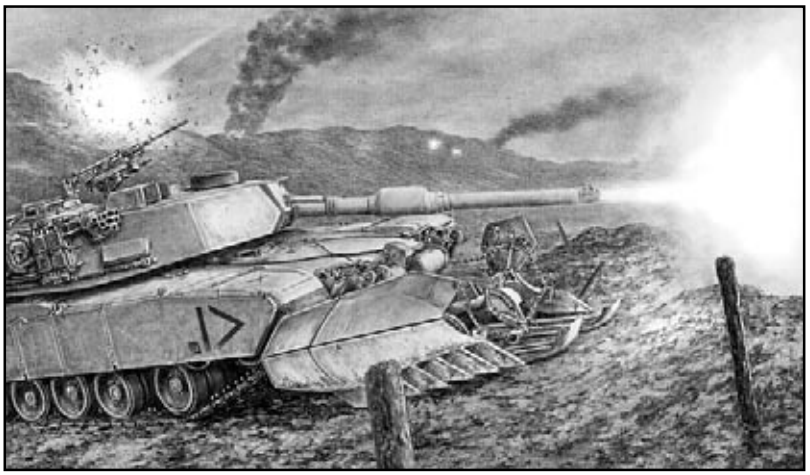
ARMOR

Red Star — White Elephant? *See Page 26*

PB 17-02-4 ***July-August 2002***



Once More Unto the Breach

It is with great awe and privilege that I am assigned as the 40th Editor of *ARMOR*. Since my days as a young lieutenant, I have been impressed with this journal. I have always had my eye on the job; luck would have it that I am at the helm. This professional journal is renowned throughout the Army and the world for its professional dialogue, well-written articles, and candor. I intend to maintain the high standards of excellence and strive to expand the landscape of professional knowledge.

This journal has earned its reputation because of the talent and wisdom of our readers and contributors. Continue to support the magazine by inspiring those around you to articulate their thoughts, ideas, and lessons learned into words. Now more than ever, as the Army strategically transitions to meet future requirements, we need your opinions and experiences. Change is here, and the Armor force cannot afford to be left behind — reacting to change instead of leading the charge into a new era.

Throughout the illustrious history of this journal, one thing has remained constant; that is the poignant, relevant, and thought-provoking articles written by individuals doing their part in contributing to the Armor force. Keep it up! If you've got something to say, send it to us. You can be sure I will not censor or stifle honest and thought-provoking opinion and debate. It is, in large, why this professional journal exists. For example, see J.D. Dunivan's "Letter to the Editor." *ARMOR* has cultivated a great deal of latitude in its open exchange of ideas over the past 114 years.

An old adage says, "The more things change, the more they stay the same." One of the benefits of this job is the ability to read the earliest editions of *The Cavalry Journal,* the predecessor to *ARMOR*. I am fascinated with the articles published during the turn of the century. In the first edition, printed in March 1888, 1st Lieutenant Eben Swift, 5th Cavalry, wrote an article titled "Sabers or Revolver"? If Lieutenant Swift was alive today, I assume he would be opining on what the interim and objective force should look like. During 1898, one young cavalry captain wrote an analysis on leadership and what the cavalry force must do to remain an integral part of the Army. His insight and wisdom on the topic is as pertinent today as it was then.

I must elaborate on an administrative note — awards, specifically the Order of St. George. I am entrusted by the Armor Association to guard this tradition. The Order of St. George was created in 1986 to honor outstanding Armor officers and soldiers. Throughout the years, this has been done effectively. However, there has been confusion over eligibility. To end the confusion, the Armor Association Executive Council voted in May to change the criteria to the following: For *Armor branched* officers who demonstrate successful command of an armor or cavalry unit. Note, "Armor branched officer." For enlisