation. The existence of the heavy lift capability means that light armor can leap tall buildings at a single bound... or the Great Rift Valley, the Shatt al Arab or the Isthmus of Panama.

ACAVs, at least, can be made to fly. The heavier combat machines would have to go by ground, of course, as would the retrievers, but we can fly light armor around ambushes. There are ways to counter the Stinger menace, if they can be detected soon enough. Future armor is going to have to live in a web of detection frequencies, and we may have to add an ECM track to the HQ platoon. There are also AA turrets, such as the GE Blazer, that will fit either the AGS or the Bradley Fighting Vehicle.

So, we can fly tactically and accomplish most missions, but how about strategic projection? In the May-June 1994 issue, the article by COL Battreall proves the concept. Light to medium armor can be airlifted if a suitable airfield or level stretch of road can be acquired as a landing field. We have GOT to have this capability, and that means that tankers must also become paratroopers! Pre-positioned navy ships full of Abrams tanks will not survive military attack. They are unarmored, and many Islamic nations are rapidly buying submarines. Germany, of course, is back in the commercial U-Boat business, along with the French and the Swedes. Now England, of all nations, is offering to LEASE their *Upholder*-class subs out to the highest bidder. This means that we must be able to go by air, all the way from the U.S. to our objectives.

As Major Spaulding and Mr. Crist point out, what we badly need is a



"Supporting armor requires BIG birds, not utility choppers.... One Chinook...can lift a basic load for a tank, AGS, or Bradley platoon, plus a couple of fuel bladders, MREs and the mail. What is needed is an air troop with CH-47s, and this opens up a whole new box of capabilities."

Above, a CH-47 slings an ACAV out of a rice paddy in Vietnam.

light, air-transportable, multi-role vehicle. We already have two of them, the Bradley and the M113. You don't need an Abrams to beat up a T-54 or a BMP, and a quick perusal of Jane's serves to locate most of the world's mechanized menaces.

Africa, for instance, concentrates most of its heavy armor in the northern segment, where Libya and Egypt are in an uneasy face-off that's been going on since Ramses II, in biblical days. The Sudan, which is coming increasingly under Iranian influence, has some modern armor and could get sticky, but for the most part, there is no serious MBT threat in the nations of central Africa, which seem to be rapidly de-civilizing, and will create a power vacuum. We depend on the stability of those nations to provide the chromium, cobalt, and molybdenum that keeps us in the forefront of the hi-tech revolution. More importantly, those unstable little political entities need to be defended against local power grabs by greedy neighbors with foreign backing. If Somalia, for instance, came under Iranian sway, one small missile base on the horn of Africa could cut off the flow of oil through the Red Sea. There's a civil war going on across that sea, in Yemen. The point is, sooner or later, we're going to get called out again, as part of the global 911 system, and we'd better have an armored force ready to go, or be sent in piecemeal again, with predictable results. Training and the T.O.

are what we need to address, and quickly.

First off, what type of parent organization will be needed? We need large companies, so the HQ had better be big and flexible. A full regiment might just be too big, though. Back in the 1950s, when I first enlisted after JROTC in high school, the Army was mostly Pentomic and the major tactical unit was the battle group, which fell between the battalion and regiment in size. It had five line companies — real big companies, and a look at their organization is instructive. In the five active years of that enlistment, I worked almost all the MOSs in a line airborne company, below E-6, and was in on the formation of the 8th Division's first light airborne field artillery (105 towed) battalion at Baumholder, so I can perhaps open a window into the past which could help us now. Those old units were quite flexible and could operate in many configurations. A-2/504, for instance, once operated for two months away from Ft. Bragg, running graduation exercises for the Special Forces in the mountains of West Virginia, back in 1962. Lordy, was that a lot of fun. We even used horses.

The battle group headquarters consisted of a HQ company with its own integral infantry platoon, a scout platoon in jeeps, and a large transportation platoon, as well as the usual HQ necessities. There were enough deuce and a

halves in that transportation platoon to move one of our infantry companies in one convoy. The supply section had its own transport and could handle several auxiliary units, such as engineers, with no problem. We had a surgeon and enough medics for each line platoon. The mess section, while normally divided up into company units, had consolidated into a battle group mess, but when we went to the field — Baumholder, Wildflecken, Grafenwohr, etc., they went with us in their own trucks.

Support artillery for the battle group was a 4.2-in. mortar battery with (I think), five platoons of four tubes each. In the present proposal, a full battery of 105-mm light howitzers might be more effective. There is an anti-helicopter 105-mm round under development and it could fit that tube, just by changing shell casings. There's also a 105-mm HEAT round available that can be made to fit the howitzer, giving the battery, and the HQ base camp, a long-needed self-defense capability. We used to use 3/4-ton trucks, two per gun, as prime movers for a 5,000-pound M-2 howitzer, so a Hummer should have no trouble with the new light gun. A second HMMWV with a trailer would supply the basic load and would be part of an airdrop, LAPES, or assault landing. If mortar-locating radar was part of that battery's equipment, the LZ would be mortar-proof. In addition, that radar could render much artillery useless, stopping the shelling of civilians.

The main force of the battle group was five line companies, each consisting of four infantry platoons of 44 men each, and one weapons platoon with three 81-mm mortars and three 106 recoillesses on special jeeps. The infantry squads had 11 men, a squad leader and two fire teams, each with a BAR. The platoon weapons squad had two M1919A6 Brownings and two 3.5-in. Bazookas. If the outfit was supported by ACAVs or Bradleys, the armored vehicles would replace the weapons squad. Possibly we could have two infantry squads and an ACAV per section and call two sections a platoon.

There's room for a lot of experimentation here, especially with the new types of hard-shell body armor that are available. This is an important concept. If the infantry has its own body armor which is rifle resistant, they don't even need APCs for most operations. Besides being a tank commander and running an ammo/POL operation in RVN,

The ACAV - Weights and Loadings

In the present proposal, the M113 in an ACAV configuration would serve as a light tank with a few dismountable infantry. With a one-man gun cupola, it can still carry eight infantrymen to provide local security and forcible entry teams. Considering the empty weight of the M113 to be 9,926 kg and the max lift of the CH47D to be 13,000 kg, we are left with 3,074 kg of discretionary stores and armament weights. Here are some examples of the M113 with various available armament.

M163A1 Vulcan, 20-mm gun	13,310 kg combat loaded
Arrowpointe 90-mm turret	11,870 kg empty, two-man turret
Cadillac Gage, 40mm/12.7mm	10,994 kg empty, one-man turret
FMC 25-mm electric turret	11,335 kg empty, one-man turret

If one of the lighter turrets were fitted to the M113, it should still be heli-portable. Fit a 90-mm turret to a Bradley and you have essentially a medium tank with dismounts. When the AGS comes on line, the unit would then have its Assault Gun/Tank Destroyer capability.

Source: *Jane's Artillery and Armor, 1987-88*

I've been a light infantry squad leader (airborne, both divisions), and have ridden all over Germany, both Carolinas, West Virginia, Southern France, and the Canal Zone in the back of a deuce and a half. An infantry squad can live in the back of a truck very handily, thank you. Is it possible to create a platoon that consists of two ACAVs and four squads of body-armored grunts in trucks with the ASP 30mm on gun rings on the cabs? Or can we use lightly armored wheeled APCs like the LAV that the Marines have adopted?

What about the weapons platoon? Can we simply replace it with four up-gunned Bradleys and plug in the AGS when it becomes available? That little beastie would make a good assault gun as well as a tank destroyer. The 105 tank gun is also a creditable artillery piece, and if the training is given and the artillery controls are fitted to the turret, the AGS could do duty on the gunline. Come to think of it, there are just 18 guns in a howitzer battalion and about 15 in a tank company. There's a bit of flexibility to be thought about here. Could an AGS company simply replace the artillery battery? We'd have not only long-range support but an armored reaction force, but no high-angle capability.

If one of those oversized line companies were replaced with the heavy aviation company discussed earlier for airlift and gunship support, a battle group, all by itself, could give most nations a lot of grief. For the record, the T.O. of one of those line companies was 260

officers and men. The battle group T.O. was 1500 men and was commanded by a full colonel, in our case, COL "Wild Bill" Welsh, who later wound up in charge of the expansion of the Special Forces. Maybe it is now time to consider the creation of a small, airmobile, armored, combined arms special force. The big divisions can handle the Saddams of the world, but we desperately need troubleshooters and forcible entry teams. Time's a'wasting.

Ralph Zumbro served as an NCO in each of the combat arms, including combat service in RVN. He has commanded tanks in Vietnam, USAREUR, and CONUS, and served as a gunnery and demolitions instructor. *Tank Sergeant*, a memoir of his service in Vietnam, is in its second printing in paperback by Pocket Books and is available at bookstores. He has written articles for *ARMOR*, in addition to writing two novels, *Jungletracks* and *Puma Force*, co-authored with his former XO, James Walker, also published by Pocket Books. Currently, he is writing an oral history of American tankers who fought in all battles of the 20th Century. *Tank Aces* is scheduled to be published in 1996.

Cavalry Mortars — A Better Way

Adopting turreted, breech-loading mortars

Capable of both direct and indirect fire

Would double their value to Cav units

Editor's Note: The author, who prefers to remain anonymous, is a retired ordnance engineer with a broad background in the defense industry. He has no financial interest in any decision the government might make in regard to the weapons described in this article.

I read with interest Captain Prior's article in the November-December 1993 issue, "Cavalry Mortars — Training and Tactics." In the article, Captain Prior states that difficulties in live-fire training in the indirect fire role compromise the important mission of the cavalry mortars, particularly under peacetime safety regulations. The upshot of this is that, "The mortar section of the cavalry troop is probably the least-used asset in the unit," which is the very first sentence of the article.

Captain Prior clearly knows the limitations of training to use a muzzle-loading mortar buried down inside the confines of a metal box. I believe that there is another way to provide effective mechanized mortar fire, and not just for the cavalry. It is a way to simplify training in indirect fire and to make mechanized mortars effective in a wider variety of roles than just indirect fire. The approach I describe here is not confined to the U.S. M106-series of vehicles, but is applicable to a wider variety of systems, including vehicles of the APC and MICV type, as well as amphibian tractors. I further submit that a lightly armored vehicle armed with such a versatile weapon would make an invaluable contribution to combined arms teams and would be readily deployable by air.

The way to accomplish all this is to use a turret-mounted, breech-loading, dual purpose (DP) mortar (with appropriate fire control) capable of firing in both the indirect and the direct fire

roles.^{1*} The vehicle will also be equipped with IVIS and GPS, and the turret will be armored to at least the level of the chassis.

Weapon characteristics proposed are:

- Turret-mounted, continuous traverse.
- Breech-loaded. (Breech type not relevant to this article.) Muzzle-loading is not an option.
- Elevation angle from <->5° to +80°.
- Recoil mechanism, probably hydro-pneumatic.
- Smoothbore or rifled? Not relevant to this article. It depends on the type of mortar ammunition chosen, or which is already in the national inventory.
- Ammunition:
 - Conventional mortar ammunition.
 - Anticipated 'smart' rounds.
 - HEP/HEAT or other special-purpose rounds designed for direct fire.
 - Caliber - Not relevant to this article. Any specific caliber chosen is dependent upon vehicle size and weight class, maximum range and terminal effects desired, minimum number of rounds to be carried, and the type of mortar ammunition that may already be in inventory. However, since so many people insist upon dwelling on the caliber issue, I suggest a caliber range of approximately 60mm minimum to 120mm maximum.

There are several reasons why mechanized mortars be turret-mounted, breech-loading, and capable of indirect and direct fire.

The tactical reasons — the most important — are:

- It provides both an offensive capability and a self-defense capability.

● A mechanized muzzle-loading mortar, when faced with a target that cannot be effectively engaged with indirect fire (i.e., an encounter with a direct fire threat at a close range) has a system engagement effectiveness level of zero. It is nearly helpless, in spite of the long-term investment in vehicle, crew, and training. If this same vehicle had a dual purpose weapon and appropriate fire control, it would be capable of not only surviving, but having a good chance of winning the encounter. Conversely, a mechanized, muzzle-loading mortar that's never used in a battle because it has no indirect fire targets also has a system engagement effectiveness of zero.

● A turret can rapidly swing through any arc to quickly engage targets of opportunity, rather than having to turn the entire vehicle, as one would have to do with a system like the M106. In the indirect fire role, the time to get 'steel on target' will be substantially reduced, as compared to the time needed by a conventional muzzle-loading mortar.

● There are many suitable direct fire, as well as indirect fire, targets for a DP weapon.

The technical/functional reasons are:

● A turret-mounted weapon's turret drives make it much faster and easier to control traverse and elevation. Furthermore, the gunner will be looking through a magnifying sight pointing in the same direction as the barrel. This is far superior to squatting down inside a metal box and squinting into a mortar sight.

● A turret provides overhead armor protection, internal mounting surfaces for fire control, coaxial MG, and crew equipment, external surfaces for a pintle-mounted MG and crew equipment, and protection from muzzle blast and fumes.

*Numbered superscripts refer to Notes and lettered superscripts refer to References (see last page of this article).

- Properly designed, an enclosed turret will provide CBR protection.
- By designing the weapon to be capable of breech-loading only (rather than including the option of muzzle-loading, as some do), the bore diameter can be made smaller than the standard mortar barrel diameter (for any given caliber), which will enhance accuracy and range with standard mortar ammo. The reason for this is that a typical muzzle-loading mortar barrel must be larger in diameter than the projectile to allow the air trapped in the barrel (and ‘behind’ the projectile) to escape, so as to let the projectile fall freely to the bottom of the tube. Not only must the air escape, but it must do so quickly enough for the projectile to be able to fall fast enough to set off the primer. The difference in diameter between the bore and projectile of a muzzle-loading mortar is called ‘windage,’ and it is the windage that allows both balloting (wobbling) in the tube and variation in muzzle velocity because of escaping propelling gases (a.k.a.: ‘blow-by’). Balloting and variations in muzzle velocity lead to inaccuracy.
- Reducing windage will slightly *increase* muzzle velocity, hence range, because blow-by will be reduced. A breech-loaded weapon can have a longer barrel, for any given caliber, than a muzzle loader. This will reduce muzzle flash, blast, and smoke. It will also provide a slight increase in muzzle velocity, hence slight additional range. Increased barrel length will ensure more uniform combustion of propellant and will decrease variation in muzzle velocity, resulting in decreased round-to-round dispersion.
- A breech-loaded weapon cannot be double-loaded, unless by an ingenuous idiot.

When speaking of close combat direct fire targets for cannon-caliber weapons, one usually thinks of armored targets; in particular, armored vehicles, whether of the MICV or tank class. Weapons used to defeat armored targets are typically flat trajectory, high velocity, high kinetic energy weapons of the 20-50-mm class used to attack IFVs; and a weapon of *at least* 90-mm caliber is ordinarily used to attack tanks. A proposal to enhance direct fire weaponry of these two classes of weapons is frequently oriented toward increasing their armor-defeating capability. Considering the fact that such weaponry is based upon a highly de-

Close Combat Targets

Vehicles: (moving targets)	<ul style="list-style-type: none"> • Heavy protection: tanks. • Medium protection: MICV. • Light protection: APC, LAVs, LVTs, some HMMWV & MICV. • No protection: some HMMWV, trucks, jeeps, radar vans. 				
Dismounted troops: (“not moving”)	<ul style="list-style-type: none"> • Heavy protection: in concrete bunkers, some buildings. • Medium and light protection: in log bunkers, dug-in positions w/sandbags, ATGM, AAA, towed artillery, mortars, command & control centers. • No protection: troops in attack: prone and standing. 				
Aircraft: (fast moving)	<table border="0"> <tr> <td>• Light protection</td> <td>• fixed wing</td> </tr> <tr> <td>• No protection</td> <td>• rotary wing</td> </tr> </table>	• Light protection	• fixed wing	• No protection	• rotary wing
• Light protection	• fixed wing				
• No protection	• rotary wing				

Now, to see the targets that are vulnerable to our DP weapon, just delete from the above array those targets that can only likely be defeated by some combination of high kinetic energy, high velocity, and/or flat trajectory weapons. These targets are tanks, heavily protected concrete bunkers and a few other buildings, and aircraft. After deleting them, the remaining targets are:

Vehicles: (moving targets)	<ul style="list-style-type: none"> • Medium protection: MICV. • Light protection: APC, LAVs, LVTs, some HMMWV & MICV. • No protection: some HMMWV, trucks, jeeps, radar vans.
Dismounted troops: (“not moving”)	<ul style="list-style-type: none"> • Medium & light protection: in log bunkers, dug-in positions w/sandbags, ATGM, AAA, towed artillery, mortars, command & control centers. • No protection: troops in attack: prone and standing.

Figure 1

veloped technology (i.e., we are *way out* on the ‘learning curve’), increases in armor-defeating capability will only come at the expense of additional weight, volume, and cost.

There is a double irony here in the perception of what the threat target really is. The first irony has been the presumption of the ever-increasing armored threat, which is a vestige of the days when our concern was the possibility of a horde of ‘technologically advanced,’ armor-led Soviet forces thundering across the Fulda gap. The threat briefings we were all exposed to in those days stressed the advances in technology that we could expect in order to meet those threat forces. Without dwelling on the issue of whether or not those threat briefings were overdrawn, it should not be difficult to accept the fact that the current Russian state is not now in a position to be producing a ‘technology’ that the Soviet Union could not field in its heyday. For example, there are those who say that the protection level of the ‘BMP-3,’ or whatever it is called now, requires a weapon more powerful than the 25mm.

This is a simple case of threat escalation — that vehicle is obviously a ‘swimmer’ and it has no swim curtain to provide the extra buoyancy needed by a system that is more heavily armored than vehicles of the general class of a BMP-2, Piranha LAV, M113, etc. No swim curtain, no extra armor. (It’s a good thing that Archimedes’ Law cannot be classified, or someone would have tried by now.)

The second irony is that, since not all direct fire targets are armored, an advance in combat capabilities is not necessarily based on more powerful antiarmor weapons. In today’s world, we sometimes see the combat capability of fighting vehicles being sensibly upgraded with improved command and control systems — not larger caliber or more powerful weapons. In reality, we are well armed with excellent weapons having a *demonstrated* capability of defeating likely threat *armor*, now and well into the future. The real issue we should be addressing is: “*How do we increase the overall offensive and defensive capability of our close combat forces?*” This must include a readily

deployable capability. One of the ways to do this is to consider (i.e., 'model') how various combinations of weapons (including dual purpose weapons) and tactics will work against the really wide variety of targets to be encountered. The point of my argument is not that this DP weapon can replace the existing superior antitank weapons, including missiles. It cannot. However, there are more, and better, ways to increase overall combat capability than to keep increasing the weight, volume, and cost of the mechanized antitank weapons (including ammo), which will in turn impose exponential weight, volume, and cost penalties on the combat vehicle *systems*. Another point that I wish to make is my belief that the U.S. has been over-focused on just how many of the targets to be encountered are really *armored* targets.

What are all these close combat targets? The array in Fig. 1 is a reasonable list of most close combat targets. I have divided the target list into those targets that are: moving, not moving (essentially, as compared to a bullet), and 'fast moving' (at least, as compared to ground vehicles and dismounted troops). Within each of these target velocity classes, I have divided them further by level of protection.

I submit that the above list of remaining targets for our DP weapon comprises a very large number of likely close combat targets. A combat vehicle armed with a DP weapon and appropriate fire control can perform the role of the mechanized mortar as well as engage direct fire targets when necessary. Such a vehicle will make an excellent, versatile member of the combined arms team and will justify the investment in personnel, time, and money.

The reader may ask, "If this DP weapon is such a good idea, then how or when has it been done in the past, if at all? Who is doing it now, if anyone?"

Look first at the historical background:

- The U.S. successfully used howitzers in WWII that were mounted in the turrets of tanks and more lightly armored vehicles, where they were used in both indirect and direct fire roles. In both these cases cited, the vehicle was originally fitted with a higher velocity weapon of smaller caliber than the howitzer. A few specific examples are the M4 tank with

DUAL-PURPOSE U.S. WEAPONS OF THE PAST

The M45, at right, was an M26 tank with 105-mm howitzer. Some were used in the Korean War.

At lower right, the Marines' LVT(H)6 of the Vietnam era mounted a 105-mm howitzer. Another Vietnam-era multipurpose weapon was the Navy's deck-mounted combination of an 81-mm mortar and .50-cal machine gun, seen below.



105-mm howitzer, which was originally armed with a 75-mm gun; and the LVT(A)4 amphibian tractor with 75-mm howitzer, which was originally armed with a 37-mm gun. Both of these vehicles were extensively and successfully used in combat.

- Weapons seldom considered as 'dual-purpose,' but which really were, were the tracked tank destroyers of WWII, such as the M10 with 3-inch gun, M18 with 76-mm gun, and the M36 with 90-mm gun. Because these systems had powerful, long-range weapons, and because they also had both the fire control capability and the crew training for indirect fire, they were often used in such roles.^a
- In the immediate post-WW II period, a version of the M26 tank was fitted with a 105-mm howitzer and renamed M45. The M45 saw some service in Korea.^b Later, a variant of the LVT(P)5 amphibian tractor was mounted with a special turret armed with a 105-mm Howitzer and was called the LVT(H)6. The LVT(H)6 was successfully used in Southeast Asia.
- Speaking of Southeast Asia and DP weapons, a really creative and inexpensive DP mobile application, the 81-mm mortar Mk2 Mod 1, was created by the Louisville Naval Ordnance Station for use during our period of involvement there. It was a

light deck mount, installed on small naval craft, which mounted both an 81-mm mortar and a .50-Cal. MG. The mortar could be trigger fired as well as drop-loaded, and could be used for both indirect and direct fire. I note that creativity and usefulness are not always a function of how much money and time were invested. Sometimes, there seems to be an inverse relationship.

Later, American interest in DP weapons languished while we struggled with the design and production of innumerable specialized weapons (including mines, grenades, cannons and missiles, guided and otherwise) intended to defeat armor; even to the extent of fielding antitank warheads for artillery. Examples of this are the 155-mm M483 ICM projectile that contains dual purpose (*this* 'dual-purpose' is a different kind of 'dual-purpose') armor-defeating and antipersonnel grenades, and the MLRS (replacing the 8-inch howitzer) whose very large warhead uses a larger quantity of the same grenades.

Now let's look at contemporary systems:

- Two contemporary systems available on the commercial market are both Thomson Brandt 60-mm breech-loading mortars with hydraulic recoil

systems. These weapons, called 'gun mortars' by Thomson Brandt, can fire standard 60-mm mortar ammunition for high angle fire, as well as special purpose ammo intended for direct fire. (The standard mortar ammo can, of course, be used against most direct fire targets.) There are two versions of this mortar, the shorter range version, the MCB 60, and the longer range version with a barrel extension known as the LR Gun Mortar. Both these gun/mortars have been mounted in several commercially available turrets.^c The LR is shown at right in a Hispano-Suiza turret, mounted coaxially with a .50-cal. MG.

- Thomson Brandt also has an 81-mm breech-loading weapon known as the MCB 81 Gun Mortar. Like the 60s above, it has a hydraulic recoil mechanism and has been turret-mounted. One version is the GIAT AMX-10 TMC 81 81-mm Mortar Gun Carrier.^c
- Another system, which has been around for a while, is the Russian SO-120 Airmobile Assault Weapon, which is a 120-mm breech-loading gun/mortar that is turret-mounted on a modified BMD chassis. Like the Thomson Brandt weapons above, it is capable of direct and indirect fire.
- A new effort now in development is the Royal Ordnance 120-mm Armoured Mortar System. It is a turret-mounted, breech-loading gun/mortar (call it what you will) that can be mounted on a light or medium armored vehicle chassis. It will have an integrated fire control with LRF and IR, and will be GPS-aided.

Why is the U.S. not using Dual Purpose systems?

Now that I have shown the reader that DP weapons have existed in the past, and I have shown some contemporary ones, let's examine some of the potential reasons why the US is not using them now:

Fixation on armored targets? Yes, but we've already covered that.

Too much faith in 'studies'? We Americans dearly love to see the results of computerized effectiveness and optimization studies (computer models), which shows how little we understand them. Next-generation weapons are usually replacements for an existing one, which has sponsorship from the

DUAL-PURPOSE BREECHLOADING MORTARS IN MODERN USE



In top photo, the Thomson Brandt 60mm LR Gun Mortar is mounted in a Hispano-Suiza turret with a coaxial 50-mm machine gun. There is also a similar 81-mm version from the French manufacturer. Both have hydraulic recoil mechanisms.

Directly above, the Russian SO-120 combines a 120-mm breechloading mortar with a light, airmobile chassis.

Above, the Royal Ordnance 120-mm armored mortar system, seen here on an LAV chassis. This option integrates fire control, laser rangefinder, and GPS

existing hierarchy, so the new system is almost guaranteed to be a product improvement of what we have now. Real innovation is hard to cope with in system-level studies because it would introduce new ideas and concepts *that could not be quickly and readily modeled in a computer*. Perhaps it could be done, but how many dissenting opinions would there be as to whether it was done properly? Without validation from the rest of the analytical community it wouldn't be worth much. Furthermore, the hassle would go on forever.

Another limitation on studies is that they focus on predictable targets and

most likely scenarios, and so focus our perception of 'what's needed' onto single-purpose systems. This is because any DP system will be a compromise and will have capabilities for which we will have paid a price and which are not needed to defeat the 'optimum' target (whatever that illusion is).

The facts are, that the next time we have to go to war, the time, the place, the enemy, and his capabilities will have been unknown to us in the 10- to 15-year period between the time when the development project was initiated and when it finally was fielded. The time when the system will then be used in war may be anywhere from zero to

"In today's world, all programs compete with one another, and any 'tracked combat vehicle' line in the budget competes all the more so with other such vehicles. The DP system that I propose will not be inexpensive, so every dollar spent on it will be that much less for tanks, APCs, MICVs, and SP artillery."

more than 30 years after the fielding date. What we really need is a flexible, multi-role DP system to supplement tanks, MICVs, and artillery. It will be adaptable in employment against now unknown enemies, targets, and terrain, at an unknown time in the future. For maximum flexibility in employment, the DP system should be readily transportable by air and sea.

More complex training? Crews for these DP systems will need to be trained in both direct and indirect fire gunnery practice. This is not the difficulty that it used to be, now that we have computerized fire control techniques, CTV, IVIS, GPS, and POS-NAV. I refer the reader to Captain McVey's excellent article, "The M1A2, IVIS, and NTC — A Company Commander's Perspective," that appeared in the same issue of ARMOR as Captain Prior's article.^d This article showed just what could be done with a tank, that classic direct fire weapon, properly equipped to call in indirect fire. I also point out that the indirect fire control techniques used for the mechanized mortars (Captain Prior's article) are nowhere near as advanced as those now available to a tank (Captain McVey's article.) It is not written in stone that a CTV can only be mounted on a tank!

Just as the infantry commander has had to learn to be an armored combat vehicle commander (MICVs with automatic cannons), he may also have to learn some indirect fire techniques as well. I am surely not the first to say that the traditional infantry, armor, cavalry, and artillery roles may need updating, and not for the first time in history. Before WWII, during the Spanish Civil War in the late 30s, the German Condor Legion volunteer 88mm flak units attacked surface targets as well as aircraft targets.^f In WWII, the German 88 mm flak units provided not only air defense support, but they also provided support against ground targets, including tanks.

"At the fronts, the flak guns were assigned other combat tasks such as anti-tank use, attacking bunkers, supporting troops under pressure in ground com-

bat, and on the coasts they even fired on sea targets and fought off attempts to land. In the western campaign, the 88mm flak was the only weapon that penetrated the heavy French tank armor. Great demands were made of flak units, which accompanied the panzer troops on their fast advances and received alternating air-protection and ground-combat assignments. That often meant moving their positions two or three times a day, including the work of trenching [emplacement?]. Very often in this action, motorized units of the armor had to be caught and passed, so as to guarantee gap-free protection against air attacks along the advance route. On the other hand, single 88mm flak guns were used by so-called flak battle troops to wipe out enemy points of resistance."^f

The method of employing the 88s, as described above, was clearly dual-purpose, if not triple purpose — that is, there may have been indirect fire missions against surface targets, but I am not certain. I believe that it was the ubiquitous nature of the 88 that originally gave it its fearsome reputation — it seemed to be everywhere, shooting at everything. The early WWII design of the American 90mm AA gun was a single-purpose AA mount, but it was modified later in WWII into a multipurpose mount capable of attacking surface targets in either direct or indirect fire.^{g,h} Surely, if it was feasible even before WWII, there is no reason now why more new weapons can't be designed for multipurpose roles. Can't we expect that computerized fire control techniques will drastically reduce both the need for specialized computations and the training necessary to do the remaining computations?

If, in the press of combat, the same weapon and crew performed in the same day all three roles of air defense, fire support, and close combat, then shouldn't we consider now organizing to do just that — rather than wait until we're in the war? Wouldn't that be one of the 'force multipliers' the military keeps talking about? If we are going to

seriously reevaluate the traditional roles of infantry, armor, cavalry, and artillery, we will have to solve these issues:

Conflict in traditional roles and missions? What will be the MOS and career fields of the commanders and crews? Of course, a DP mortar, firing either direct or indirect fire, is still a close combat system, but what happens if a 120-mm caliber is chosen? It may still be a mortar and 'close combat,' but how does such a weapon differ in appearance, and even in use, from SP artillery? What is it when it is firing in direct fire? Who says indirect fire, other than mortars, must be a fire support role? Until the early 20th Century, the artillery fired direct fire, not indirect.ⁱ And this leads us to —

Funding priorities? In today's world, all programs compete with one another, and any 'tracked combat vehicle' line in the budget competes all the more so with other such vehicles. The DP system that I propose will not be inexpensive, so every dollar spent on it will be that much less for tanks, APCs, MICVs, and SP artillery. This is certainly more of a problem for the military to sort out than for anyone else — the vehicle system and weapon designers and manufacturers should be just as happy to continue producing a variant of their production chassis with a new turret with new weapons on it. On the positive side of the cost issue for the systems proposed, a multipurpose system capable of handling more than one role offers the opportunity of needing fewer systems and fewer personnel to man them. There can also be a considerable reduction in the amount and cost of air and sealift needed if there are fewer specialized systems to be shipped.

Conclusion: The DP combat vehicle system proposed has the promise of becoming a 'multi-role'^j system that can not only engage a much wider range of targets than current combat vehicles, but will be more deployable by air than many of the more heavily armored of those same combat vehicles. It will be

a valued member of the 'crisis-deployable combined arms team.'³

Notes

¹A purist might want to argue the validity of describing as a 'mortar' a weapon intended for direct fire, even if it is an alternative role, since one of the *many* definitions of a mortar is that it is a weapon intended to be fired at elevation angles exceeding 45°. Regardless, I believe that calling such a DP weapon a 'breach-loading mortar' is too well established for me to struggle to coin a new expression that will satisfy the purists — and confuse everyone else.

²A good term by Ralph Zumbro. See Reference e.

³Inspired again by Ralph Zumbro, same reference. Mr. Zumbro has a way with words.

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The Draper Combat Leadership Award

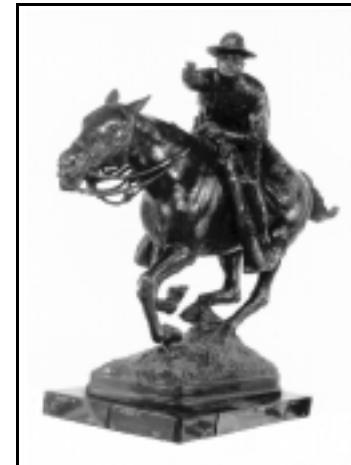
The annual Draper Combat Leadership Award recognizes the outstanding armor company or cavalry troop in each division, separate brigade, and armored cavalry regiment in the U.S. Army, to include Army Reserve and National Guard units. It is not a new award. The history of the prestigious program is the legacy of LTC Wycliffe P. Draper. In 1924, LTC Draper developed a plan to test and recognize combat leadership in small cavalry units. The first tests were held at Fort Riley, Kansas, then the Cavalry School.

Since that start nearly 70 years ago, the award has evolved. In 1928, LTC Draper created a trust fund to ensure the performance of the award and the competition expanded from Fort Riley to posts throughout the United States. In 1939, cavalry regiments that had been mechanized began to compete for the award, thus ensuring its continued relevance in a modernized Army.

During World War II, the competition was suspended, but was resumed in 1944 under the title of the Armored Cavalry Leadership Award to reflect the new reality of the force. Since then, the competition has continued to evolve.

Today the Draper Combat Leadership Award, represented by the "Goodrich Riding Trophy," is awarded not on the results of a test, but on the overall performance of a unit. This was done for both practical and economical reasons. Economically, it is no longer necessary to allocate funds for a "Draper Test"; the results of all of a unit's field exercises are considered during the competition. Examining the functioning of a unit throughout the calendar year (Jan-Dec) gives a better evaluation of the true performance of a unit and its leaders than a one-time test.

All company-sized armor/cavalry units assigned to divisions, separate brigades, armored cavalry regiments, or U.S. Army Reserve Readiness Regions are eligible



for consideration for the award. Air cavalry troops and attack helicopter companies organic to armored and cavalry ground units are also eligible. The program is open to U.S. Army, Army Reserve, and National Guard units. Troop/company winners of the Draper Leadership Award need to be identified NLT 31 March of the following year by memorandum to the Draper Custodian. Troop/company commanders, first sergeants, and the unit will receive the Draper plaque. Army Regulation 672-73 will answer most questions concerning the award process.

The Draper Award Program also recognizes individuals for their demonstrated leadership in courses at Fort Knox, recognizing the outstanding leadership graduates in both ANCOC and AOBC for their contributions and efforts while students.

The point of contact for any questions regarding the Draper Leadership Award Program is USAARMC, ATTN: ATZK-ARP (Draper Custodian), Fort Knox, KY 40121, phone: DSN 464-1321/1439 or commercial (502) 624-1321/1439. FAX: DSN 464-7585, commercial (502) 624-7585.

Kouma Tank Platoon Gunnery Excellence Competition Winners

Congratulations to the 1994/1995 winners of the Kouma Tank Platoon Gunnery Excellence Competition for a job well done. The active duty winner was 3d Platoon, D Company, 1/67th Armor, 2d Armored Division, III Corps, Fort Hood, Texas. They achieved 100 percent on gunnery hits and "T" (trained) for all tactical tasks. The reserve unit winner was 2d Platoon, A Company, 2/116th Cavalry, Idaho Army National Guard, Fifth U.S. Army. They achieved a Tank Table VIII average score of 795.

The concept for the Kouma competition was the brainchild of General Gordon R. Sullivan, the former Chief of Staff of the Army, who wanted to honor the top tank platoon in the total armored force. The competition centered around General Sullivan's guidance of "train to fight" as units are evaluated on their annual qualification gunnery tables. Units that maintain tough, demanding, and realistic training of their soldiers, crews, and platoons will be rewarded through this competition.

Making the Case for An Airborne Infantry Fighting Vehicle

by Stanley C. Crist

The XM8 Armored Gun System (AGS) will replace the M551A1 Sheridans that presently serve with the 82d Airborne. The AGS will also be used by light cavalry units and will probably enter service beginning in 1997. Although there has been some criticism of the idea of using a light tank to fight main battle tanks (MBTs), the fact is that there is no viable alternative presently available, if one adheres to the philosophy that the best antitank weapon is another tank.

The notion of employing huge gliders to transport usable numbers of M1 tanks to a combat zone, as described by Major E.C. Parrish III in "Gliders Carrying Main Battle Tanks?" (*ARMOR*, September-October 1993), is technically feasible, but it ignores economic and political realities that would almost certainly defeat such a project long before it got off the drawing board. Given the time required to design, build, test, and field military aircraft, the tank-carrying glider would probably not be in service (assuming cooperation of the Air Force, which is doubtful) until well into the next century. The AGS, on the other hand, being basically an off-the-shelf design, will be available almost immediately to give rapid deployment forces some much-needed combat power.

Comparing the AGS with the World War II M22 Locust light tank is not really valid. While the level of armor protection is similar, the 37-mm main gun of the Locust did not have a prayer of defeating the heavy armor of the German Panthers and Tigers, but the AGS' 105-mm gun can punch through any opponent it is likely to encounter.

Major Parrish does make one statement, though, that illuminates a deficiency that AGS proponents have not addressed: "Like it or not, light infantry can't move as fast... as armor, which puts our toughest soldiers at a severe disadvantage." Airborne infantry — while possessing superior strategic mobility — has the least tactical mobility once it is in-theater.



Author's concept of an airborne IFV on shortened Bradley chassis.

Recent testimony of the degree to which light infantry is impaired in this regard, especially in desert operations, comes from Captain Sean Corrigan ("The 82d Airborne In Saudi Arabia," *ARMOR*, September-October 1993), who commented, "If the situation had not been so serious, my scout platoon would have been a funny sight trudging through the sand under rucksacks over-stuffed with...gear. The defensive sector staggered us with its frontage and depth." He goes on to say, "As a lightly armed, unprotected, and dismounted task force, we could not have stopped a determined armor attack of any significant size."

This situation could be corrected, however, if we were willing to look to a former adversary for an example. The BMD combat vehicle provides Russian paratroopers with the ground mobility that mechanized infantry has long enjoyed. An Airborne Fighting Vehicle (AFV) would provide at least a ten-fold increase in tactical mobility, survivability, and overall combat effectiveness for U.S. parachute infantry.

This concept is not just a luxury; tanks need infantry support. In order to work together, infantry needs the same degree of mobility as tanks. This will probably prove to be even more important in operations involving the AGS. Because of its lesser armor protection,

relative to the Abrams, AGS doctrine will almost certainly emphasize speed. To hold out against a capable and determined foe until heavy forces arrive will mean pushing the limits of maneuver warfare to the utmost. Using dismounted light infantry in such circumstances would be courting disaster, but light mechanized troops in Airborne Fighting Vehicles could easily maintain the pace.

It would seem logical to use the Bradley Fighting Vehicle (BFV) as the basis for the AFV design. This would minimize development time and expense by using existing, battle-proven components. As weight is an important factor for an air-droppable vehicle, the two-man turret assembly should be replaced with a one-man mini-turret mounting a 40-mm Mk19 grenade machine gun or, perhaps, a 20-mm cannon (for ammunition compatibility with the RAH-66 Comanche helicopter that will accompany light forces in the future). While this might appear to be a step backwards, armament-wise, it does result in other advantages (and, in any case, the weight must come off if the AFV is to be air-droppable). One of the aforementioned advantages is that, without the turret, the chassis can be shortened by more than three feet — without reducing the number of infantrymen that can be carried — thereby

further decreasing vehicle weight. In addition, the shorter overall length might permit one more AFV to be loaded on board the transporting aircraft.

With a properly designed cargo hatch, it may be possible to have a certain percentage of Airborne Fighting Vehicles serving as mortar carriers. Mortars would probably be the only indirect fire support that light forces could rely on in fast-moving operation, as according to Captain William Prior ("Cavalry Mortars," *ARMOR*, November-December 1993), "...mortars have no logistical tail or reinforcing mission that may cause them to fall behind out of supporting range during fluid cavalry operations, as is often the case with supporting artillery."

Captain Prior also notes that, "Timely and accurate (indirect) fire can multiply the effects of the cavalry troop's direct fires many times and spell the difference between success and defeat on the battlefield." The effectiveness of mortars against heavy armor is soon to undergo a quantum leap in capability, as terminally-guided projectiles enter service, making high-mobility mortar "tracks" more important than ever.

Since a direct-fire antitank weapon is highly desirable for an infantry fighting vehicle, one should be included in the planning of the AFV. The TOW's characteristics make it less than ideal for the fast-paced combat envisioned for AGS-equipped forces. As Captain John Tien says of his experience in Southwest Asia, "In the high-speed mobile warfare of DESERT STORM, the M901A1 TOW launchers were basically ineffective; neither could we shoot them on the move, nor could we afford the stationary engagement time." ("The Future Scout Vehicle," *ARMOR*, March-April 1993). This may or may not apply to the BFV, with its stabilized weapon system, but the need for the gunner to continuously track the target from launch to impact cannot be eliminated. This trait of wire-guided missiles seriously limits the rate of fire.

Fortunately, there is a weapon system — Javelin — that will be very well suited to AFV requirements. A "fire-and-forget" missile, Javelin (see "Javelin: A Leap Forward," *INFANTRY*, January-February 1992) has a range of 2000 meters, which should be adequate for most scenarios. Even without a stabilized sight, the AFV would not have to halt for more than a few seconds to



Above, two views of a model illustrating author's concept for an airborne IFV based on a shortened Bradley chassis. Javelin missile and ASP 30-mm cannon provide firepower.

shoot. The ability to use Javelin in dismounted ambushes can further amplify the light force's fighting ability. Self-guided weapons (such as Javelin) may prove to be as revolutionary for ground warfare as they were for air combat.

Finally, although it seems unlikely that U.S. ground troops will have to operate without air superiority in the foreseeable future, the AFV can — if need be — provide air defense coverage of the combat team by carrying an ample supply of Stinger missiles.

The back cover of the September-October 1993 issue of *ARMOR* posed the following questions regarding the use of the AGS: "How should armor and light infantry forces work together? Is there room for improvement in how this type of operation is conducted?" It is not logical to use World War II methods — tanks teamed with dis-

mounted infantry — in an era of high-mobility warfare. To do so would invite both excessive casualties and mission failure. As Colonel Donald Elder so eloquently phrased it in "Force Projection and Combined Arms" (*ARMOR*, November-December 1993), "By opting for anything less than the mounted combined arms team...you by no means have (the most capable combat force)." An Airborne Fighting Vehicle would maximize the warfighting ability of early entry forces at relatively little cost, by bringing balance to the AGS/Comanche/infantry team. Can we afford not to make it?

Stanley Crist is a former tank commander, having served with the 3d Battalion, 185th Armor. He is a previous contributor to *ARMOR*.

TARGET!

A Fine New Book Focuses on Armor's Knights, Their Mounts, and Their Battles

Once every few years, a book comes along in our field that is truly a surprise. *Tank Action*, by George Forty, is just such a book. Forty takes us on a riveting trip through the earliest stages of tank warfare in World War I and continues his spellbinding ride clear through to the Coalition laagiers in the deserts of South West Asia. His vehicle for the journey, obviously, is the tank, but he takes a track to the destination wholly unlike any we've ever experienced.

To be sure, we are taken through many battles in quite some detail. And refreshingly, not all battle tales are told from the typical "good guys" viewpoint. The operating definition of a good guy in this book is anyone who can handle the wartime responsibilities of a tank commander. The focus is not on politics, geopolitical leanings, or five-star general decision-making, but on tanking and tankers. The first chapter, "The Tank Commander," clearly articulates Forty's main idea: "Tank commanders of today possess certain qualities which are as necessary when commanding a modern main battle tank as they were when tanks first appeared on the battlefield during the First World War." Through every major war, he shows us how constant those qualities are. Dirty boot stuff, loud noises, and extraordinary behavior are what Forty wants us to understand and appreciate. He lets the men who peer at the outside world through narrow slits and small periscopes, and who pull their triggers from inside armored vehicles, tell the tales of mounted warfare through their deeds. Extraordinary tank commanders are treated as such, no matter on which side they fought. We see in graphic detail the deeds of heroic men, (and one woman!), tankers all, who single-handedly made a difference at a critical time and a critical point on the battlefield.

Of course, we all know of the epic tank actions fought in this century, beginning in WWI and ending with DESERT STORM, and we wonder if some of those histories were embellished by public affairs officers with overactive typewriters. As the Wehrmacht blitzed across Western Europe, as the Axis and Allies reeled back and forth over the bleak North African Desert, as tank formations plugged holes in the embattled Pusan perimeter, and as the U.S.-led United Nations armored juggernaut rolled into Kuwait, time blurs the faces of the men who looked through rangefinders at enemy targets and caused those targets to die for their countries. Parts of some of those big battles are here, but we already know how they all turn out, and Forty knows that we know. But we don't so readily know the names, faces, and tales of the

"Tank Aces," such as LT Norman Plough, 1SGT Shelton Picard ("the one tank task force"), LT Pavel Danilovich Gudz, and CPT Alan Hart. But the author ensures that we do know them by the end of their respective chapters. Some of the aces are well known — General Israel "Talik" Tal, MSG Ernest Kouma, SS Oberscharfuehrer Ernst Barkmann — but the reason is because they were superb tankers. We find out through individual actions just what qualities these men — the famous and not so famous — possessed to make them perform so admirably. We see what it means to be technically and tactically proficient. We appreciate keenly the sacrifice it sometimes takes to get your cannon to the spot on the battlefield that can create an effect totally out of line with normal force ratio computations.

By studying individual tank crews and commanders, Forty dissects tank action through this century. He accurately captures the teamwork so elemental to the profession and honestly portrays the destructive power that direct fire cannons wield on the battlefield. I've been reading about tanking, or doing my own, for over twenty years and found the accounts truly fascinating. They reflected thorough research, contained many useful, easily understood maps, and were lavishly illustrated with photographs. Nearly every page of the book contains a picture, diagram, or map. The photos are one of the strongest features of this book. Even the most dedicated student of armor will find dozens of pictures that he has never before seen.

While he alters the pattern slightly throughout, the book generally sets up the historic situation, narrows it down to the specific battle, and discusses the action with a focus on the small unit or even individual tank. The account of General Tal personally "TC-ing" and gunning against Syrian targets at long range (over 10 km in a Centurion in the mid-1960s) is indicative of the type of fascinating information running throughout. An interesting feature after each of these discussions is the "Tank Ace" section, where Forty describes in detail the ace himself and some follow-up information so we leave knowing the ultimate fate of the warrior.

I found *Tank Action* so engrossing that the book had a "three- or four-to-one factor," i.e., every five minutes that I thought I'd spent with the book was actually fifteen or twenty. Every reader who is, was, or ever wanted to be a tank commander will be well served by adding this superb text to his personal library. I will.

— Major Terry A. Blakely, Ed.

Tank Action: From the Great War to the Gulf, by George Forty. Alan Sutton Publishing Ltd., Great Britain, 1995. \$39.95. (Available from Zenith Books, P.O. Box 1, 729 Prospect Ave., Osceola, WI 54020. 715-294-3345)

An Excerpt from *Tank Action*:

...(Lieutenant Clifford T.) Elliott's most satisfactory single engagement came the following night when he knocked out a formidable 65-ton tank destroyer — the Sturmgeschutz mit 8.8 cm PaK43/2, known as *Ferdinand* or *Elefant*, only ninety of which were ever built. The armor thickness was up to 200 mm on the front of the superstructure, so Elliott was indeed fortunate to have been able to knock it out with his Sherman. However, it was at point-blank range as he explains:

"After we had intercepted the German column at Fleron we perceived that there were probably more Germans in Liege and that they would try to get out through the main road at Fleron.

"I set my tank at a cross street in Beyne Heusay. It was still light and I told my crew to boresight the tube. We set the elevation at about six feet. I did not want to hit the front plate of a German tank, especially if it was a Panther. My tank was about four feet from the left buildings, the street was about 25-30 feet wide. This gave me an angle of 30 degrees, but it would also put the tank or vehicle about 40 feet from our tank before we could fire. My crew and I mounted our tank and sat to wait...We waited for five or six hours. It was black as the ace of spades; you could hardly see your hand in front of your face. We then heard the steel tracks on the cobblestone street. We knew that we had some worrisome times. A tank, and not some soft-shell vehicle. The German tank would come a little further and stop. I could follow the sound on the street. I believe the German tank commander knew there was an American tank up the street. He just did not know where.

"He made one more stop and I believed I could see a darker shadow. I yelled at my gunner to fire. I could see the sparks fly. Steel on steel. We fired three more times. The end of the Ferdinand!"

In the eight months that Lt. Clifford Elliott served with the U.S. 3rd Armored Division, his tank destroyed over 250 pieces of German equipment, including tanks, trucks, artillery pieces, antitank guns, and even a train. He was wounded four times, knocked out of eight tanks, and received the Bronze Star and four Purple Hearts...

The Battle of the Bridges:

Kuwait's 35th Brigade on the 2d of August 1990

by Major Robert A. Nelson

On 2 August 1990, Iraqi forces invaded and seized the State of Kuwait. The Kuwaitis were not prepared for this onslaught and were unable to mobilize and mass their forces in time to prevent or delay the Iraqi forces from achieving their objectives. One brigade, the 35th "Shaheed" Brigade, was able to deploy and, for several hours, delay significant Iraqi forces. This is the story of the 35th Brigade's efforts to defend Kuwait.

Background

Iraqi claims to territory in Kuwait are older than the modern state of Kuwait and are primarily based on territory held by the old Ottoman Empire. After Kuwait gained its independence from Britain in 1961, this dispute threatened to cause war on several occasions.

Shortly after Kuwait gained independence from Britain on 19 June 1961, Iraq threatened to invade Kuwait, claiming that Kuwait was an integral part of Iraq. British troops went to the area and took position on the Mutlaa Ridge until the Arab League could mobilize forces to assist Kuwait. The Arab League nations maintained their forces in Kuwait until February 1963, when a revolution in Iraq toppled the government. The new government issued conciliatory statements and the Arab League forces withdrew.

In the following years, Iraq repeatedly demanded that Kuwait relinquish control of Bubiyan and Warbah Islands, arguing that forces positioned on these islands could control access to the Shatt al Arab and Shatt al Basrah canals. Yet the Kuwaitis had never attempted to control or restrict commerce through the area.

In March 1973, Iraq invaded Kuwait and seized a border post and territory three kilometers in depth in the vicinity of Umm Qasr, along the northeast coast. Iraq withdrew under pressure from the Arab League after securing

low-cost loans from Kuwait. A subsequent border dispute was shelved in 1983 due to Iraq's involvement in the Iran-Iraq war. Kuwait supported Iraq in that war through low-cost loans and use of Kuwaiti port facilities.

At the end of the Iran-Iraq war, Iraq had a large debt. Iraq also possessed a large and experienced army. The crisis leading to the 1990 invasion began to build in the aftermath of the war. On 30 May 1990, Saddam Hussein began to complain of noncompliance on production quotas and oil prices by members of OPEC. A few weeks later, on 15 July, Iraq named Kuwait and the United Arab Emirates as the culprits. Kuwait was also accused of establishing installations to pump oil from the Iraqi side of the Ar Rumaila oil field and, thus, of stealing Iraqi revenues. Further accusations came on the 21st of July when Iraq accused Kuwait of not supporting Iraqi projects concerning commerce and transportation. Kuwait announced on 28 July that it would reduce its oil production. At a further meeting held in Jeddah, Saudi Arabia, Kuwait tried to settle the crisis. The meeting on the 1st of August quickly broke down in the face of Iraqi demands for oil, loans, and territorial concessions. The Iraqis probably never intended for diplomacy to succeed. Their forces began moving on the 17th of July and were set in their attack positions by the 1st of August.

Friendly Forces

The Kuwait Land Forces consisted of four brigades, plus the Amiri Guard and the Commandos Battalion. The 6th Mechanized Brigade was in the north, with M113s, BMP-2s, and Vickers tanks. The 15th Mechanized Brigade was south of Kuwait City, with Chieftain tanks and M113s. The 80th Infantry Brigade was in Jahra, with light infantry and some Saladin armored cars. Finally, the 35th Armored Brigade was west of Jahra on the Salmi road.

The 35th Brigade, commanded by then-Colonel Salem Masoud Al Sorour, included the 7th and 8th Tank Battalions, 57th Mechanized Infantry, an antitank company, and the 51st Artillery Battalion. Both tank battalions were armed with Chieftain tanks. While the 7th was in garrison, the 8th Tank Battalion was deployed without its tanks on a routine mission guarding the northern oil fields. In the days prior to the invasion, the commander of the 8th Battalion brought the 3rd Company back from the oil fields.

The 57th Infantry Battalion was equipped with a mix of M113s and BMPs. It also had two companies deployed dismounted, one on Bubiyan Island, and one on Faylaka Island. The brigade antitank company had Improved TOW Vehicles and the 51st Artillery Battalion had M109A2 155-mm self-propelled howitzers.

The Kuwaiti version of the Chieftain tank MK 5/2, although aging, was still a formidable fighting platform. It mounted a 120-mm main gun with a laser rangefinder, ballistic computer, infrared night sight, and target designating capability. Although the Chieftain has a muzzle reference sensor, the 35th Brigade was unable to boresight the tanks on the day of the battle. The weakness of the Chieftain lies in the power train. The tank is underpowered; the engine will only achieve 720 bhp and is very prone to breakdown. Most Kuwaitis describe it as "Good gun, bad engine." The Chieftain was due to be replaced by the M84 in the Kuwaiti Land Forces.

Enemy Forces

Republican Guard units led the Iraqi forces. Originally, this force was Saddam Hussein's security force, but the Guards expanded into a full corps during the Iran-Iraq war. By the end of that war, the Republican Guards emerged as Iraq's striking force, usually the main effort of offensive opera-



The Kuwaitis fought the Battle of the Bridges with the British Chieftain MBT, at left, equipped with an excellent 120-mm rifled gun, but cursed by power train reliability problems. Infantry carriers include the Soviet BMP, above, and the U.S.-built M113.

tions. The Hammurabi Mechanized and Medina Armored Divisions led the Iraqi attack. Each division had three brigades, two armored brigades and one mechanized in the armored division, or two mechanized and one armored in the mechanized division. Each also included artillery, usually three battalions of 2S1 and one of 2S3, with an engineer, commando, air defense, and reconnaissance battalion plus logistics elements. Each maneuver brigade consisted of three tank battalions and one mechanized or three mechanized and one tank. The brigade also had a reconnaissance platoon and mortar battery.

The principal weapons of these divisions were the T-72 tank and BMP Infantry Fighting Vehicle. The T-72 is armed with a 125-mm smoothbore gun with laser rangefinder, ballistic computer, and infrared night vision equipment. The main gun is stabilized on two axes. The Iraqi version has the "Dazzler" device mounted on the turret to defeat ATGMs; however, it is not effective. The main advantages of the T-72 are the low profile and ease of operation and maintenance. The Iraqis had both the BMP-1, with 73-mm gun and AT-3 missile, and BMP-2, with a 30-mm gun and capable of firing the AT-4 and 5.

At 2200 hours on 1 August, the 35th Brigade operations officer learned of the impending invasion and placed the brigade on alert. The officers and men, alerted by telephone, quickly assembled. Soldiers were on leave or unable to report so, in some cases, new crews

were assembled on the spot. CPT Nasser, XO of 7th Battalion, took soldiers and checked their background. If a clerk had been previously trained as a tank gunner, CPT Nasser assigned him to a tank crew as a gunner.

The tanks and howitzers were not uploaded in normal peacetime routine. Ammo upload took most of the night. According to MAJ Khasan Dawud of the 51st Artillery Battalion, the officers and men worked side by side, without any regard for rank. There was a great deal of confusion and speculation, and periodically the soldiers received updates on the situation. Many believed this would be a repeat of the 1973 Iraqi occupation of the border areas.

At 0030 on the 2d, the brigade received information the Iraqis occupied Al Ratka; by 0100, they occupied all of the frontier boundary centers in the north.

From the brigade commander's perspective, things were very confused. There were many tasks to be done and the situation was unclear. A significant number of personnel were still deployed executing routine peacetime guard missions and could not be recalled in time to fight with the brigade. The subordinate units took about eight hours to upload ammunition and supplies. Unfortunately, they were unable, despite their haste, to load everything necessary in the limited time. The 8th Battalion did not load enough water, a critical item in Kuwait in August. The artillery battalion could only prepare seven of their 18 guns. Furthermore,

the guns were not loaded with a complete mix of ammunition. This limited their options later when they executed fire missions. COL Salem departed the camp at 0430 and joined the antitank company. The rest of the units cleared the camp by 0600. They dispersed to deny the Iraqis a good target.

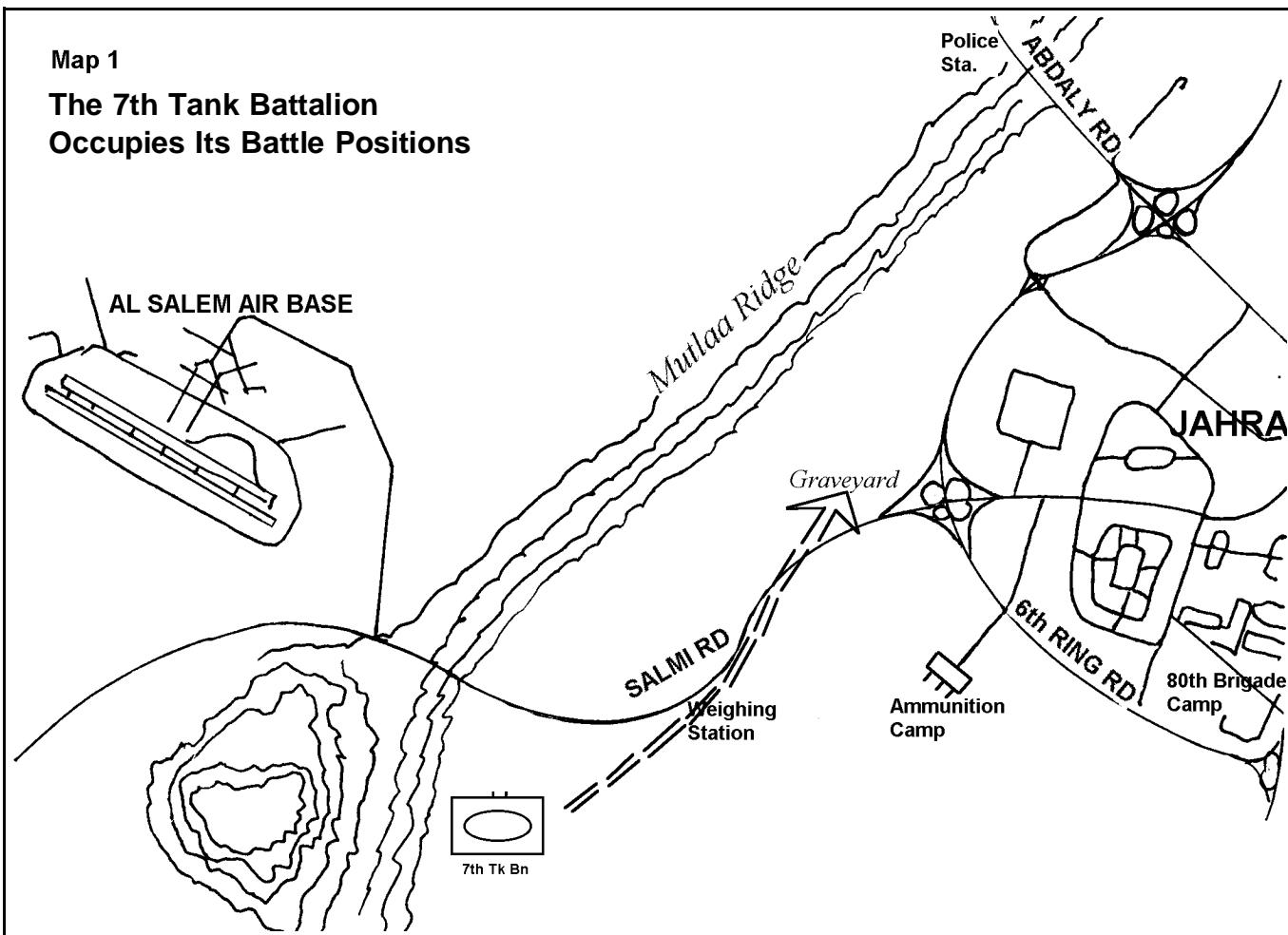
The antitank company initially deployed in two sections, one section went to the Al Salem airbase to provide security, and the second to secure the intersection of the 6th Ring Road and the Salmi Road. During their move east along the Salmi Road, they witnessed an Iraqi air raid on the Al Salem airbase. The remaining forces of the brigade moved out of the camp as they completed assembly. The 7th Battalion assembled three companies with 9, 10 and 7 tanks in each company, plus the battalion commander's tank (which broke down during the movement east). The 3d Company of the 8th Battalion had 10 tanks, the single company from the 57th had about five BMP-2s plus several M113s and, finally, there was a composite firing battery from the 51st Artillery Battalion with seven guns.

The Battle of the Bridges; First Phase

The 7th Tank Battalion led the remainder of the brigade. They moved east along the Salmi Road to the vicinity of the Al Ghanim Oasis and took positions near the graveyard north of the road. At about 0645, LTC Ahmad

Map 1

**The 7th Tank Battalion
Occupies Its Battle Positions**



Al Wazan sent a reconnaissance vehicle forward to the vicinity of the police station on the Mutlaa Ridge to investigate activity on the Abdaly Road. The recon party moved forward and identified Iraqi forces coming down the ridge attacking both east and west of Jahra. COL Salem contacted LTC Al Wazan and directed him to occupy positions in the vicinity of the graveyard (See Map 1). When LTC Al Wazan arrived at the site, COL Salem gave him instructions and oriented him on the enemy force coming down from the Mutlaa Ridge. The Iraqis continued west in column along the 6th Ring Road. COL Salem directed the 7th Battalion to engage, LTC Al Wazan gave the order to open fire. The 7th Battalion began engaging the Iraqi column. The recon party, still forward, cut through the graveyard to escape back to friendly lines without being hit by either side.

The Iraqi forces were elements of the Hammurabi Division, the lead division on the Iraqi northern axis. It attacked with two brigades south along the Abdaly Road and one brigade from Umm Qasr down the east coast. The division

attacked directly south and east of Jahra along Highway 80 as well as west of Jahra on 6th Ring Road. The elements moving east of Jahra were briefly delayed by three Saladin armored cars from the 80th Brigade before continuing their attack into Kuwait City. Those elements moving down the 6th Ring Road apparently did not expect any opposition. They moved in column on the road and did not recon or secure their flanks.

The Chieftains, firing at a range of 1,000 to 1,500 meters, were very effective; the Kuwaitis hit numerous vehicles and caused the column to halt. However, due to confusion at higher echelons, LTC Al Wazan received an order to cease firing and return to garrison. After several minutes, he decided that the order was inappropriate and resumed engaging the Iraqis.

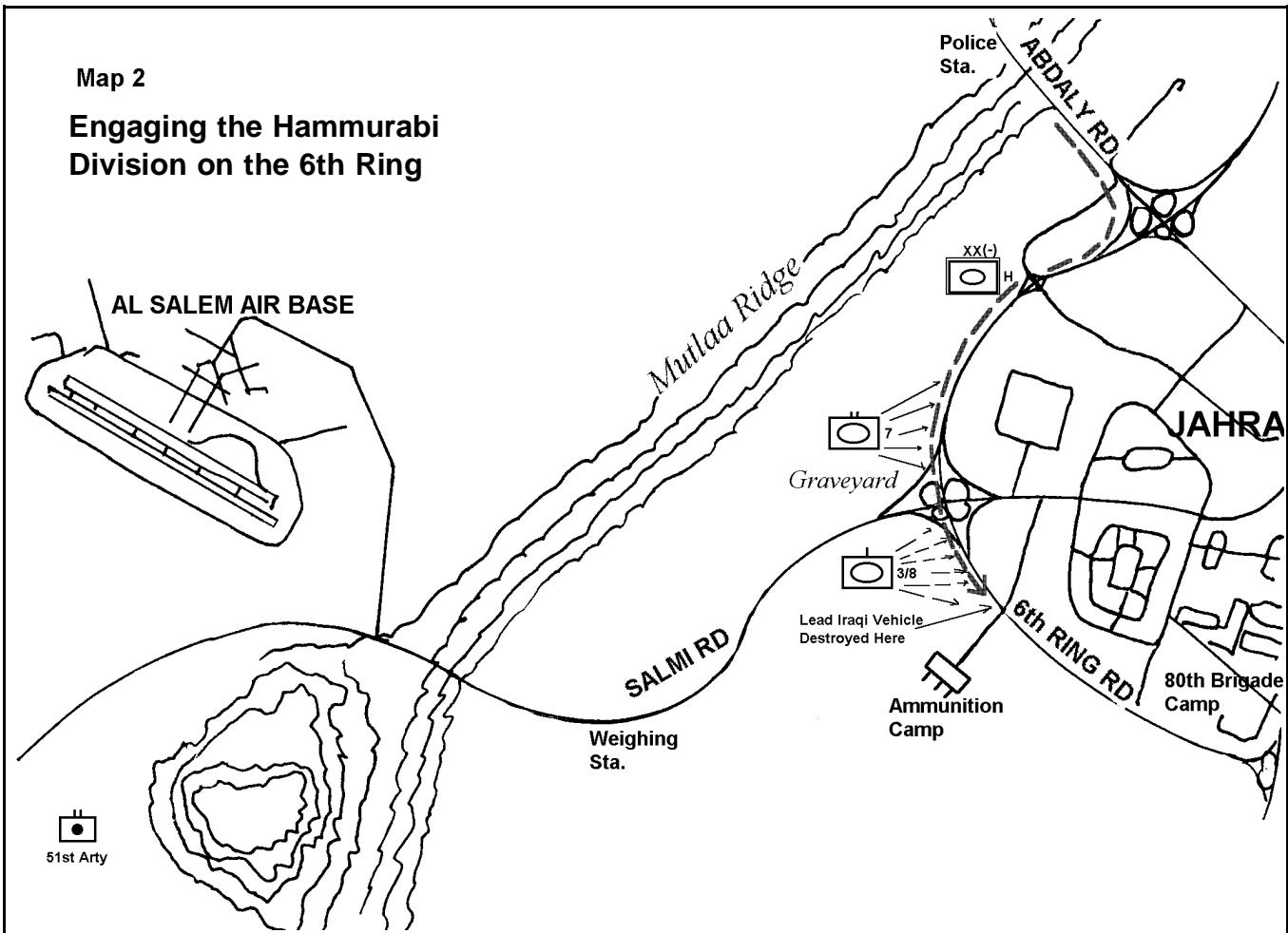
While the 7th Battalion engaged the Iraqis from the north side of the Salmi Road, the 8th Battalion arrived on the south side. The 3d Company commander, CPT Ali Abdulkareem, received an order to move his company across the 6th Ring Road and attempt

to free the 80th Brigade, trapped in garrison by the Iraqis. The 6th Ring is a six lane divided highway with concrete barriers separating the north and south lanes and not easily crossed. The Iraqis controlled the two northern bridges and there was a long detour to reach the next bridges to the south. CPT Ali moved forward in his tank, covered by his company, to conduct a personal reconnaissance. Due to the difficulties in finding a crossing site and continued Iraqi movement south on the 6th Ring Road, the 8th Battalion was subsequently directed to tie in with the 7th Battalion and stop Iraqi movement along the 6th Ring.

When CPT Ali closed on the southern flank of the 7th Battalion, LTC Al Wazan at first did not recognize them. He thought the Iraqis were attempting to turn his flank from the south and directed a TOW platoon to move to cover his flank. He said later, "You know, I almost killed my friend. I gave the order to prepare to engage and we had our fingers on the trigger. But then, thank God, we saw the Chieftains and stopped." This was to be a very lucky day for CPT Ali.

Map 2

**Engaging the Hammurabi
Division on the 6th Ring**



CPT Ali positioned his company south of the Salmi Road to cover the two bridges over 6th Ring. A car pulled up driven by one of the battalion's gunners who was on leave. This soldier was one of the best tank gunners in the battalion and joined CPT Ali's crew. CPT Ali scanned the sector and identified an Iraqi command vehicle under the southern bridge that crosses 6th Ring Road. He gave the order to fire, but his company did not respond at first. He gave his gunner the order to fire and destroyed the vehicle under the bridge. (The burn marks are still visible underneath this bridge.) The Iraqis were now trapped on the road. The rest of the company, following CPT Ali's example, now began engaging the Iraqis (See Map 2). At first, all tanks fired at the same target, CPT Ali quickly directed his crews to distribute their fires across the entire front. The enemy did not respond aggressively, abandoning their vehicles and hiding along the road. A tank platoon attempted to maneuver against the 3rd Company by going around the artillery camp and attacking from the east. The company destroyed them.

While CPT Ali's company engaged the Iraqis on the road, a flight of 30 HIP helicopters flew across his front toward Jahra. Although CPT Ali wanted to engage them he was not able to elevate his gun high enough. He was not concerned until he saw a HIND at the trail of the formation. He recognized the threat but could not bring his gun to bear. The HIND turned and hovered as if it was preparing to engage. Again, CPT Ali's luck was with him. The HIND hovered for a few minutes, then turned to follow the rest of the formation.

Iraqis continued to come down the 6th Ring Road, apparently unaware of the situation. A convoy of cargo trucks loaded with soldiers passed in front of 8th Battalion. The Kuwaitis engaged the trucks, and several hundred troops dismounted. Instead of deploying to fight, most of the soldiers merely sat down on the side of the road to await the outcome of the day's events. Some Iraqi infantry moved into the ammunition camp on CPT Ali's right flank. His flank tanks received small arms and RPG fire, but took no losses. Ali also

destroyed a 2S1 still mounted on a transport, indicating the Iraqis were still unaware and unable to react to the 35th Brigade's fires.

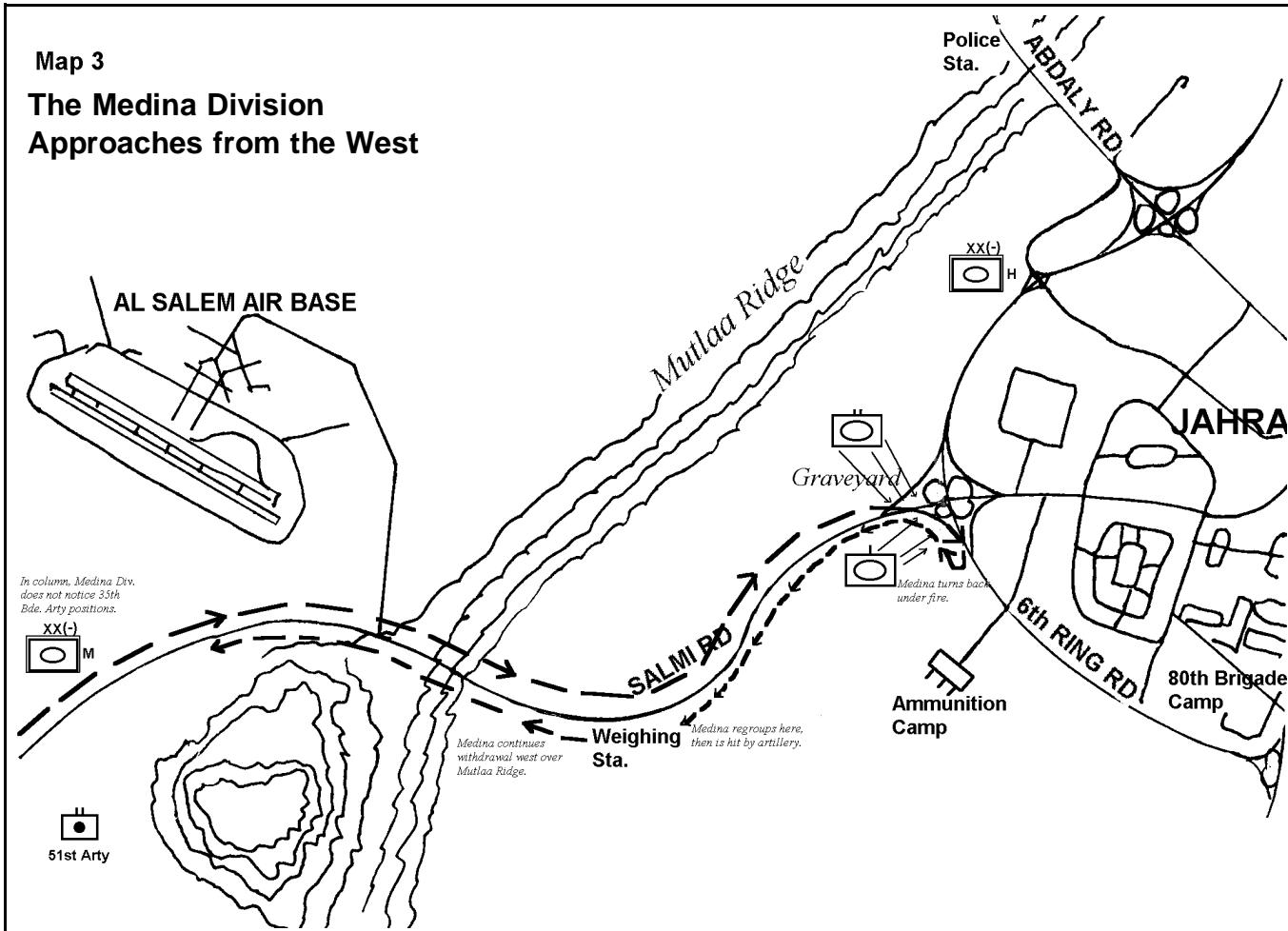
Events slowed down along the 6th Ring Road. The Kuwaiti artillery continued to engage the Iraqi soldiers sheltering among the wrecks and behind the embankment along 6th Ring Road. Some Iraqi soldiers attempted to surrender, but the Kuwaitis turned them back because they did not have enough soldiers to secure prisoners. The Kuwaitis took advantage of the lull in the fight to send vehicles back to the brigade camp to replenish ammunition.

**Battle of the Bridges,
Phase Two**

At about 1100 hours, the 35th Brigade received information about a force coming from the west towards Jahra. The Kuwaitis identified an armored force approaching from their rear. The Kuwaitis thought this was a Gulf Cooperation Council force moving up to reinforce them. Some of the

Map 3

The Medina Division Approaches from the West



vehicles flew green flags that the Kuwaitis first took to be Saudi Arabian. CPT Khasan walked over to question the lead vehicles. As he approached, he realized that this was an Iraqi force because it was equipped with T-72s and BMPs, but he was too committed to turn around. He asked the crew of the lead vehicle their identity and location of their commander. The crew answered, Khasan turned around, walked back, and passed the information to the brigade. The Iraqis continued to drive east along the Salmi Road between the 7th and 8th Battalions. When the lead vehicles turned south on the 6th Ring, Kuwaitis fired into them. The 7th Battalion turned to engage along their right flank and rear while the 8th Battalion engaged a company-sized force to their front on 6th Ring Road.

These Iraqis were the lead brigade of the Medina Division. This division attacked from the west along the Salmi Road. Like the Hammurabi, they were still in column on the road and had no idea of the resistance by the 35th Brigade. Information found after the war indicated there was no direct contact

between the Hammurabi and the Medina Divisions. In fact, the Medina drove past the artillery firing positions and reserve tanks of the 35th Brigade who were south of the Salmi Road in the vicinity of the Al Salem Airfield.

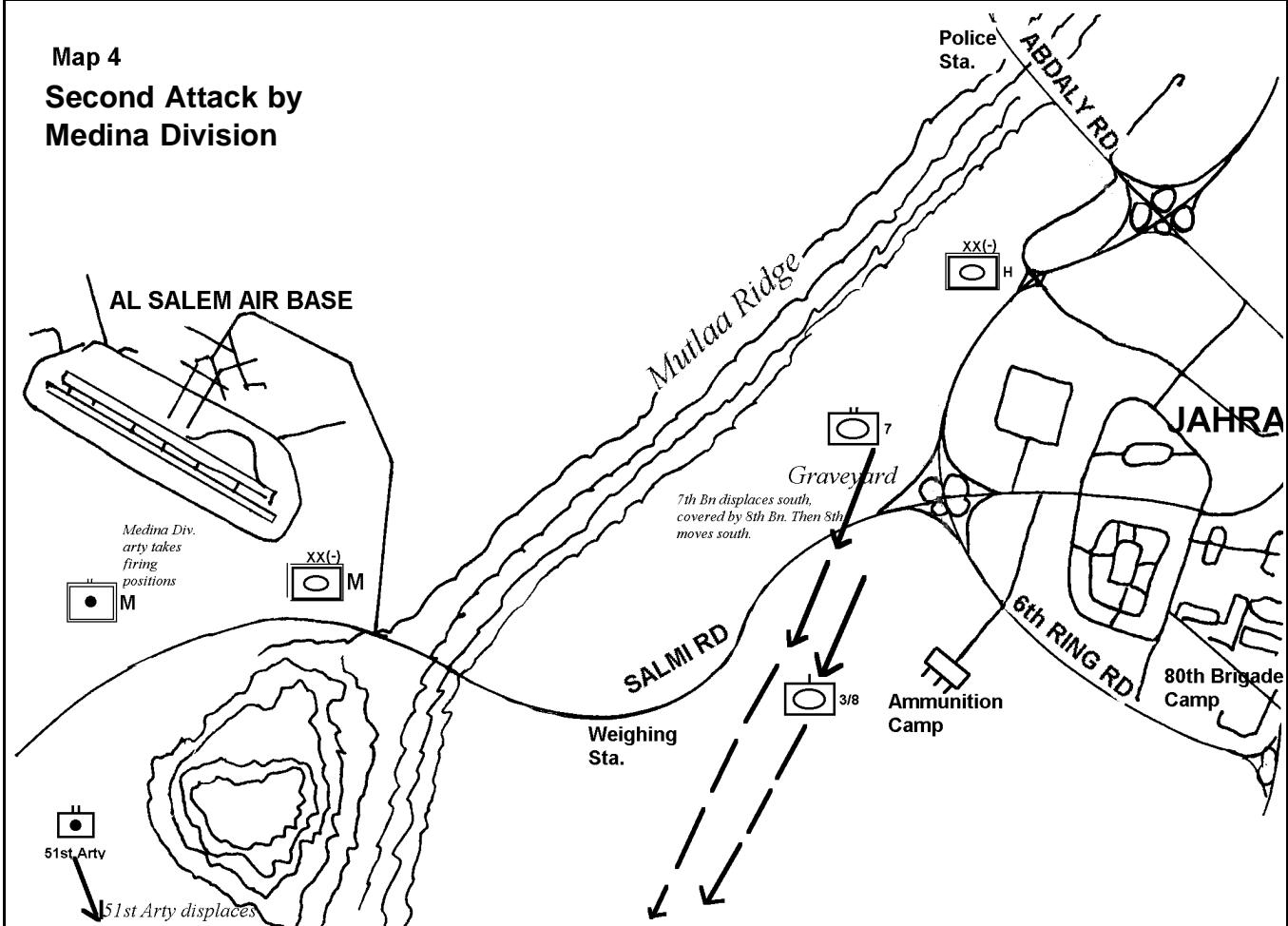
The fires of the 7th and 8th Battalions caused heavy casualties and attrition in the lead brigade. The Kuwaitis captured six prisoners, The brigade operations officer, LTC Suleiman Al Huwail, questioned them and they identified themselves as members of the Medina Division.

The Iraqis withdrew towards the west along the Salmi Road, temporarily halting to regroup at a truck-weighing station located about three kilometers from the 7th and 8th Battalions positions (See Map 3). The Kuwaitis quickly brought effective artillery fires on this point, causing additional casualties and confusion among the Iraqis. LTC Fahad Ashush, the 51st Artillery Battalion commander and CPT Khasan Dawud, the 2d Battery commander were forward acting as observers. The guns were manned by composite crews of all ranks because the battalion had

not fully assembled. MAJ Nabil Saleh, the battalion XO, commanded the guns. These fires caused the Iraqis to continue to withdraw to the west over the Mutlaa ridge. Unfortunately, the Iraqis established their own artillery in firing positions just north of the Salmi Road on the west end of the Mutlaa ridge. They placed accurate fires on the Kuwaiti positions. Several rounds hit near the brigade command group, seriously wounding the artillery battalion commander, LTC Fahad. MAJ Nabil, the battalion XO, took command of the battalion.

While the 51st Battalion was engaging the Medina Division, a Kuwaiti A-4 Skyhawk appeared. It flew around the Kuwaiti artillery position twice and attacked the Iraqi columns just to the north along the Salmi Road. The artillerymen were concerned that they might also be targeted because they were close to the Iraqi force. They had good reason to be concerned. LTC Majed Al Ahmad, an A-4 pilot, flew one of the strikes against the Iraqis along both the Abdaly and Salmi Roads. Due to the rapid pace of the invasion, he

Map 4
Second Attack by
Medina Division



was not given a clear picture of events on the ground nor was a forward air controller or communications available with the ground forces. Under the control of the Al Salem Airbase controller, he hit both the Hammurabi and the Medina Divisions with a total of five MK-82, 500-pound bombs. He was unaware of the positions of the 35th Brigade and could not identify the Chieftains during his bomb runs. MAJ Majed targeted the Iraqis because he was directed by the controller at Al Salem to hit the columns on the road. He returned to Al Jaber Airfield after being hit by a surface-to-air missile.

The Iraqis threatened to attack the artillery with a company of BMPs and fired several rounds of 30mm in their direction. Although several rounds hit the position, the Iraqis were firing armor-piercing instead of high explosive ammunition and did not get a direct hit or cause any casualties. The gunners prepared to engage them with direct fire and the Iraqis did not continue the attack. The artillery moved south and east to new firing positions that were farther away from the Iraqis and less exposed.

The Medina regrouped and attacked again, this time with two brigades deployed. The unit commanders informed COL Salem they were running short of ammunition, in particular tank main gun rounds. Most tanks were down to two or three rounds of main gun ammunition. COL Salem requested reinforcements and support from headquarters, but there was no additional support available. To prevent the brigade from being encircled between the Hammurabi and now-deployed Medina Divisions, COL Salem directed a withdrawal to new positions south of the Salmi Road. The 8th Battalion covered the 7th Battalion's initial move (See Map 4).

The 51st Artillery Battalion set ten kilometers to the south and prepared to fire. They were delayed in firing while observers moved into position and then again by communications difficulties. MAJ Nabil had difficulty contacting the brigade commander to help cover the repositioning. CPT Nasser, XO of the 35th Brigade, took charge of the tanks of the two reserve platoons and prepared to attack the enemy. Commu-

nication was re-established and the attack canceled.

While his company covered the movement of the 7th Battalion, CPT Ali stood on his turret to gain some relief from the heat. For no apparent reason, his driver moved the tank about ten or twenty meters. The driver had never moved the tank without specific directives before. As soon as the tank moved, an Iraqi main gun round hit the position they just vacated. After the 7th Battalion set, the 8th Battalion began to move and again, CPT Ali was misidentified as Iraqi and almost engaged.

The brigade continued moving south to a subsequent position to escape the closing Iraqi pincers. While repositioning, they received a directive from higher headquarters to move toward the 15th Brigade camp to replenish and continue to defend. However, higher headquarters did not have an accurate picture of the battlefield and communication was tenuous at best. Joint headquarters informed COL Salem to take whatever action he considered necessary. He decided to withdraw to position his back against the Saudi border



Members of the Kuwaiti 35th "Shaheed" Brigade and the Chief of the U.S. Office of Military Cooperation Kuwait. From left to right: Major Ali Abdulkareem, Major Nabil Saleh, Major Nasser Dowailah, Brigadier General Ivany, Brigadier General Salem Al Sorour, Colonel Ahmad Al Wazan.

and secure his flanks and rear against envelopment during the night. Thus, the brigade continued to move south and set on the Saudi border, arriving at about 1630. The brigade remained in position through the night. LTC Ahmad Al Wazan, along with a recon element, moved into Saudi Arabia and made contact with the border police and informed them who they were and the brigade situation. The brigade entered Saudi Arabia the following morning. After the last units withdrew into Saudi Arabia, an Iraqi air-strike hit the vacated positions.

The Saudis assisted the brigade in reorganizing and resupplying. While some units, such as the 7th Battalion, were relatively well supplied with water during the fight, others were suffering badly from a lack of water and all suffered from fatigue. At one point, both Kuwaitis and Iraqis alternated purchasing water from the same roadside vendor, soldiers from both sides calmly lining up to pay.

Conclusion

The 35th Brigade was able to inflict heavy casualties on the Iraqis and delay the movement of two divisions. Had the Kuwait Army had been able to organize the entire force into a cohesive defense, they may have delayed the Iraqis long enough to allow the Gulf Cooperation Council Forces to assemble and reinforce them.

The Kuwaiti armed forces continue to face this challenge today. Iraq and Iran both present a significant long-term threat to peace and stability in the region. Kuwait must look to the lessons of the Battle of the Bridges as it con-

tinues to modernize and develop its ability to defend itself.

Postscript

Brigadier General Salem hosted the members of the United States Office of Military Cooperation-Kuwait on a staff ride of the Battle of the Bridges on 8 April 1995.

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Interviews

Ahmad Al Wazan, Colonel, Executive Officer, 35th Shaheed Armored Brigade. Colonel Al Wazan was a lieutenant colonel and commander of the 7th Tank Battalion at the time of the invasion.

Ali Abdulkareem, Major, Commander, 8th Tank Battalion. Major Ali was a captain and commander of the 3d Company of the 8th Tank Battalion on the 2d of August. He had just returned to Kuwait after completing the U.S. Army Armor Officer Advanced Course in June at the time of the invasion.

Bader Al Dehani, Major, Executive Officer, 63d Battalion, currently acting as an assistant operations officer in 26th Brigade. Major Bader was assigned to the 35th Brigade intelligence section

during the invasion.

Khasan Dawud, Major, Executive Officer, 51st Artillery Battalion. Major Khasan was a captain and commander of the 2d Battery, 51st Artillery Battalion during the invasion.

Majed Al Ahmad, Lieutenant Colonel, Operations Officer at Al Jaber Airbase. Majed was a major at the time of the invasion. He flew A-4 Skyhawks from Al Jaber Airbase.

Nabil Saleh, Major, Commander of the 51st Artillery Battalion, also serving as an assistant operations officer at Land Forces. Major Nabil was the XO of the 51st Artillery Battalion at the time of the invasion. Major Nabil had recently returned to Kuwait after completing the Field Artillery Advanced Course in the Spring of 1990.

Salem Masoud Al Sorour, Brigadier General, Commander, Kuwait Land Forces. General Salem was a colonel, commander of the 35th Brigade during the invasion. He lead the brigade back into Kuwait during Operation DESERT STORM.

The following officers reviewed this article:

BG Salem Al Sorour, COL Ahmad Al Wazan, COL Nasser Khames Al Zaabi, MAJ Nabil Saleh, MAJ Nasser Dowailah, MAJ Ali Abdulkareem, and MAJ Suleiman Al Huwail.

Major Robert A. Nelson is currently assigned as the training advisor to the Kuwait Land Forces. Previous assignments include 3d ACR, 1st Armored Division and the National Training Center.

MISSION:

Combat Reconnaissance Patrol

by Captain Daniel B. Miller

"Everything in war is very simple, but the simplest thing is difficult."¹

On 18 February 1991, I Troop, 2d Armored Cavalry Regiment received a mission to reconnoiter the terrain in our sector of responsibility along the Saudi Arabia-Iraq border. The patrol had to pay particular attention to the "border berm," and to locate primary and alternate crossing sites. This was in preparation for "Phase I," the regiment's crossing into Iraqi territory on G-1. For OPSEC reasons, the patrol had to execute the mission on foot.

In peacetime, this would have been almost too easy. As troop commander, I would select one of the scout platoons, have the platoon leader select a scout section, and follow the usual troop leading procedures. The scouts had routinely executed similar patrols along the Czech border, and at the CMTC (Hohenfels). This was not peacetime, however, and the decision about who would go was not that simple.

"Train as you fight" is a vital rule of thumb. It is easier said than done, however. This was the troop's first combat action since WWII. I had absolute confidence in 1LT Tom Isom, the 3d platoon leader, (later to earn the Bronze Star for valor at 73 Easting). An experienced scout platoon leader, he had led patrols before, often with great success.



PHOTO: Greg Stewart

1LT Isom had shown that he was fully capable of planning, organizing, and leading the patrol. All he needed was appropriate support from 3d Squadron and myself.

However, I had a big question to answer. That question was whether or not to lead the patrol myself.

It might seem as if this was a question that did not even need consideration. But several factors made this a difficult decision. Only two soldiers in the troop (SFC Mullinix and SSG Thacker) had combat experience, both in Vietnam. I was obviously in the non-veteran category, and therefore an unknown quantity in the Iron Troopers' eyes. Everything I did or did not do would factor into their view of me as a

worthy leader. I did not want to make a poor decision here, and start off with a bad precedent. Several factors influenced my final decision.

Strong lessons from military history teach that the vast majority of successful commanders led from the front. My experience of observing and working for several commanders had proved the validity of this lesson. To me, the front would be with the patrol, not in "the rear" (defined as anywhere behind the patrol).

In addition, many successful battlefield commanders showed a virtual contempt for danger, both real and potential. Some paid the ultimate price for their actions, but their soldiers never doubted their personal courage for a moment. I did not want to appear a shirker or a coward to the troopers by asking them to do something I apparently was not willing to.

The last factor influencing my inclination to lead the patrol was that by doing so, I would see the ground on which the troop would operate. Again, numerous examples in history point out how critical it is to know the ground. History is also replete with examples of the high price paid in soldier's lives when their commanders did not have an appreciation of the terrain. At this point, my knowledge of the terrain was from map reconnaissance and some

"My final decision was a compromise. While I did not actually go on the patrol, I moved as far forward as possible with the FIST-V and the Bradleys of the scout section assigned for extraction. I viewed as much of the terrain as possible from the FIST-V's hammerhead..."

Aviation and Special Forces intelligence reports. As far as I knew this would be (and was) my only chance to personally view the ground.

Several factors mitigated against leading the patrol, however. 1LT Isom's credibility as a leader was on the line as well. His platoon was looking for and expected the same quality leadership from him as the troop did from me. No matter how I tried to convince LT Isom and the soldiers, leading the patrol myself would show I lacked confidence in his ability. Neither he nor I could afford that, as we still had to get through the rest of the operation.

Attaching myself to the patrol while letting LT Isom lead it was not a viable option. It would still look to the soldiers as if I were checking on or "babysitting" him. In addition, if I went on the operation I would be THE leader. Lieutenants should not lead captains, and allowing this to occur would be wrong for both of us.

Both doctrine and "train as you fight" dictate that the commander place himself where he can best control his unit. If I went on the patrol, my span of control would effectively be the eight soldiers on it, even with a radio. Orchestrating an extraction under fire would be extremely difficult at best if I were pinned down with the rest of the patrol. The XO, 1LT Paul Calvert, was fully qualified to do this himself, but should this be his responsibility, or mine?

Also, I was neither a world-class scout, nor a normal member of that team. Both points, but particularly the latter, made me more of a potential disadvantage than an asset. Again, "train as you fight" seemed to indicate that my role lay somewhere other than with the patrol.

On a personal level, I am somewhat accident-prone. Due to the enemy situation as we knew it, I was not particularly concerned with getting shot. But I

was deathly afraid of doing something stupid, like breaking an arm or a leg in a fall. While no one person is irreplaceable, I did not want to miss the upcoming operation doing something I was not supposed to. As it was, I had my head split open by a tent pole the day before we crossed the border. Fortunately for me, my gunner patched me up, and I was able to lead the troop into Iraq.

It seems trivial now, but at the time I agonized over what I should do. My training told me to let LT Isom and 3d Platoon accomplish the mission. My gut kept making me reconsider that decision. Fortunately, I was able to talk it over with the XO, LT Calvert. He is a highly professional officer, and we were able to discuss it in a detached manner.

My final decision was a compromise. While I did not actually go on the patrol, I moved as far forward as possible with the FIST-V and the Bradleys of the scout section assigned for extraction. I viewed as much of the terrain as possible from the FIST-V's hammerhead, which also allowed me to occasionally glimpse the patrol as it moved to its various observation locations. With the communications capabilities afforded by the FIST-V, I could effectively coordinate the actions of the troop, while being as far forward as physically possible.

In the end, the patrol was successful. They made no contact, brought back valuable information on suspected enemy locations, and selected not two, but three, potential crossing points. They also gave me the make-up of the border berms, and an estimate of how easy it would be for the ACE to breach it. Even though there was no sign of enemy activity, the fact that the patrol went off without a hitch set a good precedent for the troop. LT Tom Isom had a great start on proving himself as a combat platoon leader. I was still an

unknown quantity to the troop, but we had "fought as we trained."

The point of this article is that in a combat situation, simple decisions are not always so simple. Given roughly the same set of circumstances, other troop commanders in the regiment went on the patrol with their scouts. I decided to fight as we trained. Perhaps I agonized over something that should not even have been an issue. There are other solutions to this dilemma. What would you have done?

Notes

¹Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), p. 127.

The author would like to thank LTC Gerard T. Hopkins for his assistance in the preparation of this article (proofreading and review).

Captain Daniel B. Miller was commissioned in 1984 from the U.S. Military Academy. He has served with 3d Battalion (Abn), 73d Armor as a platoon leader, XO, and assistant S3; 3d Sqdn, 2d ACR as assistant S3, S4, and troop commander; and as commander, I Troop, 3/2 ACR during DESERT SHIELD/DESERT STORM. A graduate of AOBC, AOAC, CAS³, Airborne, and Jumpmaster Schools, he is currently assigned to ROTC at St. John's University, Queens, N.Y.



The Work Order Logistics File (WOLF)

by Tom Ress

Would you like to know which repair parts were the most frequently used in 1993 in maintaining an M1A1 tank? How about the average number of hours it takes to repair a HMMWV engine? Or the main components that are causing maintenance actions on the HEMTT? How many days does it take to return a Bradley to a unit when it is inducted to indirect support maintenance?

All of these questions and more can be answered by simply picking up your phone and calling the Army's USAMC Logistics Support Activity (LOGSA).

The LOGSA, located at Redstone Arsenal, Alabama, operates and maintains a centralized data base of worldwide maintenance data generated from the direct support and general support (DS/GS) maintenance activities. This data base, called the Work Order Logistics File (WOLF) provides Army managers with the capability to perform maintenance and logistics analyses on fielded equipment and units. This data base can answer the type of questions posed above and many others.

The best thing about the WOLF is that it imposes practically no burden on

the units, but in turn provides the capability to store and access worldwide historical maintenance data — a capability which is not available to field maintenance units. The WOLF can be used by any unit or activity in the Army to analyze maintenance actions or equipment maintenance factors.

How does the data get from the field to the WOLF? The process is easy and painless. The data contained in the WOLF are generated directly by the field maintenance support activities. Those DS/GS maintenance activities that use the Standard Army Maintenance System (SAMS) for their day-to-day maintenance management functions end up reporting to the WOLF. This submission is done by the SAMS-2 sites which forward closed maintenance actions generated at the SAMS-1 sites to LOGSA or electronically via floppy diskette on a weekly basis. The data submitted to LOGSA includes all maintenance actions completed since the previous week. The key to the usefulness of the WOLF is completeness and accuracy of reporting. Any time a work order (DA Form 2407, Maintenance Request) is generated at the SAMS-1 level, data from that work order will eventually appear in the

WOLF — if the SAMS-1 site follows established procedures and reports to the SAMS-2 sites as required. It is critical that the SAMS-1 sites report this data on a regular basis so that the SAMS-2 sites have complete submissions to LOGSA.

The LOGSA currently receives weekly submissions from 103 SAMS-2 sites. This includes all of the Active Army and National Guard DS/GS Tables of Organization and Equipment (TO&E) units. In addition, LOGSA receives data on closed maintenance actions from those Table of Distribution and Allowances (TDA) Directorates of Logistics (DOL) located at installations operating the Maintenance Information Management System (MIMS). The data from these two sources (SAMS and MIMS) are processed and loaded into the WOLF on a monthly basis. We also received data from the Fort Hood DOL which operates a unique maintenance management system. Approximately 250,000 records are loaded in to the WOLF every month, representing all maintenance actions completed in these units. The combination of data from the TDA and TO&E activities covers the vast majority of mainte-

nance activities occurring at the DS/GS levels throughout the Army.

What does all of this mean to you? By using the data contained in the WOLF, you can look at the maintenance factors affecting your equipment or your unit. The WOLF retains historical data for up to five years (currently from January 1990 to the current month). You can use this data to determine historical maintenance costs, maintenance man-hours, repair parts consumption, reasons for maintenance actions, number of days in maintenance, and other significant maintenance factors.

The data in the WOLF are retained both by item repaired and by unit. In other words, every maintenance action is performed against an item of equipment, reported by National Stock Number (NSN) and End Item Code (EIC), and with an associated Unit Identification Code (UIC) and Data Processing Installation (DPI) code. If you need an analysis on an item, such as an M998 HMMWV, the NSN or the EIC may be used to access and extract the appropriate data from the data base. Similarly, an analysis on a particular unit or division would use the UIC or DPI code to extract data.

Accurate reporting of data from the field is critical to the usefulness of the WOLF. Insertion of an incorrect EIC while entering data into the SAMS-1 computer can result in the data being incorrectly loaded into WOLF and thereby adversely affecting any studies performed that include that data.

The studies that are done using SAMS/MIMS data that you submit to LOGSA have visibility at the highest levels within DA and above. The WOLF has been used to determine support costs for specific items of equipment, such as the M1A1 and the M2/M3 Bradleys. Also, the WOLF was used to determine problems affecting maintenance and support of the HEMTT and the UH-60 Blackhawk. These studies were used by HQDA and the item managers to isolate and correct equipment and component support problems. Many WOLF analyses are used for general officer briefings and information papers.

Inaccurate or missing reports from your units can and do show up in these reports. Failure to submit your SAMS/

MIMS data to LOGSA on a regular and timely basis can hamper the effectiveness of management decisions and have resulted in follow-up actions with non-reporting units to determine reasons for lack of reporting.

Accuracy of reporting of certain pieces of data in SAMS is also important. For instance, the accuracy of man-hours used in the course of maintenance actions is important since it affects the man-hour utilization figures

The WOLF is now a user-friendly, menu driven system that provides easy access to this historical maintenance data so you can easily manipulate the data from your terminal.

used to determine support requirements.

Similarly, accuracy of MOS reporting affects calculation of manpower studies, and accuracy of repair parts consumption affects determinations of parts stockage for units.

We want you to use the WOLF. The data can help you manage your maintenance budget and increase the effectiveness of your maintenance unit. These are two ways you can get data from the WOLF. If you anticipate being a one-time or infrequent user of

WOLF, the LOGSA will perform analyses for you. You can call, write, FAX, or e-mail us and we will respond to your request. If you will be a recurring or frequent user of the WOLF, a password will be issued to you that will allow direct access to the data base. You will be provided with a password and WOLF User's Guide that will instruct you in accessing and using the WOLF.

If you have tried to use the WOLF in the past and have been unsuccessful due to the difficulty of its use, we have made considerable changes in the past months that have improved the system. The WOLF is now a user-friendly, menu driven system that provides easy access to this historical maintenance data so you can easily manipulate the data from your terminal. Access procedures are detailed in the user's guide, but basically all you need is a terminal and modem.

There is no other source for historical maintenance data on all items within the Army. If you require this type of data within your organization, LOGSA is the place to contact. The WOLF is a valuable tool that can improve the maintenance and management of equipment in the Army inventory. It is available for your use.

Tom Ress is a logistics management specialist with the USAMC Logistics Support Activity.

If you have any questions on the data available in the WOLF, please contact the WOLF office at LOGSA. The address and phone numbers are:

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Engagement Area Development

A Guide for Tank Platoon Leaders in Cavalry Squadrons

by First Lieutenant Brian L. Steed

Engagement area development and direct fire planning in the division cavalry squadron are remarkably different than in a regular task force. The distance over which the squadron defends, the critical mission tasks, and size of the enemy engaged are all reasons for the differences. As a result of these differences, the weight of direct fire planning falls primarily on the shoulders of the tank platoon leaders in the squadron, rather than the company/team commanders, as in the task force. The troop commander normally has responsibility for multiple engagement areas, in addition to coordination with air, indirect fires, engineers, etc. These tasks demand much of his attention and time, not allowing him to devote the necessary time to direct fire planning.

The tank platoon leaders must step forward and assume their roles as direct fire planners to reduce the burden on the troop commander and ensure a detailed product. Since most documents are written with the focus on the company/team commander, this recommendation becomes problematic. The purpose of this article is to provide a direct fire planning focus for the tank platoon leader developing a platoon engagement area (EA) which may then expand to the development of troop engagement areas.

In the cavalry environment, most engagement areas normally begin as a hasty occupation of a battle position. At the schoolhouse, we are taught that we sit in our tanks and use the radio to identify to our TCs the various target reference points (TRPs), sectors of fire, etc. We are even made to memorize a series of control measures to be identified. Instead, we need to look at how we occupy and develop a deliberate position to better understand the EA development process. The following will address the defense of a platoon battle position and the development of a platoon EA.

Receive the Mission

As soon as the platoon leader receives a warning order that hints at the de-

fense and where it will be conducted, he must conduct a quick map reconnaissance and evaluate the following items:

Task-Purpose: This is an entire issue unto itself, but is critical to the success of any mission. What are we doing, and why are we doing it are questions that the platoon leader must answer for all soldiers. The better we understand these answers, the easier it is for the leaders to retask themselves during a mission to accomplish their purpose.

Enemy Courses of Action (IPB): Absolutely critical to a platoon leader and most often ignored is the issue of IPB. The platoon leader must assess from his knowledge of the enemy, a probable enemy course of action. Is the enemy: an MRC, an MRB, etc.? What equipment does he have? How fast does/can he move? How does he employ and deploy his combat power? What combat support and combat service support does he have? What is his objective? Is he terrain- or force-oriented?

These and any other questions in regard to how the enemy has fought and will fight are essential for success. This is impossible for a platoon leader to do while perched in his tank. He must already know the answers to these ques-

tions; they must spring to his mind as he begins to run down the list.

Most Probable Enemy Course of Action: With a map reconnaissance and a detailed look at the probable enemy course of action, the platoon leader must look at the one course that he expects the enemy will take. Where does the enemy want to go?

EA Placement: Upon receipt of the overlay, the platoon leader must begin his map reconnaissance. He needs to analyze the terrain, identifying the intervisibility lines and testing the BP and EA positions. Do they make sense? A high level of detail here will improve the quality later.

Engineer, Fire Support, and CSS Guidance: What sort of priority can you expect from the troop and squadron? Simply because the platoon or troop is low on the priority list should not stop the platoon leader from requesting additional assets. It never hurts to ask.

Security: All around security, all the time. Don't assume away enemy eyes.

Engagement Area Refinement

Now he must answer the question, where does the platoon want to kill the enemy? What this means to the platoon

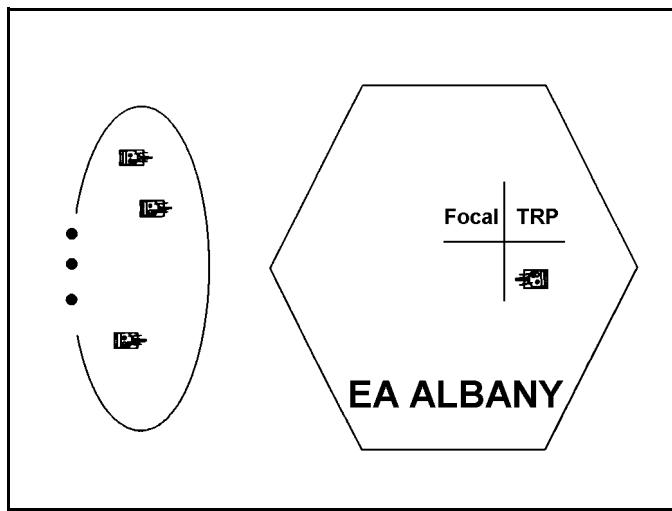


Figure 1.
Focal TRP
Placement

leader is that he must physically go out into the proposed EA and mark the spot where he wants to kill the enemy (i.e., where he will mass 120-mm direct fires). The ideal would be for his crew to place a TRP at that spot while he looks back to the friendly side and identifies his platoon's positions (Figure 1). He should be on the radio communicating with his tank commanders back at the BP. If they plan to dig the vehicles in, then the TC should be laying on the ground with the binoculars at the proposed gun tube level and having the platoon leader's statements relayed by the loader in the hatch. The TCs will then reposition to allow them to engage the focal TRP. If the platoon leader has a GPS, then placing the focal TRP becomes more academic as he takes the grid of his proposed BP and programs it as a way point. Then as he moves forward into the EA he knows approximately how far it is and the focal TRP will be placed at a more accurate distance (e.g. 2400 meters).

The platoon leader should also place TRPs for trigger lines, break lines, and possibly for defining the EA itself. TCs should continue to track these additional TRPs and communicate whether or not they can observe them. Not only has the platoon leader defined the EA, but he has gone a long way in creating his direct fire plan.

Designate Weapons Positions

If the platoon leader follows the actions previously noted, most of his weapons positions are already designated. Often, however, the platoon leader will not have all the systems he will fight present when he plans and prepares the EA. Maybe he is designing a troop engagement area, or he expects several scout vehicles to support his platoon BP. These positions also require planning and proper marking. Planning each weapon's position requires the following considerations:

- **Tanks:** The M1A1 was designed for massed fires that destroy with unmitigated fury. Always mass tanks!
- **Bradleys:** They have two weapons systems, TOWs that can outrange your tanks, and a cannon that can provide final protective fire while you withdraw. Plan for both. The 25mm is a very destructive weapon when controlled by those who know how to use it, and our 19Ds know (Figure 2)!
- **Dismounts:** We don't usually get infantry support, but at times our

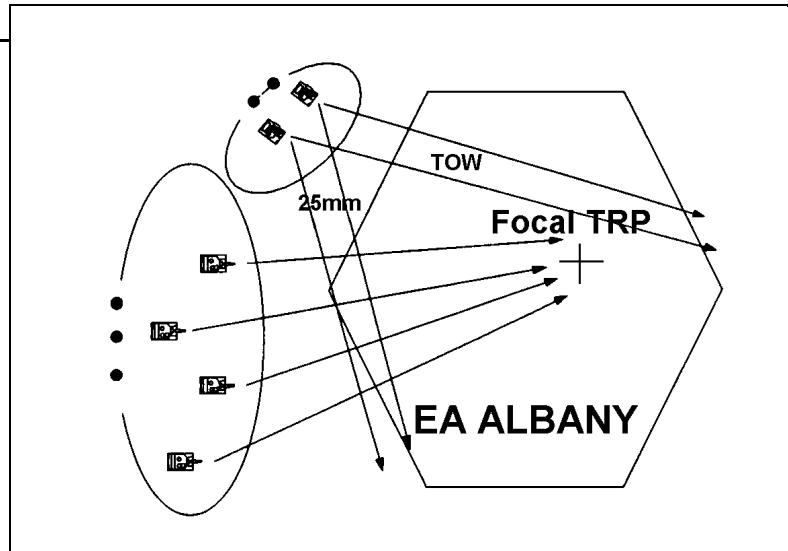


Figure 2. Planning for Weapons Positions

scouts will have dismounts. They are very useful in securing dismounted avenues of approach and killing light-skinned vehicles with their organic LAWs and/or DRAGONS. Infantry units usually bring DRAGONS and scouts have LAWs of one type or another. Dismounts are great when you can get them, but they must receive adequate support and require detailed planning.

- **Attack Helicopters:** One of the greatest benefits of being part of a division cavalry squadron is the maneuverability and speed that the air cav provides. Don't discount their firepower. At times, AH-1 Cobras will be available. The AH-1 Cobra has three different weapons systems. The TOW it carries is just as destructive as the Bradley TOW. It also has 2.75-inch rockets and 20mm, both of which can suppress BMPs and destroy light-skinned vehicles and troops. Always plan how you would use them. They are best on the flanks. Once this is done, request them. You will probably be the only tank platoon leader to plan for such assets and may receive a higher priority for your efforts. No promises.

Direct Fire Control Measures

The Armor School teaches that an EA is defined by trigger lines and break lines. This is correct, but oversimplified. The more detail the better. Here is an example of the needed level of detail:

A range of 3500 meters with two enemy vehicles across, represents the trigger for TOW firing.

- A range of 2900 meters with three enemy vehicles across, sends the signal to begin observed fire with one tank.
- A range of 2400 meters with five enemy vehicles across is the signal to the entire platoon to begin massed 120-mm fire.
- A range of 2000 meters with six enemy vehicles across signals displacement and the Bradleys to shift from TOW to 25mm for the final protective fires (FFP).
- Accompany every trigger line with a criteria, i.e. number of vehicles across. Items not discussed, but which should be, are how many rounds fired at each phase, what round is battlecarried, when to change battlecarry, etc.

Break lines and break criteria are also important. The division has only one division cavalry squadron. We are not expendable. Survival of our assets is critical to the continued success of the division and, therefore, must be preserved. Break lines and criteria are the commander's means of allowing units to survive. Take them seriously; plan, rehearse, and validate them. The intent is for a unit to be able to disengage and displace back to a subsequent position. If the line is too close, or the criteria either too heavy or light, then inform the commander. Always remember the intent is to survive, not to make a last stand.

Engineer Guidance

Firm control and specific guidance is critical to success with engineer assets. They need to be shown in graphic form

and engineer terminology what you require, where you want it, and when it needs to be completed. Engineers will do two things for tank platoon leaders in the defense. They will dig survivability positions, and they will emplace obstacles. First, remember that they will not always be available, so you must be prepared to plan and set obstacles from your platoon basic load. Even a few pickets and several rolls of wire can be significant across a high speed avenue.

Survivability: The standard is no wasted blade time. Timely and efficient action during the first portions of this process will improve the chances for success. Supervised marking of positions and having guides available the moment engineers arrive on station are critical. The platoon leader should meet the senior engineer and inform him of his plan, accepting recommendations from the engineer. Remember, he only recommends; you are in charge! Then lead him to the first position and ensure your TCs are prepared to show the ACE (or dozer) drivers what their digging focus (the center of the position's orientation) is and what the priority of the positions are.

Questions a tank platoon leader needs to consider:

- How much time will I have the engineer assets?
- How many blades do I have?
- How long does it take to dig a two-tier fighting position in this ground?
- How many holes can I get dug?
- Do I want hull-down positions instead? (Only when time is critically short.)
- Where is my priority?
- If I get blades longer, what more can I do with them? (Never leave engineer assets idle.)

Countermobility: Priority and purpose. Is the intent to turn, fix, disrupt, or block? These are questions and terms that engineers understand and can answer. Understand what the terms mean and what you want. Normally, at cavalry troop and platoon level, there will not be enough assets or time to emplace blocking or fixing obstacles.

Ensure you communicate priority of effort. You must take the senior engineer to each position and show him the extent of each obstacle if you want it done correctly. Additionally, you must inspect the obstacle preparation to ensure you are not surprised when the en-

emy attacks. Always consider limited visibility when planning obstacles; how do you cover them?

Fire Support Guidance

Just as with engineers, you must think in terms that the artillerymen understand: destroy, neutralize, and suppress. Each target needs to have a purpose. Why is it there? What do you want to do to the enemy with that target? Both you and the FIST must understand what you want to do and how you plan to do it in each EA. Always think of smoke. Direct support artillery battalions are hard to come by, but mortars are organic to your troop. Smoke can help in displacement. Also remember that obscuration, both smoke and dust caused by round impacts, work both ways. Plan for this obscuration; it will destroy laser efficiency. Mortars are also very useful for the PFP.

Don't just plot targets, but plan how to orchestrate indirect into the fire plan. Who is calling for fire in your platoon? Is it you, your platoon sergeant, a wingman maybe? What is their trigger for initiating these fires? Unlike direct fires, indirect fires are unresponsive and require even more thorough planning for success in a swirling tank fight.

Concepts to Consider

- Engagement criteria: Distance and number of vehicles across.
- Engagement priorities for each weapons system:
 - TOW and 120-mm SABOT should shoot tanks and ATGM systems.
 - 120-mm MPAT (HEAT) should focus on ADA, command and control vehicles, BMPs, and engineer assets.
 - 25mm and cal. .50 should focus on ADA, command and control vehicles, engineer assets, and BMPs.
 - Coax fires should focus on dismounts and trucks.
- CFV shift from TOW to 25mm: What enemy action triggers?
- Displacement criteria: Number of vehicles across a designated distance. Must be based on refinement through displacement rehearsal. We don't want vehicles caught in the open while they head for a subsequent position.
- Test EA on paper and on the ground: This will be discussed in the next section.
- Prepare:

-Positions
-Direct fire plan
-Obstacle plan
-Indirect fire plan
-Limited visibility plan. (This isn't simply for night operations. What about fog, dust, smoke, etc.? Our thermal sights and lasers are not invincible. What is the plan if lasers are ineffective?)

-Counterattack plan
-CSS plan (platoon leaders must always think of this, especially M1A1 platoon leaders).

- Rehearse: You will never do this enough!

-Combined arms. Indirect fires, engineers, aviation (if available), and scouts.

-Hatches open, open protected, closed, over pressurized.

-Full-up, with CSS (transferring from semi-ready to ready rack, transferring from tank to tank, and from HEMTT to tank), and in MOPP 4.

-Rehearse contingencies: What-if drills.

- Execute

-Mass fires and maintain volume of fire.

-Report accurately.

-Be prepared to reposition and FRAGO off the plan. Flexibility of thought and action are the cavalry way of execution.

-Consolidate and reorganize

-Accurate, timely status reports.

-CASEVAC on anything that is moving to the rear.

-Maintenance forward.

-Redistribute ammunition between ready racks and tanks. Restock if possible.

-Fix obstacles.

EA Testing

Predict Enemy Formation - Is he on line or in column or somewhere between? Paint the picture so your gunners will know what the enemy will probably look like as they scan the battlefield (Figure 3).

Predict Enemy Speed - 20 kph is not always the right answer, even at NTC. If the enemy, in a former Warsaw Pact model, has a high speed avenue he will push it to the maximum. On the other hand, he may move much slower because of terrain constraints. This is why it is a must to physically drive the entire engagement area at the expected speeds. If an M1A1 tank can't go 20 kph then it is a safe bet that the enemy tanks can't either.

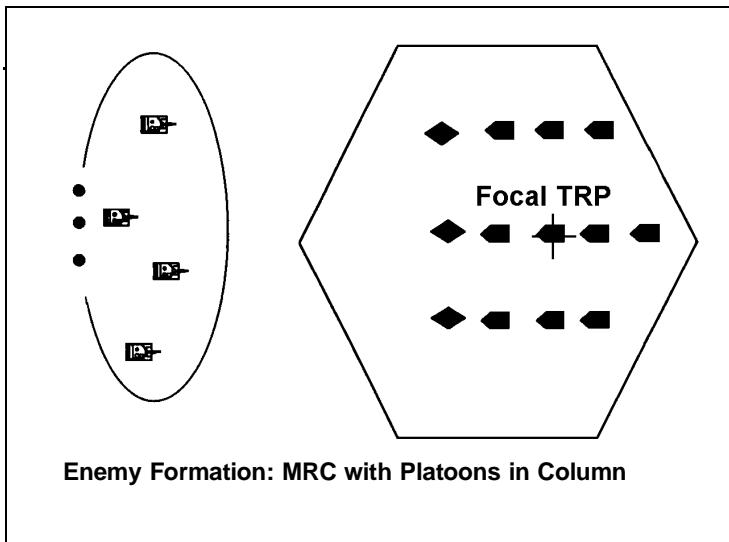


Figure 3. Enemy in the EA

Measure Engagement Area - How far back can the enemy be seen and engaged, and where does he reach the break line and criteria?

Determine Enemy Time in the Engagement Area - This starts with driving the engagement area and having TCs communicate at what point they lose you in their sights, and accurately recording the amount of dead space by both time and distance. This, subtracted from the enemy's speed through the engagement area, will tell the platoon leader how long he has to shoot the enemy.

Determine Type, Number of Enemy Vehicles in the Engagement Area - What kind, and how many, vehicles does the platoon have to kill?

Determine Time, Ammo Required to Kill - Will the platoon require more SABOT or MPAT (HEAT)? How long will be needed to kill the number of vehicles predicted? Can you get there from here, meaning, does the engagement area provide the time and space to kill all those vehicles?

Determine Number, Type of Friendly Vehicles Shooting into the EA - Are the right numbers of weapons systems arrayed? Does the platoon need Bradleys to help, or maybe the commander's tank?

Determine Friendly Obstacle Delay Time - The engineer representative can help with this question. Will the obstacles placed provide the time necessary to kill the enemy?

Compute the Number of Kills - (1)

Direct Fire: This is the calculus part of the whole test. Assume an experienced gunner can identify, lay on, lase, and engage one target every 45 seconds. In the heat of a swirling tank fight, that is optimistic, especially once the enemy's direct and indirect fires are considered.

(2) **Indirect Fires:** Always assume zero. This applies to aviation kills as well. Direct fire must be able to destroy everything in the EA in your test or you are assuming away too many enemy capabilities.

Adjust Defense to Achieve Desired Number of Kills in Adequate Time Allowed!

Numbers to Remember

- The TOW 2 missile is about 75 percent effective at 3500 meters.
- A distinguished tank crew shoots about 35 percent at 3000 meters.
- A qualified tank crew shoots about 45 percent at 2400 meters.
- Most tanks fire ten rounds or less during the day live fire defense at NTC. This is against an entire MRR!
- Volume of fire equates to 20 rounds or more fired from a tank against an MRR. This means detailed planning of how a platoon rotates tanks back to transfer ammunition from semi-ready to ready rack.
- At NTC day and night live fire defense you will face 162 enemy vehicle targets. A "world class" task force kills 140 or more.

Final Note

Don't forget platoon fire commands. Think about them, and write them down before the battle so that there is a ready reference during the battle. This makes it much easier. The more thinking done prior to the fight, the easier it is to fight the fight.

Learn your doctrine, TTP, and gunnery manuals, but most of all, learn your platoon. Most direct fire planning can be SOP. You know your best shooters, those who can kill at long range, those who have a tight zero, etc. Use this knowledge to assist in your placement and calculations.

Always remember you are a cavalryman. This means that you must assume more responsibility and take more initiative. It doesn't mean that you treat defensive preparations in a cavalier manner. The scouts are the artists, you are the technicians, the military scientists in the squadron. Take this seriously in your planning and preparation and your four tanks will be able to destroy entire battalions. You are the real firepower, but you must be used effectively and efficiently.

This article was made possible because of the mentoring of several key leaders: LTC Lute, LTC Soeldner, LTC Lynch, MAJ Lucier, CPT Laniewski, and the outstanding observer controllers at the NTC, MSG Bleisner (Scorpion 12A) and SFC Stanley (Cobra 12D).

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The Lessons of Operation Desert Hammer VI: Training

Digitization Will Impact Many Areas of Training

by Captain Ronald K. Kollhoff



During April 1994, the Army Warfighting Experiment (AWE) named Operation Desert Hammer VI (ODH VI) took place at the National Training Center. The purpose of the experiment was to have the first digitized battalion task force complete a full rotation and develop essential insights that would assist the Army's efforts toward achieving the goals of Force XXI. This article talks about lessons derived from the rotation in the area of training, that includes training tasks, strategies, methods, and literature.

Training Tasks

During training, preparation, and conduct of the AWE, observer controllers (O/C) and subject matter experts (SME) identified few new tasks. Of the new tasks identified, most were related to the new capabilities and requirements of the new digital systems. For example, the use of far-target designation and POSNAV on the M1A2 tank, or the operation of the HL-UAV, were "new" tasks. These tasks were few in number compared to the tasks modified by digital systems, like reporting, navigating, and C². These tasks are not additions; only the nature of accomplishing them has changed.

Unit training efforts must recognize these new and modified tasks and integrate these new tasks and new task procedures into the training plan. Training tasks "non-digitally" and then "digitally" can quickly exceed available training resources. The real focus of training should be to train soldiers how to leverage off digital system capabilities.

The advent of digital systems creates the need to train other members of a

crew/section on these tasks, in addition to the already designated tasks within their primary Military Occupational Skills (MOS) and duty position. During the AWE train-up, leaders as the primary users, received the majority of the training on the digital systems. Not surprisingly, as a result, O/C assessments indicated that there was no depth within crews/sections for AWE leaders to delegate digital tasks down to subordinates. For example, the gunner and loader on a tank must also receive training on how to operate IVIS, so they can pick up some of the work load from the tank commander. The TCs became overburdened with operating digital equipment, which detracted from their primary roles as leaders. Another example is the All Source Analysis System (ASAS) where battalion-level intelligence personnel will deal with increased amounts of information. These personnel require training to request intelligence in forms usable by tactical commanders.

The bottom line is that we must identify the specific tasks that are new, modified, and unchanged when operating in a digital environment.

Training Strategy

The AWE TF train-up for NTC focused primarily around simulation training, with no TF field maneuver training taking place in the 12 months prior to deployment. With the emphasis on simulation training, not field training, the TF experienced difficulties performing basic warfighting skills and fieldcraft. Several O/Cs and SMEs commented that the lack of hands-on training prevented soldiers from achieving proficiency with digital systems. It is also important to understand

that the AWE TF did not have sufficient time to assimilate digital systems into its administrative and warfighting SOPs. Equipment and software changes occurred as late as the unit's arrival to the NTC.

Another key point is that the AWE TF did not link up with all its supporting elements until arrival at the NTC. This particular training preparation is generally unsuccessful and not the training strategy used by conventional baseline units preparing for a rotation.

Several lessons learned were mentioned by O/Cs and SMEs from this use of simulation within training strategy. The training strategy must address training horizontally across Battlefield Operating Systems (BOS), and vertically within BOS. AWE TF training exercises reinforced horizontal integration across BOS, but geographical separation of the units hindered training within BOS. For example, FISTS and FSOs were integral players in simulation exercises, but training could not routinely include the key players from supporting artillery units. As a result, the complete fire support system was not exercised. The training strategy must provide for this vertical and horizontal integration.

Despite the presence of digital systems, the synchronization of all available combat power proved a challenge. Although digital systems can aid synchronization, leaders must know when and where to synchronize. Future training strategies must train the leader in all the necessary steps to attain synchronization. Training events should occur at company, battalion, and brigade levels and involve all the key players required in attaining synchronization. Constructive, virtual, and live simulations should also be used.

Future training strategies should also feature a clear progression of training. First, there is still a requirement for training basic fundamentals. Soldiers must learn basic warfighting skills and fieldcraft. Then they train on how to operate digital equipment, followed by training on integrating these systems into unit warfighting processes. This structure ensures that individuals and units are proficient in fundamental skills and tasks prior to moving on to more advanced concepts. O/Cs observed that the AWE TF was proficient with certain digital systems, but underlying weaknesses in fundamental skills prevented success. Training strategies should focus on avoiding such shortcomings. In fact, structured training programs require development and foundation on a logical progression of training.

Future training strategies must orient toward more complete combined arms (CA) training with a higher proportion of CA exercises. Digital systems and their associated communications links are designed to more closely integrate the various BOS. The M1A2 and the Bradley (with IVIS) can be considered "two BOS systems" since they can both maneuver and direct artillery/mortar fires. Clearly, these systems and their links must be frequently exercised for overall unit proficiency on the battlefield. This can only be achieved by CA training.

Also, leaders and soldiers must train on digital systems until they are second nature. During the preparation and conduct of the AWE, leaders and crews were observed using digital systems when time was available. In high pressure situations (such as enemy contact), soldiers tended to revert to voice means of communication and other techniques they considered "normal." This was largely due to unfamiliarity with the digital systems. The M1A2 and its capabilities were better utilized because the AWE TF had worked with these systems the most. Only repeated training gives soldiers the necessary insights to best use their systems. Future training strategies (institutional and unit) must incorporate the necessary training time for leaders and soldiers to gain this knowledge and proficiency.

Future battle command will definitely require a revised training strategy. This strategy must be built around a solid training program. Such a training program requires its own synchronizing of field/simulation so that all BOS training occurs within a combined arms contact.

Training Methods

Given the changes noted above in training requirements, most current training methods are excellent, but digitization will cause a few changes. Some already know, but it's too early to determine the extent of all the necessary changes. Many new methods need developing as new systems undergo testing and fielding. Suggestions made after observing the AWE TF were the need for embedded training, assigning a "master digitizer," and using simulation as a means of dealing with the increased training frequency required for units to function digitally.

Using available training time to the fullest extent possible is always a challenge. Training tools like "hip pocket training" are useful as embedded training to fill time voids when soldiers are standing around waiting to conduct their other scheduled training. Digital skills are highly perishable, which means that the frequency of digital training will need to increase. We have current training strategies that already require significant amounts of time to carry out, thus increasing the frequency in order to provide sustainment can quickly exceed available training time. There is just so much time to allot to training. When soldiers are sitting in their M1A2 waiting to shoot Tank Table VIII, or standing around in the motor pool waiting to have their vehicle inspected, they could call up a training tutorial software program within the digital system. The tutorial would allow soldiers to gain and sustain the necessary skills required to operate their assigned digital equipment.

Having a master digitizer at the company/team level, the unit SME on digital systems, would greatly enhance digital training within the unit. This person is similar in function to the

master gunner, providing the necessary expertise required for the unit to train to digital excellence. He would train the users when and how to use digital systems and how to communicate what they've learned to subordinates.

In Force XXI, we digitize so that large units, battalion and higher, can function quickly as one. Consequently, there needs to be more battalion-and-higher exercises. Maneuvering large forces with increased frequency in the field is too costly in terms of training dollars; therefore, there is the need for more simulation training. However, it is important to understand that simulation is not a total substitute for field training. We must determine a proper mix of field/simulation training to ensure essential field skills don't deteriorate. Finally, as often as possible, simulations and field training, should include combat support and combat service support elements to ensure the entire TF trains as it will fight.

Training Evaluation

The evaluation of training is critical to assessing a unit's ability to perform its METL tasks. Evaluation should be continuous and integral to all training events. Knowing that digital task performance decays rapidly, units must ensure continuous evaluation of soldiers' performance during training. External evaluations, digital skills test, and "gates" in simulation can ensure units are adequately trained to operate on the digital battlefield.

During a major simulation training exercise, the AWE TF did not receive adequate external evaluations at all echelons. At the platoon and company/team levels, sufficient external evaluations did take place. However, at the battalion level, the staff did not receive its evaluation from an external source. FM 25-100 states that formal evaluations should be conducted by a headquarters higher in the chain of command than the echelon undergoing the evaluation. Also, when using Distributive Interactive Simulation (DIS) for multi-echelon training, there should always be a plan to properly critique each echelon involved. Training conducted without some form of feedback

"Force XXI changes the way we will fight and, therefore, we must relook the way we will train and make changes accordingly."

provides little benefit to leaders in assessing their unit's ability to perform its wartime mission.

Furthermore, Force XXI creates the need for conducting a digital skills test as part of a unit's collective training. A key point derived from the AWE TF was that digital systems must be an integral part of a unit's operations and training. To ensure soldiers can perform necessary digital tasks prior to a major training event, something like a digital skills test should be performed — possibly a test similar in nature to the Tank Crew Gunnery Skills Test (TCGST) which armor crews must pass prior to shooting tank gunnery. Not only will the test demonstrate proficiency with digital systems, it will also provide a tool for conducting sustainment training.

There is a need for monitoring digital training progression that allows commanders to track performance. A proven method is to use simulation with "gates," like in the Unit Conduct of Fire Trainer (UCOFT). Have a matrix, as used with the UCOFT, which moves soldiers through continually tougher conditions until proficiency is achieved at each level. Feedback would be provided so that commanders can determine what personnel/sections require additional training in order to perform all essential digital tasks to standard.

Training Literature

Training literature across the board needs rewriting, with present tasks, conditions, and standards updated to reflect the digital environment. Soldier manuals for every MOS level will require revision to reflect the impact of digitization.

A significant problem with the train-up of the AWE TF was insufficient training literature and documentation for the digital systems prior to fielding. Equipment and software updates occurred frequently, with some taking place even after the unit's arrival to the NTC. As a result, the TF had to learn and master the digital systems during the rotation, which detracted from its performance.

Force XXI creates the need for new tactics, techniques and procedures (TTP). Several written materials delineating TTPs were available to the AWE TF prior to the rotation. Some of these included the Fort Knox Supplemental Material (FSKM) 17-15-1A2: *MIA2 Tank Platoon Tactics, Techniques and Procedures*; Special Texts (ST) 71-1-1, 71-2-1 and 71-2-2: *Tactics, Techniques and Procedures for the MIA2 Tank Company Team, Battalion Task Force, and Digital Battalion Task Force* (respectively). In many cases, these manuals were not field-tested prior to the AWE and should now be treated as foundations for the continuing development of future TTPs. Again, with Force XXI, we see changes to tasks, staff processes, and warfighting; therefore our training literature must change.

Digitization is taking the Army in new and exciting directions. The AWE TF and Operation DESERT HAMMER VI gave us some valuable lessons on which we need to focus to achieve success in the future. Force XXI will change the way we fight and, therefore, we must relook the way we train and make changes accordingly. Digitization alone will not win future wars; only units that have well trained leaders and soldiers will.

Captain Ronald K. Kollhoff was commissioned in 1985 from OCS. His previous assignments include tank platoon leader, support platoon leader, and company executive officer at Ft. Carson, Colo.; battalion maintenance officer and Bravo Company commander with the 40th Armor, Berlin Brigade; and HHC commander and training officer for the Berlin Brigade. He is a graduate of AOB, IMPOC, IOAC, Airborne School, CAS³ and ORSA MAC. He is currently assigned as an Operations Research Analyst in the Directorate of Combat Developments, Ft. Knox, Ky.

DRIVER'S SEAT

(Continued from Page 5)

They only fight as a last resort, usually in self-defense when surprised, or to escape once detected. Scouts are too vital a resource to be used in the traditional combat role best reserved for armor and infantry. Scouts need to be available where and when needed, and woe to the commander who loses his eyes and ears. Much like Lee at Gettysburg, he will find himself going into battle blind.

For future scouts, the news is exciting. Technology is providing more sophisticated and reliable equipment to make their job easier. There are current plans for a Future Scout Vehicle capable of affording the stealth needed to minimize and survive detection. This new FSV will be highly mobile and have a reduced signature. It will be smaller than the Bradley, and will incorporate advanced communications and electronics. It will be equipped with the most advanced optics and sensors to detect the enemy at greater distances.

Future training will be more important than ever. With the new technology being developed under Force XXI, continuous training is critical to the scouts' success. In addition to the initial entry training and the prerequisite NCOES courses, scouts have various other schools and courses they are encouraged to attend. The Armor Center, where scouts are trained, provides additional training, such as the Scout Platoon Leader and Scout Commander Certification Courses. Additionally, scouts are encouraged to attend airborne and air assault training. Scout platoon sergeants are encouraged to attend the Pathfinder course.

There is no other soldier in the Army like the cavalry scout. His importance is immeasurable — and it has been throughout history. Those commanders who fought and won on history's battlefields know this. Because of scouts, they've decisively engaged and destroyed their enemy behind the command of....

SCOUTS OUT!

The Combat Trains Desert Laager

*The right formation can provide security
And be ready to move if needed*

by Captain Gregory A. Daddis

Possibly one of the most difficult tasks in squadron-level logistics operations for the cavalry is the movement and security of the trains organizations. In desert terrain, such as the National Training Center (NTC), this potential problem becomes exacerbated. Lack of concealment, large operating distances, and numerous high speed enemy avenues of approach all impact on the service support of the unit. And more often than not, of all six of the sustainment functions, protecting the CSS system is the most overlooked and loosely planned.

One option for protecting a key logistical node, the combat trains, is the use of a 'desert laager formation.' Although the laager formation is mostly identified with line ground troops, it can be easily modified for effective use in a squadron combat trains. In a ground troop, a laager allows for quick movement with simple command and control. The troop is in a box formation, with the two scout platoons in column moving abreast and the two tank platoons following behind their sister scout platoons, also in column. The troop TOC and headquarters elements are in the center of the formation, so in essence the unit moves in three parallel lines. Gun tubes are oriented outwards for an approximate 360 degree circle of security while both moving and stationary. In a moment, we can see how this could be easily applied to a combat trains formation.

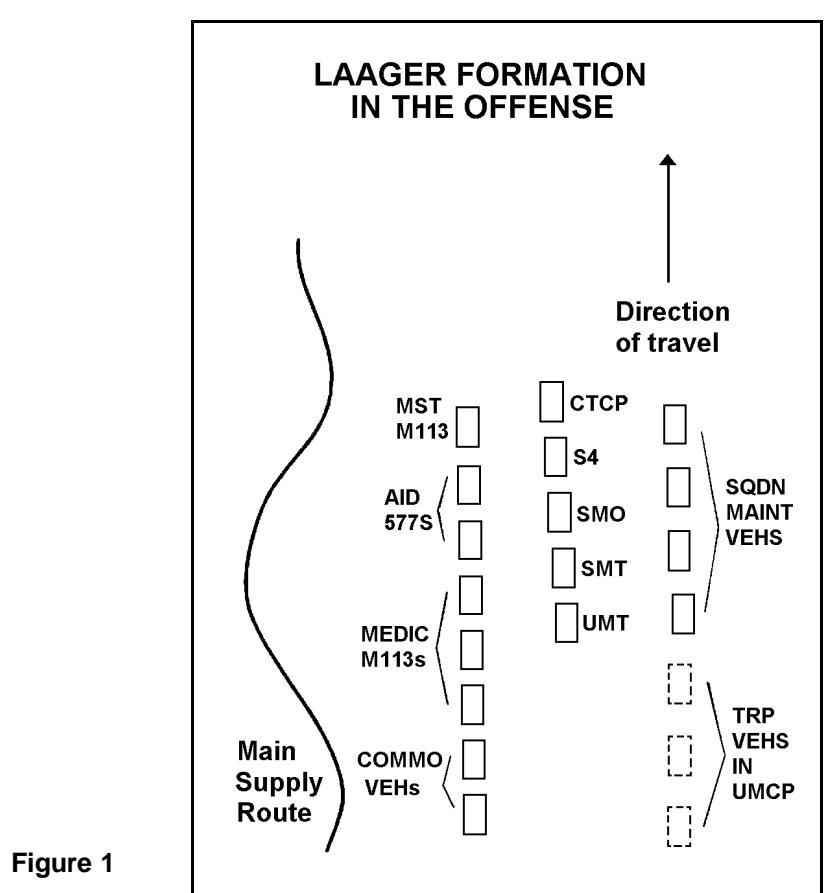
FM 17-95, *Cavalry Operations*, states that the combat trains are "normally located well forward and remain mobile." What 17-95 does not depict is a responsive layout for the trains so it can support the squadron on a fast moving battlefield, especially in a desert scenario. In the cavalry, where extended fronts and quick-paced operations are the norm, flexibility is a must for service support. Unfortunately, the very nature of a combat trains, which

can be cumbersome if linked into a unit maintenance collection point (UMCP), does not lend itself to such flexibility. Security also throws a wrench into this, for the trains have limited organic weapons for self-defense, yet maintain quite a large signature.

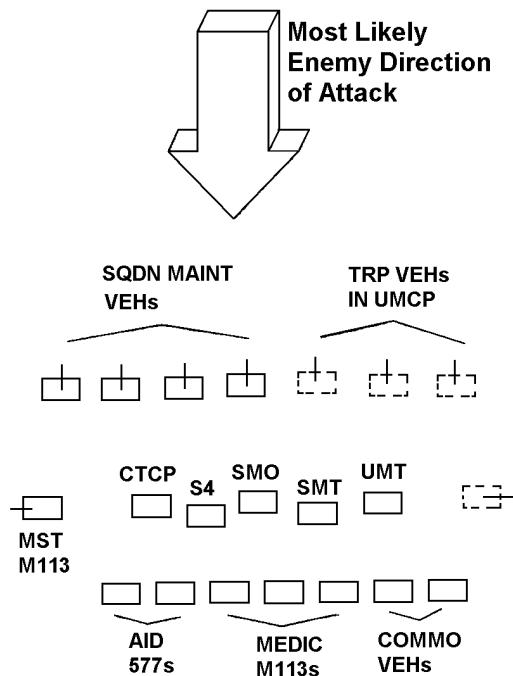
So, if the trains must operate well forward, remain mobile, and protect itself, it seems the only way all of this can be accomplished is through the formation that is chosen. Formations for the combat trains are somewhat enigmatic and obviously change, based on the tactical situation. Regardless, the combat trains

organization can be a large creature. The combat trains command post (CTCP) can control the squadron's aid station, maintenance collection point, squadron commo section, and unit ministry team (UMT). With medical M113s and downed vehicles in the UMCP, the combat trains can feasibly reach up to twenty vehicles or more. In this situation, the laager formation can greatly assist in mobility and security.

In this formation (see Figure 1), a trains element in the offense, supporting a zone reconnaissance or movement to contact, can move efficiently behind the forward troops. Either the



LAAGER FORMATION IN THE DEFENSE



"By maintaining the laager formation during stationary operations, the combat trains can rapidly transition back to the offense. If attacked unexpectedly by air or artillery, the trains simply maintain formation and move out of contact..."

Figure 2

S4 HMMWV or M577 leads the trains moving in three columns. The left column is led by the attached maintenance support team (MST) M113, followed by the squadron aid station and medic vehicles. The left column is followed up by any of the squadron's commo section. In the center, the support HMMWVs follow behind the CTCP. This offers the SMO and SMT's vehicles and the UMT protection inside of the lightly armored vehicles. The right column is led by the squadron's maintenance M88s and M113s, and the rear is taken up by any recovering downed vehicles.

The squadron S4 or SMO can now quickly and easily move the combat trains through a "follow me" method. If the trains remain in this formation during short halts, momentum can easily be regained once the squadron reinitiates movement. As with a line troop's formation, any weapon systems are pointed outwards to assist in security while moving.

In the defense or during stationary security missions, the laager can easily be maintained in a desert environment (see Figure 2). The right column faces toward the most likely enemy avenue

of approach, allowing the weapon systems on the M88s and downed vehicles to orient towards any threat. Again, all weapons are facing outwards to assist in 360-degree security. The CTCP moves to the center of the formation for command and control and protection inside the small perimeter.

By maintaining the laager formation during stationary operations, the combat trains can rapidly transition back to the offense. If attacked unexpectedly by air or artillery, the trains simply maintain formation and move out of contact. This eases the problem of linking back up with several dispersed elements that have broken from a coil formation. Command and control for the S4 or SMO becomes much easier, allowing both staff officers to remain focused on supporting the squadron.

Mobility is also simplified by using the laager. The S4, leading the trains formation, can position his organization into a hasty defense by conducting a "column left, march." This quickly puts forward what armor is available forward while protecting the wheeled vehicles and medical assets.

There are times when the UMCP and combat trains will be separate entities. The tactical situation, or simply a large

number of broken vehicles in maintenance, may dictate that the combat trains break away to maintain a smaller signature. Here, the laager formation can still apply. A small maintenance team can move with the trains to assist in fixing forward and can therefore maintain position in the right column. The CTCP now has a smaller signature to deal with, while preserving simple command and control.

In a desert environment, where concealment can be limited, the laager formation provides an option for security through mobility and flexibility. With a designated combat trains internal SOP, the laager formation can be used to effectively move, control, and protect a key node in the squadron's logistical structure.

Captain Gregory A. Daddis is a 1989 graduate of the United States Military Academy and commissioned as an Armor officer. He has served as a tank platoon leader, scout platoon leader, and cavalry troop executive officer in 2/3 ACR at Fort Bliss, Texas. After completion of the Armor Advanced Course, he served as the S3 plans officer for the 5-17th Cavalry Squadron, 2d ID, at Camp Pelham, Korea. He is currently assigned as the S4 for the 2-4th Cavalry Squadron, 24th ID at Fort Stewart, Georgia.

CSS

For the Scout Platoon: Another Solution

by First Lieutenant John S. Wilson

As aptly stated by Captain Maus in his article "Combat Service Support for the Task Force Scout Platoon" (*ARMOR*, Mar/Apr 93), the scout platoon suffers from a lack of support. I believe Captain Maus was on the right track; however, he did not carry it far enough. Everyone has tried, in some cases successfully, to apply band-aids to this systemic problem. The main error with these quick fixes is that the task force either robs Peter to pay Paul or just lets Paul starve. The right answer is to add a support section to the current task force scout platoon MTOE. A scout support section gives the scout platoon sergeant a highly flexible element that reports directly to him, guaranteeing the scouts responsive combat service and support.

Organization and Equipment. The Scout Support Section would only require a small addition to the current scout platoon MTOE. The HMMWV section works from a M998 HMMWV in the two-door cargo configuration (See Figure 1). The M998 tows an M101A1 cargo trailer for carrying supplies forward. The HMMWV has three secure radios to allow the section to monitor the scout net, the A/L net, and the task force command net. The M998 is equipped with a winch and HMMWV tow bar for recovery operations. The section has a light wheeled mechanic's tool kit and a field medic's kit. The section is armed with three M16A2 rifles and one M203 grenade launcher. The HMMWV scout support section is manned by one 19D30, one 63B20, and one 91B20. The 19D30 must be the most experienced scout in the platoon next to the platoon sergeant. By doctrine, the support section leader position must be filled by the 19D next in line for the platoon sergeant's job.

The M3 CFV and M113 scout support section is similar to the HMMWV section (See Figure 2). The section is equipped with M113A3 and M105 cargo trailer. The best answer is to adopt the Israeli M113 configured as a recovery vehicle. However, the present M113A3 would suffice. The M113, like the HMMWV, is equipped with a winch and tow bar. The section is additionally armed with an M2 HB .50

caliber machine gun. In the M113 support section, the 63B20 is replaced with a 63Y20.

Operations. The support section answers directly to the scout platoon sergeant. The section is responsible for coordinating and supplying service and support to the platoon. The section is also manned and equipped to treat and evacuate casualties and fix or recover scout vehicles forward. The section also passes CSS information from the scout platoon to the CTCP via the A/L net. The support section stages in the combat trains or in the company trains of the forward deployed company closest to the scout platoon.

The personnel in the section work and train together regularly. The low density MOS soldiers should also work and train with their MOSSs occasionally to keep their skills in tune. The section leader, the 19D30, has the experience and ability to maneuver the section to and from the screen line, through the forward lines, and back to support areas with the stealth necessary to keep the support unit in the battle. The mechanic will have the tools and on hand PLL to fix a majority of mechanical problems forward. If a vehicle cannot be fixed, the section has the assets to move it to the rear for more complex operations. The medic can stabilize casualties forward. The section can carry a small number of serious casualties rearward, and safely lead other casualty evacuation assets forward. The section has enough cargo space to carry small amounts of emergency supplies to the scouts and can relay the daily LOGPAC forward from the forward company.

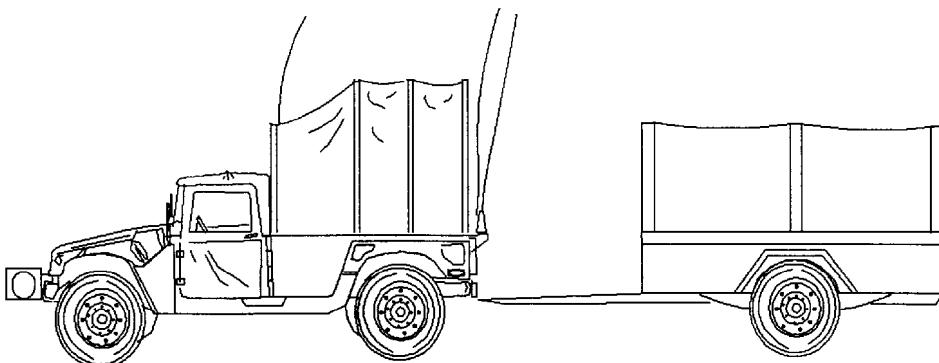
Advantages. The scout platoon would have a loyal team dedicated to ensuring they receive adequate support while forward of the main body. The dedication of assets in the new MTOE ensures the platoon has a responsive service and support on call. The section would act as a direct link between the scouts and the CTCP; ensuring the CTCP has up-to-date CSS information from the scouts that is often missing when the platoon sergeant is busy painting the task force commander a picture. The support section can guide special attachments (i.e. engineer recon, GSR) forward to link up with the scouts on the screen line. The support section could fill in for scout elements who have pulled back to a forward scout service station resupply operation. The section all but eliminates the extra headache of the area support company's first sergeant who is often

too busy filling his company's needs to the detriment of the trusty scouts. A permanent support section relieves the HHC commander and the S4 of the tribulations of piecemealing a scout support plan together. As a bonus, the section can act as a relay station between the screen line and the TOC when scout radios are out of range. Who knows? The scouts may even get a hot meal for once.

Disadvantages. The section is mounted in a thin-skinned vehicle and is vulnerable to enemy attack. However, the section sergeant can compensate for this with stealth and experience. One could perceive the section as a loose cannon on the battlefield. Training and coordination with the combat trains and company first sergeants will alleviate the problem. The section, especially the M3/M113 section, can carry little or no fuel forward to the scouts. While the HMMWV section can carry fuel forward via 5-gallon cans, the M113 section would have to lead a fuel HEMTT forward to a safe location, set up a fuel point, and fill in for each scout vehicle as it goes to refuel. The fact that the M113 weighs less than the M3 is a drawback to using the M113 for recovery. The M113 can tow the M3, but should only tow it as far as the forward supporting company/team whose M88 and maintenance team could take it from there.

An addition to the MTOE during the Army drawdown would seem to make this proposal cost-prohibitive. However, when weighed against the loss of effective, experienced scouts on the screen line, the addition is worth it. The maneuver task force can no longer afford to patch ineffective solutions together with limited CSS and tactical assets.

First Lieutenant John S. Wilson is a 1989 ROTC graduate of Ouachita Baptist University. After AOB, he served as platoon leader with 2-64 Armor in Schweinfurt, Germany. After deploying his platoon as a WSRO (Weapon System Replacement Organization) unit, he served as the assistant S4 and then as the battalion S4 for 2-64 Armor. At the end of his branch detail, he was assigned as the S1/S4, 106th Finance Battalion in Wuerzburg, Germany. He is currently support platoon leader, HHC, 2d Battalion, 153d Infantry Brigade, Arkansas ARNG.



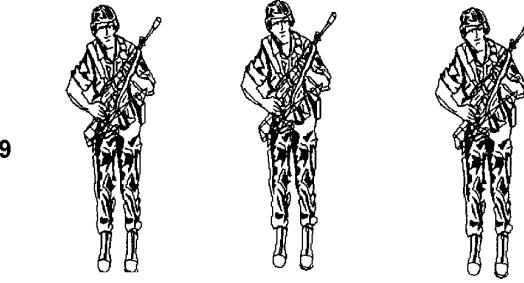
- 1 x M998 HMMWV w/Winch
- 1 x M101 Trailer
- 1 x HMMWV Tow Bar
- 1 x Light Wheeled Vehicle Mechanic's Tool Kit
- 1 x Field Medical Kit
- 1 x Camouflage Screen System
- 1 x Global Positioning System
- 1 x AN/VRC-49 (2 x RT-524s)
Secure with AN/VRC-47 (1 x RT-524)
Secure or 3 x AN/PRC-119
SINCGARS Radios
- 3 x M16A2, 1 x M203 40mm GL



**Fig. 1 Scout Support Section
(HMMWV Plt)**

19D30 63B20 91B20

- 1 x M113A3 MRV
- 1 x M105 Trailer
- 1 x Tow Bar
- 1 x Light Tracked Vehicle Mechanic's Kit
- 1 x Field Medical Kit
- 1 x Camouflage Screen System
- 1 x Global Positioning System
- 1 x AN/VRC-49 (2 x RT-524s) Secure with
AN/VRC-47 (1 x RT-524) Secure or 3 x AN/PRC-119
SINCGARS Radios
- 3 x M4 Carbine
- 1 x M203 40mm Grenade Launcher



**Fig. 2 Scout Support Section
(M3/M113 Platoon)**

19D30 63Y20 91B20

In Nine Years, He Developed Doctrine, Tactics, and Vehicles

Franks Award Winner Worked on Desert Mobility for Special Forces Units

The first winner of the General Frederick M. Franks, Jr. Award is a Special Forces operations sergeant who worked to develop doctrine, equipment, and training material to improve the desert mobility of Special Forces units.

The award, presented to MSG Bradley H. Guile by MG Larry R. Jordan at the annual Armor Conference in May, was the first in a competition to recognize individuals who make long-term contributions to the Army's ground warfighting capabilities. Also present was General Franks, now retired, who was commander of the VII Corps in the Gulf War and later served as commanding general of the Army's Training and Doctrine Command.

According to the award criteria, the winner must "offer a vision for the future of the mounted warfighting force that significantly improved combat survivability, lethality, maneuverability, or mobility, or developed an innovation in equipment, materiel, or doctrine that significantly enhanced the effectiveness of mounted elements of the combat arms...."

MSG Guile's contribution was as project NCO in an effort to develop Special Forces mounted doctrine and field the equipment required to conduct mounted operations in desert environments. The Desert Mobility Vehicle System project began in 1985 and ended five years later with the development of modified vehicles, tactics, and doctrine, in the form of the training circular "Special Forces Mounted Operations." The project was intended to enable 5th Special Forces Group (A) to conduct joint and unilateral mounted operations in desert environments using specially modified HMMWVs, trailers, satellite navigation equipment, and desert mobility motorcycles.

According to his detachment commander, CPT Richard A. Shaw, Guile contributed to both hardware and concepts: "Directly through his efforts, 23 modifications have been approved, fabricated, and implemented on the M998 and M1026 HMMWVs to enhance their operation in the desert." The SF units call these vehicles the Desert Mobility Vehicle (DMV).



MSG Bradley H. Guile, Franks Award winner

The training circular, known as the "SF Mounted Bible," was published in 1987 and revised in 1993. Its tactics and techniques were based on lessons learned in SF deployments to Jordan, Kuwait, and Saudi Arabia, and in CONUS training. It details how to conduct and plan mounted operations, how to ensure their supplies, and how to maintain them. The circular also covers helicopter insertions of mounted units, desert navigation, and employment of the motorcycle sections. It includes a Mission Essential Task List and criteria for unit ARTEP evaluation.

Working with Tank Automotive Command, Special Warfare Center Force Modernization, and the 5th SFG(A), MSG Guile also helped develop the Requirement of Capabilities (ROC) document for the project equipment modifications and — because operational detachments often work in areas without direct support — a maintenance training program at TACOM to prepare SF soldiers to perform -20 and limited -30 level maintenance on the HMMWV.

Finally, MSG Guile created the Special Reconnaissance Project, an investigation of available Army and off-the-shelf commercial equipment that would give mounted SF operators an edge in desert environments.

MSG Guile served more than nine years as mounted operations subject matter expert for 5th SFG at Fort Bliss, Texas. He has been reassigned to Fort Polk, La., as senior observer-controller for the Special Operations Division.

Nominations for the Franks Award, administered by the Director of the Armor School, should be submitted to the president of the selection panel between 1 January and 31 March for accomplishments in the previous calendar year. Recommendations can begin with any soldier or civilian. Nominations must come from brigade-level or equivalent organizational commanders, and endorsements from division-level or equivalent commanders. Each major headquarters — i.e., TRADOC, FORSCOM, Cadet Command, etc. — may also nominate one individual for the award.

The nominee can be an active duty or reserve Armor or Infantry officer or noncommissioned officer, or a Department of the Army civilian. In addition to making a long-term contribution to ground warfighting capabilities, the nominee should possess two or more of the following characteristics of duty performance during the year or years prior to the nomination:

- Offered a vision for the future of the mounted warfighting that significantly improves combat survivability, lethality, maneuverability, or mobility.
- Developed an innovation in equipment, materiel, 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.
- Revealed a love of soldiering through leadership skills, recognition of the sacrifice and achievements of subordinates.
- Attention to the intent and directions of higher commanders.

The selection panel will meet in the spring prior to Armor Conference and will forward its nomination to the Chief of Armor. The award will be made at the Conference and the Armor School will pay for the TDY expenses so that the selectee can attend.

Further information on the award and a complete list of award criteria are available from USAARMS, ATTN: ATSB-DAS, Fort Knox, KY 40121.

LETTERS

(Continued from Page 3)

establishing observation posts and conducting patrols, play a key role.

The dismounted teams used in depth as observation posts, during and after the operation, would also be able to maintain contact with the retreating Krasnovian forces to ensure there is no reconsolidation of forces and threat of counterattack.

A dismounted platoon organic to a cavalry squadron would enhance the commander's capabilities before, during, and after any operation. The assets needed to create such a unit are virtually organic to the squadron, making it a cost-effective concept, while the increased mission success and minimized loss of life and equipment make it invaluable.

The configuration of the platoon, when deployed, will vary by mission and METT-T. There should be at least 20 soldiers in the platoon, allowing enough manpower to conduct multiple missions and necessary coordination and resupply for the teams in operation.

The platoon should be controlled by the S3, while working closely with the S2. Command would fall directly under the squadron commander, treated as another unit under his command.

Training of such a unit must receive the highest priority and training distractors must be kept to a absolute minimum to ensure readiness of the platoon and its survivability when deployed. Only the best scouts should be selected for the platoon, and the highest standards must be sustained and periodically evaluated.

SSG FRANK R. BELONUS
Troop B, 1-4 Cavalry
Ft. Riley, Kan.

Scout Vehicles: Still No Good Answer

Dear Sir:

The purpose of this letter is to add my views to the ongoing, rapidly expanding dialogue regarding suitability of the HMMWV for the battalion task force scout platoons. I have attempted to reduce complexity of the subject by focusing on survivability, mobility, and deployability. The HMMWV is regarded as a proven high-mobility, multi-purpose, wheeled vehicle. But is it really suitable for combat operations in a battalion task force scout platoon?

Survivability: Survivability is of paramount importance to the scout. Can HMMWV-mounted scouts survive on a modern battlefield while actually conducting reconnaissance, surveillance, and security operations? Truthfully, even the uparmored

HMMWV cannot adequately protect scouts from either direct or indirect fire.

Most reconnaissance units around the world are using armored vehicles with large caliber weapon systems. Scouts will frequently have to preclude enemy reconnaissance personnel from doing the same thing that they are trying to do. HMMWV-mounted scouts are disadvantaged from the start.

HMMWV-mounted scouts have neither the lethality nor armor protection required for survival. There is little to protect the crew from fragmentation. On the other hand, the M3 Bradley Fighting Vehicle, although a noisy vehicle with a large silhouette, can also compromise its location because of exhaust plumes. The Bradley does have good armor protection against direct fire up to 30mm (BMP-2), and good protection from effects of high-density artillery fragmentation. It provides excellent protection from small arms, 12.7mm and below (BRDM-2).

The basic HMMWV is not comparable. It can be uparmored, but the results are only slightly better than nothing. Uparming also carries penalties — increasing gross vehicle weight and decreasing space inside the vehicle, thus reducing the payload. Payload is very important. Scouts must carry all their equipment all the time.

NBC protection is another aspect of survivability. The HMMWV offers nothing in this area, except what the scout carries for personal protection. Most armored combat vehicles in the U.S. Army have an NBC particulate system which greatly enhances the crew's ability to perform while mounted. I cannot say enough about survivability on the battlefield. Scouts cannot be effective if they cannot survive, and you cannot rely on stealth alone for mission accomplishment. Scouting is very dangerous under the best battlefield conditions.

HMMWV lethality doesn't really measure up to requirements of a modern battlefield. Weapon systems currently organic to a task force scout platoon are well proven. The M2HB .50-cal. machine gun is an excellent weapon, but it does not pack the power to defeat the threat a scout may meet. The Mk 19 MOD 3 is also a great weapon. It has a good range and explosive rounds capable of defeating most thin-skinned vehicles. It can wreak havoc on dismounted troops. But there is a definite shortfall in the antitank area.

The TOW system carried by platoons of light cavalry squadrons is a combat multiplier. "Scouts are not supposed to fight," but it has been proven in combat over and over that there are those situations in which a scout must fight. HMMWV-mounted scouts do not have a weapon capable of at least taking out enemy armored reconnaissance elements, whereas Bradley scout platoons have all the firepower

needed to defeat almost any threat on the battlefield.

Scouts, unfortunately, by the nature of their business, will frequently get into trouble in combat. They must be provided the capability to defend themselves and survive on potential battlefields.

Target acquisition is an extremely important aspect of a good scout platoon. Scouts must be able to detect the enemy before the enemy detects them. The HMMWV offers poor target acquisition capabilities, basically nothing better than World War I technology, i.e., binoculars which are not even close to state-of-the-art.

At the NTC, my platoon was issued AN/TAS6 night sights along with UAS-11 TOW sights. There were only two vehicle mounts available. We were being creative, attempting to find ways to put the sight up with the gunner, but whatever we tried was field expedient at best. These sights enhanced our night operations ability, their capabilities cannot be compared to what an M3 BFV platoon can do.

Thermal sights are a must for a scout platoon. Scouts are supposed to own the night. How can scouts own the night if they cannot see? Night vision goggles are good on patrols and OPs for close-in observation, but a thermal sight is a must for long-range night vision. We will always have problems with this in the dismounted mode until someone designs a reliable, light-weight, thermal sight for the dismounted elements of a scout platoon.

Mobility: Mobility is an essential requirement for scout platoon operations. Coupled with mobility is stealth. Being quiet is very important. If the enemy cannot hear you, the enemy probably cannot locate you. The M3 BFV does have a large silhouette, a loud engine and powertrain, an exhaust plume, and a thermal signature which can be seen for two miles. But it can be reasonably stealthy if operated in a stealthy manner.

In reality, the Bradley can be maneuvered fairly quietly, but not as quietly as a HMMWV or LAV-25. When attempting stealth with the Bradley, the time it takes to maneuver/move is greatly increased. The HMMWV, on the other hand, has excellent stealth attributes. It is quiet and has a low silhouette. There is a problem with having external speakers for the communication systems that can compromise its position.

Amphibious capabilities of the Bradley, which can be rigged to swim, given the time, are lacking in the HMMWV. The HMMWV requires engineer support, or must find a bridge or ferry to cross more than a ford.

Deployability: Both vehicles can be deployed by many means. While a HMMWV can be loaded in just about any cargo aircraft, the M3 BFV cannot. But, since the U.S. Army will not deploy solely by air,

there really is no problem in strategic deployment given early warning.

The problem is in tactical deployment. My platoon has practiced sling-loading the HMMWV in a tactical environment. It takes, at a minimum, two UH-60 helicopters per vehicle. As it stands, an empty M1025 or M1026 HMMWV is just short of the maximum weight for the cargo hook of a UH-60. This equates to one aircraft for the vehicle and a second for the crew and equipment. Which in turn means either 20 aircraft for the ten HMMWV scout platoon or two aircraft flying ten sorties. Not impossible, but is it feasible?

Bottom Line: Is there an existing vehicle which would be better than the HMMWV of the task force scout platoon? There are approximately 107 vehicles worldwide that could be used as a reconnaissance platform. Some would need to be modified to fit the scout's needs, others would not.

Should the U.S. Army develop a unique reconnaissance vehicle from the ground up? Unless we are prepared for extremely high casualties among reconnaissance, surveillance, and security personnel, the answer is a resounding YES!

We urgently need to capture modern and maturing technology to adequately prepare scouts for the modern battlefield, as well as for the 21st century battle. It is essential that the scouts/soldiers who will use it provide the input into the design, development, and testing process. This is an absolute requirement to ensure that we field the right design.

In closing, I want to emphasize that scouts across the total force need to engage in the dialogue to ensure the future user is properly mounted/equipped. *ARMOR*, over the years, has provided us a great forum. My thanks for that.

SGT WILLIAM BIGHOUSE
HHT, 2-1 Cavalry
Ft. Hood, Texas

Recoil Vibration of the .50 Cal MG

Dear Sir:

Two things in the September-October 1994 *ARMOR* really caught my attention: One is Don Loughlin's article, "Reducing Gun Recoil: Differential Recoil Systems," the other the back cover HMMWV Scout Update regarding the new dual-purpose, dual-weapon gun mount for the Mk 19 GMLG and cal .50 BMG M2-HB.

Although Loughlin's article is primarily about weapons firing "out of battery," both it and the back page gun mount story address the problem of the recoil "vibration" of the cal .50 machine gun.

This problem has existed as long as the powerful cal .50 MG has. I first fired a .50 over 50 years ago. It was one of the M2

water-cooled antiaircraft mounts, which incorporated recoil-absorbing springs. However, in World War II, relatively few cal .50s were fitted with recoil-absorbing devices.

In World War II, recoil-absorbing devices were primarily used on those M2 water-cooled and M2-HB .50s in antiaircraft mounts. They were also used in many of the flexible hand-held mounts for the cal .50 M2 aircraft guns and in some .50 M2 aircraft guns mounted in power aircraft turrets. The introduction of the new MK 93 dual-purpose mount with recoil absorbing provisions seems to me to make it worth discussing the systems used in World War II and long after.

These original recoil absorbers, developed in the World War II era, fell into two classes: "recoil adapters," integral with the gun assembly, and "gun mount adapters," interposed between the gun and mount. In addition to either of these, there has always been the "barrel buffer assembly" of the gun's action and the "buffer assembly" portion of the gun's back plate assembly, both integral to the gun itself.

Neither of the .50's integral "buffer" assemblies do much to limit the "vibration" of the gun, but they both make an important contribution to its basic Browning design being one of the most reliable and smoothest of any machine gun ever conceived, and that is what has made it as long-lived a weapon as it is. Its basic design dates from about 1920!

The integral "recoil adapter" for the .50 M2-HB was listed as late as in TM 9-500, *Data Sheets For Ordnance Materiel*, September 1962, but it is largely forgotten today. This is in part due to the fact that it cannot be used with the M2 tripod ground mount or any of the .50 gun mount assemblies in use today.

The recoil-absorbing "gun mount adapters" of World War II were only usable with the .50 M2 aircraft gun, and they have been used with it in things like helicopter and gunship hand-held flexible mounts fairly recently. This system has never been adapted to the .50 M2-HB gun although recoil absorbers were part of some older anti-aircraft mounts for it.

The problem of stability of mounts for machine guns was addressed in TM 9-2205, *Fundamentals of Small Arms*, 1952 edition. Figure 47 on page 57 in this TM shows a series of graphs of recoil effect which happen to have been for the cal .50 machine gun. From these it can be seen that the "recoil adapters," like any recoil absorber, made a considerable reduction in the peaks of the gun's recoil force, which made a gun fitted with them much more stable.

In addition to reducing the gun's recoil force peaks, these recoil adapters, particularly the "stiff" type, had no effect on the gun's reliability and/or rate of fire, and speaking from personal experience, they made the gun easier to aim and control and enhanced its accuracy when it was

fired "free" handheld. They also improved its accuracy when it was locked in its mount for long-range fire.

It has long bothered me to see that mounts for powerful weapons such as the .50 M2-HB have not incorporated recoil absorbing "recoil adapters" or "gun mount adapters." These devices can make the .50 a more stable and, therefore, more accurate and effective weapon in not only mounts for vehicles like the HMMWV, but on any light motor vehicle, aircraft, or boat. They can also do the same thing for a .50 mounted on more stable platforms such as tank turrets. Perhaps the time has come that they will?

Now that I have got the burr out from under my saddle, let me say you continue the long tradition of turning out *ARMOR* as an excellent and highly professional publication. Thank You.

KONRAD F. SCHREIER JR.
Los Angeles, Calif.

The Dichotomy of Non-Digitized and Digitized Forces

Dear Sir:

By the turn of the century, a force dichotomy will exist between non-digital and digital forces. There are four very likely scenarios in which this will occur: within units conducting digitized new equipment training (DNET), when an Army brigade is assigned to support a Marine Corps-led Joint Task Force (JTF), when a yet-to-be-digitized Army National Guard fights with a digital active duty force, and in conducting coalition warfare. We must, therefore, not simply determine how to fight homogeneous digital forces. We must also ascertain how they will fight with non-digital forces.

In Sun Tzu's *The Art of War*, he defines the concepts of ordinary and extraordinary forces. The ordinary force is described as a "...normal, direct... orthodox... (or) fixing force... or... as the force(s) of distraction..." The extraordinary force is recounted as the "...indirect... unorthodox, unique... (or) flanking (force)... or the force(s) of decision...." (Sun Tzu stresses that both forces are complementary, and that an ordinary force can become the extraordinary force if they meet with success, while the reverse is true of the extraordinary force.)

A recent example of this notion was the use of the Marine Corps in Operation DESERT STORM. To the consternation of the Corps, CENTCOM planners envisioned them as the ordinary force whose attack would "...hold the Iraqis by the nose...." One day later, an Army extraordinary force (the VII and XVIII Corps) was to "...blindsides them from the rear...."

A non-digital force can similarly complement digital warfighters. The digitized,

M1A2 force is no more lethal than a non-digitized, M1A1 force in terms of firepower. (Both main guns still have a 12-rounds-per-minute rate of fire.) The digital force, however, has inherently superior command and control (C²) features, allowing for the faster decision cycle necessary in pursuit operations. This suggests that non-digital units are suited to the ordinary force role while digital units are tailored to extraordinary force missions.

There are two possible reasons that a partially-digitized unit could be sent into combat. Most obvious is the incredible, shrinking Army, followed closely by possible budget cuts that stall or slow digitization.

In the first (and worse) case, two simultaneous regional conflicts could erupt. Were that to occur, every available armored unit would be needed. That just may include a brigade, division, or corps with elements that concurrently are, and are not, digitized. In the second example, if funding dried up to complete digitization of the force, the Army would have to determine where DNET breaks off. Doing so could leave the same situation.

Keying on a digital force's faster decision cycle capability, I would argue that there is a twofold method for employing this force. First, we designate non-digitized forces as our ordinary force to conduct fixing attacks or attacks to achieve a penetration of enemy defenses. Digitized units are then assigned extraordinary force missions. And secondly, we provide every Army headquarters down to battalion level digital C² capability, even if their fighting vehicles do not have combat vehicle command and control (CVC²) systems. This is primarily because of a need to communicate with higher and sister units. It also provides non-digital units the means to persevere when they meet with success and are used to press the attack. With digital intelligence collection assets, their C² method would be to receive data and vector units using a FRAGO with GPS waypoints.

In Major R.W. Lamont's November-December 1994 article, he speaks of the Army and Marine Corps memorandum of understanding to provide a brigade-sized armored force in support of Operational Maneuver From the Sea (OMFTS). It is conceivable, given the Marine Corps' budget constraints, that our supporting force could be digitized while theirs is not.

For this effort to be successful, we should be prepared for two possible courses of action (COAs), either colocate our brigade's headquarters with the MEF's, or, provide a digital liaison staff to the JTF commander.

The first option limits our brigade headquarters' flexibility by possibly placing it out of communications range with forward elements. However, it provides the MEF commander with easy access to the intelligence our digital sensor package collects.

The second option provides flexibility to our brigade's headquarters and JTF access

to our assets. However, we may need to configure our digital systems to operate on board ship if that is the site of the JTF HQ. I would argue for this course of action because it allows us to retain our flexibility.

Engaging in even one major regional conflict will see reserve component combat units fighting alongside active duty units. A heavy force equivalent to that deployed for DESERT STORM would require significant combat unit support from the National Guard. Since the National Guard will not see digitization until well into the next century, we will have the same situation as with our partially digitized active duty force above.

I believe the answer is the same: designate National Guard units as the ordinary force and provide them with digital C² systems down to battalion headquarters level. The National Guard can then orient on offensive missions in unit training (based on late deployment into the region).

Current Army doctrine states that the U.S. will often pursue its objectives through coalitions and alliances. Indeed, it is difficult to imagine fighting in the Middle East, Korea, or Bosnia unilaterally. Wherever we have digitized forces fighting alongside non-digital allies, we have the same situation as when our digital brigade supports OMFTS.

To fight a synchronized battle, we must be prepared to share intelligence gathered by digital sensors with our allies. To do so, we are probably better served having digital liaison staffs working in conjunction with our allies, as mentioned above with the Marines.

However, there are a few twists. The liaison staff must speak our allies' native language, suggesting Army Special Operations Forces need training in digital C² systems. We must also be prepared to place some form of mobile CVC² system — say the kind we will employ in HMMWV scout elements — with any allied unit that flanks, or is within, our battlespace. If we command the coalition, we also need to consider ramifications of designating our non-digital allies as the ordinary force and use our digital forces as the extraordinary force.

We must consider how we will employ a force dichotomy of non-digital and digital elements. In all cases, it is key that every Army battalion-level staff has digital C² systems so that it can communicate with any headquarters across the command and has the means to persevere if it meets with success. It is equally important that our sister branches in a JTF, and our allies, have some form of liaison team equipped to provide them with digital links to our force. In so doing, we can lessen the potential C² nightmare we might face whenever this dichotomy arises.

CPT MICHAEL L. PRYOR
Cdr, C-1-156 Armor
LAARNG

The Crewing and Configuration of the Future MBT

Dear Sir:

I have a few comments, which are not necessarily intended as being contradictory to Robin Fletcher's article, which appeared in the May-June 1995 issue.

The Swedish "S-Tank" is an innovative, creative approach to combat vehicle design, but it is not a tank. Any vehicle not capable of being fired on the move can hardly now be called a 'tank.' It is really an armored, self-propelled, antitank gun; at which, it should be excellent. It is compact (a small target), lightweight, has highly sloped armor to the front, and saves all the height, weight, and cost associated with a turret, associated armor, and the turret drives and 'stabe' — a not inconsiderable saving. I wish I knew more about it and why it didn't become more widely used. Can anyone with personal knowledge enlighten me? Perhaps calling it a 'tank' just confused people about what its role is, or should be?

More has been written about the future of front engine designs for tanks than is necessary. Yes, rear access is desirable for several reasons, but so is adequate frontal armor which makes it difficult to be able to raise engine access doors and get adequate cooling air. Meeting the requirement for maximum gun depression angle is also important. It is all a matter of which approach best meets the system's specifications, which should reflect the user's priorities. When the system designers are satisfied that a front engine design best meets the user's requirements, it will be chosen — which is what the Israelis did with the Merkava.

DONALD J. LOUGHIN
Antioch, Calif.

Requests Information

Dear Sir:

I am doing a study and research on the massacres by Hitler's armies during the Battle of the Bulge. I would appreciate any information your readers could provide me.

AL PRICE
3732 E. 58th
Tulsa, OK 74135
PH: (918) 742-1462

Correction

On the back cover of the May-June 1995 issue, we listed incorrectly the future designation of the 3d ID in Vilseck and Schweinfurt. The correct designation is 1st ID (Mech).

BOOKS

A History of the Army's Rebirth

Prodigal Soldiers: How the Generation of Officers Born of Vietnam Revolutionized the American Style of War by James Kitfield. Simon & Schuster, N.Y., 1995. 476 pages, \$25.00.

Prodigal Soldiers is a hard-hitting, one-on-one personal account of how the American military lost, then found, its soul. It superbly captures the emotion, passion, and love fundamental to the profession of arms. Kitfield's selection of General Barry McCaffrey, Admiral Stan Arthur, General Chuck Horner, and General Tom Draude is right on target because their stories are representative of the "emotional roller coaster" experienced by every soldier, sailor, airman or marine who joined the military, trained, went to war, and preserved the peace. It is a quick read that most will be able to immediately identify with and relate to their personal experiences. Several times, I caught myself wandering back through my 17 years of service, remembering my own participation in this story of being lost, then found. The book leaves the military reader with an overwhelming pride in those warriors who stayed the course and made a difference, yet sad for another group of officers no less committed or competent but on whose watch the collective soul was diminished.

Kitfield tells the story of officers who refused to submit to the madness around them as they rose through the ranks. It was because of that almost maniacal focus on doing the right thing that they, by chance, happened to be in the right place at the right time to participate in the greatest feat of arms in the modern era — Operation DESERT STORM — thus purging the American military and the American people of that cloud called Vietnam, and re-establishing the sacred trust and confidence between America and its military. This book offers great insights into the incredible amount of emotional, intellectual, and physical energy required to recapture the essence of our profession.

Kitfield captures, in great detail, perhaps one of the most courageous acts ever by a senior American military leader — General Edward "Shy" Meyer's "Hollow Army" testimony before Congress. He opened the front gate and laid bare an American military establishment shaken to its very core, and coming apart at the seams. His pronouncement allowed the Joneses, Creeches, Depuys, and Starrys to begin the healing process in a purposeful, coherent fashion. He also understood that it would take more than a determined force, but also a tremendous capital resource investment, to attract quality recruits, build the finest equipment, provide family care programs, ensure real-

istic, demanding, training opportunities, and empower tactical leaders. No amount of good intentions or hard work can create a professional force such as the one assembled in 1990 in Saudi Arabia without the institutional wherewithal that allows leaders and soldiers to focus on their warfighting mission.

Kitfield also gives superb treatment to the genesis of the 1986 Goldwater-Nichols Defense Reorganization Act, which set the stage for the transformation of the American military into a single warfighting team as opposed to three (or four) services working the seams. Kitfield though identifies the primary culprit of the entrenched parochialism as the "iron major," a term of "endearment" he awkwardly applies to an apparently omnipotent group of officers who he characterizes as bent on thwarting any real progress. He is off the mark in this case because, in truth, the power of these "iron majors" is directly proportional to the lack of definitive guidance from senior leaders. In situations where the "Big Hand-Little Map" philosophy of senior leadership is translated into "I'm not sure what I want but I'll recognize it when I see it — work harder," there develops a rich environment for institutional entropy embodied in the "iron major" thought, and drives everyone to the lowest common denominator. General Jones, Senator Goldwater, and Congressman Nichols recognized that fact and created a mandate so prescriptive that even the "iron generals" cannot diffuse its power. I assure you that in the 24th Division, under MG McCaffrey, there was no lack of definitive guidance and, therefore, the professional life expectancy of Kitfield's "iron majors" in the 24th Division would have been brief at best. In fact, being an "iron major" in the Victory Division was a badge of honor because it meant you could operate on four hours sleep a night and still produce results. Somehow, I believe that then-Majors McCaffrey and Horner would have been proud of the title because it really reflects the moral, intellectual, and physical constitution of that special group of officers who are usually the bridge between senior leader vision and the reality of operating tactical units. Those "iron majors" were the ones who turn commander's intent into battlefield outcome — they "make it happen." Regrettably, Kitfield's characterization confuses the issue and misses the point in this regard.

On balance, Kitfield's work is an intellectually stimulating book that leaves the military reader recommitted to prevent the tremendously dysfunctional trauma of the 1970s. Published at a time when many of the institutional initiatives which "fixed" the Armed Services in the early 1980s are dis-

appearing, the unstated conclusion is ironic. Of particular note are the fundamental programs, such as recruiting standards and robust training and leader development programs. Battalion and squadron commanders, ship captains, and senior non-commissioned officers are the product of a 20-30 year institutional training and leader development commitment from recruitment to retirement. You simply do not find these skilled professionals listed in the Yellow Pages under "Warfighter. These systems were lost in the late 1960s and early 1970s and took a generation to recover — once lost, they just cannot simply be bought back with supplemental funding programs.

Prodigal Soldiers stirs a unique blend of disappointment, pride, and anxiety. As we stand facing the next crisis of confidence, our operational commitments increase, our resources decrease, and our structure is down-sized. Kitfield's challenge is leadership in a time of uncertainty. The challenge is for our senior leadership to create and maintain the institutional conditions for success into the 21st century. The risk is the "hollow Army" of 1979. Our soldiers, sailors, airmen, and marines deserve no less.

LTC JOSEPH C. BARTO, III
Joint Warfighting Center
 Ft. Monroe, Va.

Lucky War: Third Army in Desert Storm by Richard M. Swain, Fort Leavenworth, Kansas: United States Army Command and General Staff College Press, 1995. 369 pages.

This study has not been released for public sale, according to the Superintendent of Documents. Copies will probably be available at military libraries. -Ed.

Colonel Richard M. Swain's *Lucky War* is the first genuine historical account of DESERT STORM to appear amid a host of "quicky books" and journalistic accounts of the war. It joins Rick Atkinson's *Crusade* and Gordon and Trainor's *The Generals' War* as the principal books about the war which begin to interpret the events of 1990 and 1991 in a way which will be useful both to soldiers and historians.

Like *Crusade* and *The Generals' War*, *Lucky War* demonstrates the importance of personality in the conduct of the war. To some, these accounts are irritating since they suggest that professional considerations and patriotism are not the only values demonstrated by senior leaders in combat. The notion that professionalism or patriotism are the chief values which define com-

manders is naive. How officers, regardless of rank, see themselves and each other has always been important. Commanders have a sense of who they are and have egos just as other people do.

This disturbs us because the stakes are so high, but also reminds us that even our bravest, brightest, and highest commanders are, in the end, human beings.

Swain brings to his study an understanding of combat operations based on personal experience, a thorough grounding in American military history and, most importantly, he knows the current history of the Army. Rick Swain understands how the contemporary U.S. Army thinks and how it operates. Accordingly, Swain is able to go beyond the history of the war and deftly weave into his account of operations why General John Yeosock and other soldiers thought as they did, and how they perceived events. What results is a balanced account, not only of Third Army generally, but also of General Yeosock and his chief subordinates. Neither John Yeosock nor his corps and division commanders deserve the abuse meted out by some authors, whose agendas include staking out specific service claims or preserving their own positions in history. (It is hard, for example, to read *The Generals' War* without hearing the strains of the *Marine Hymn*.)

Having said that, Swain's own bias is clear. Rick Swain is a soldier and there is, as a result, some sense that he is justifying or defending Third Army. Still, his assertions are ably made and evidence to support them is documented so the reader may check Swain's sources for themselves. *Lucky War* will be useful for years to come, both to soldiers seeking to understand the art of high command and those who wish to know not only what happened, but why.

COL GREGORY FONTENOT
Director, School of
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Ft. Leavenworth, Kan.

Persian Gulf War Almanac by Harry G. Summers, Jr. Facts on File, New York, 1995. 320 pages, \$35.00.

The Persian Gulf conflict has been the subject of countless memoirs and after-action reviews since its conclusion in the spring of 1991. Now for the first time, a definitive compilation of the events, personalities, and lessons appear in a single volume. Carefully compiled by Colonel Harry G. Summers, Jr., this almanac is the most comprehensive reference book to date on the Gulf War.

Divided into four parts, the book initially traces the geographical and historical realities of the Persian Gulf region from Babylonian times to Saddam Hussein's invasion

of Kuwait on August 2, 1990. The second section focuses on the chronology of the conflict, from Hussein's request at the Arab Cooperation Council meeting on February 19, 1990, for financial assistance to share the cost of the Iran-Iraq war to the repatriation of allied POWs on March 5, 1991. The heart of the almanac, however, is the third section, which is a detailed listing of the most significant aspects of the war. Over 350 entries are included. Finally, the selected bibliography and index complete the reference portion of this book.

What makes this book so important for future officers and students of the conflict is the reference material contained in the extensive almanac portion. Entries include a diverse range of topics, such as Airland Battle doctrine, coalition forces, divisional units, and virtually every aspect of the maritime, air, and ground campaigns. Summers also examines a number of controversial issues. The role of women in the military, the American media, U.S. mobilization and deployment practices, and ecological and chemical warfare will prove of immense interest to future military strategists and planners. In addition, the author provides biographical sketches of all major civilian and military leaders involved in the conflict.

Another aspect of this book that deserves special mention is the author's own insight into the conflict. A noted military analyst, Summers has published two previous almanacs on the Korean and Vietnam Wars, as well as his classic, *On Strategy*, an examination of the relationship between strategy and policy in the Vietnam War. During the Gulf War, he served as an analyst for all the major American television networks in addition to writing a weekly syndicated newspaper column for the *Los Angeles Times*.

Summers is at his best in tracing the evolution of U.S. military strategy from the strategic defense of the Cold War to the strategic offense. That transition, coupled with the changes in military operational policies, including the expanded role of women on the battlefield, the contributions of the reserve components to battlefield success, the necessity of joint operations and command structures, and the awareness of the importance of combined operations, makes the *Persian Gulf War Almanac* an indispensable companion to the author's previous works.

In short, this almanac is must reading for all military officers. It will remain a superb source book for information and future research on the first major campaign of the post-Cold War world.

COL COLE C. KINGSEED
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West Point, N.Y.

Problems for Platoon and Company by Erwin Rommel, translated by Cyril Koob. Military/Info, P.O. Box 27640, Golden Valley, MN 55427, 1995, 74 pages, \$20.

In 1935, Erwin Rommel wrote this small book so junior officers could think through complex training exercises. He included 19 tactical exercises that progressed from the rifle platoon's deployment from the march to the actions of a reserve in a battalion's attack. Each exercise increased in complexity and in the level of responsibility expected of the leader. The exercises are based on Rommel's experience in World War I and were revised in 1940 and 1944.

One of the most interesting aspects of these exercises is that they include the essence of "tasks, standards, and conditions" which the U.S. Army emphasizes so strongly today in its training. In each exercise, the purpose or task is stated clearly and the conditions described in detail. Those conditions include such things as hearing "single rifle shots" to the time that has passed since the last hot meal. Though the standard is not as clearly stated, a careful reading of the exercise reveals what is expected.

The major shortcoming of this work is the translation. The translator states, "this is more literal than other translations of German military writings you have possibly read in the past. Translations into English have tendency [sic] to lose quite a bit in their content." The problem for the reader, however, is that many of the sentences make little or no sense, and many of the paragraphs have to be studied deeply in order to be understood. Phrases such as "imply the enemy fire," or "defense on the southern hang of 343," or "disruption fire" may make sense to the translator, but they serve only to confuse the reader. Moreover, the work has not been carefully proofread. For example, each exercise includes a "Purposed Outcome" even though the translator in the introduction uses "Proposed Outcome." Problems with translating and proofing become evident in the front of the book, which is entitled "Translators Forward," rather than "Translator's Foreword."

Despite the problems with the translation, this is a useful work. It includes 66 tactical drawings and maps and a wide variety of challenging tactical situations. These will challenge the reader and require careful thinking about responses. Nonetheless, a greater sensitivity to the reader's needs and a clearer translation would have made this book much more useful.

COL ROBERT A. DOUGHTY
Department of History
U.S. Military Academy
West Point, N.Y.

ALL ACTIVE CAVALRY UNIT LOCATIONS

NOTE: INCLUDES AVIATION(AV) AND INFANTRY(IN) CAVALRY UNITS

FT CARSON, CO
4th IN DIV (M)
1/10 Cav

FT CARSON, CO
4th IN DIV (M)

3rd ACR

1/3 ACR
2/3 ACR
3/3 ACR
4/3 ACR (AV)

FT IRWIN, CA
11th ACR
1/11 ACR (TK)
2/11 ACR (IN)

FT BLISS, TX
3rd ACR
1/3 ACR
2/3 ACR
3/3 ACR
4/3 ACR (AV)

FT BLISS, TX
3rd ACR
MOVES TO
FT CARSON

CONUS

FT DRUM, NY
10th MTN DIV (LT)
3/17 Cav (R)

USMA WEST POINT, NY
4/1 Cav

FT KNOX, KY
1st AR TNG BDE
5/15 Cav
16th CAV REGT
1/16 Cav
2/16 Cav
3/16 Cav
4/16 Cav
5/16 Cav

FT BRAGG, NC
82nd ABN DIV
1/17 Cav (AV)

FT CAMPBELL, KY
101ST ABN DIV
2/17 Cav (AV)

FT STEWART, GA
24th IN DIV (M)
2/4 Cav

FT STEWART, GA
3rd IN DIV (M)
3/7 Cav

FT HOOD, TX

III CORPS

1/6 Cav (AV) 3/6 Cav (AV)

1st CAV DIV

1/5 Cav (IN) 2/5 Cav (IN) 1/7 Cav 2/7 Cav (IN) 1/8 Cav (TK) 2/8 Cav (TK) 3/8 Cav (TK) 1/9 Cav (IN) 1/12 Cav (TK) 2/12 Cav (TK)

2nd AR DIV

2/1 Cav

FT HOOD, TX

III CORPS

1st CAV DIV

1/5 Cav (IN) 2/5 Cav (IN) 1/7 Cav 2/7 Cav (IN) 1/8 Cav (TK) 2/8 Cav (TK) 3/8 Cav (TK) 1/9 Cav (IN) 1/12 Cav (TK) 2/12 Cav (TK)

4th IN DIV (M)

1/10 Cav

JRTC/FT POLK, LA
2nd ACR (LT)

1/2 ACR
2/2 ACR
3/2 ACR
4/2 ACR (AV)

ALASKA

FT WAINWRIGHT
6th ID
A Trp 4/9 Cav

FT WAINWRIGHT
10th MTN ID (LT)
E Trp 3/17 Cav



OCONUS

GERMANY

KIRCHGOENS 1ST AR DIV
3/5 Cav (IN)

KIRCHGOENS 1ST AR DIV



SCHWEINFURT 3rd IN DIV (M)
3/4 Cav

SCHWEINFURT 1st IN DIV (M)
1/4 Cav

BUEDINGEN 1ST AR DIV
1/1 Cav

ILLESHEIM USAREUR
2/6 Cav (AV)
6/6 Cav (AV)

= CURRENT (FY95-96)
NOTE: WHITE BOX ONLY INDICATES NO CHANGE
= FUTURE (FY97)
TO BE COMPLETED BY 30 SEP 96

KOREA

CAMP PELHAM
2nd IN DIV
5/17 Cav

CAMP PELHAM
2nd IN DIV
4/7 Cav



HAWAII

SCHOFIELD BARRACKS
25th IN DIV (LT)
5/9 Cav (R)

SCHOFIELD BARRACKS
25th IN DIV (LT)
3/4 Cav (R)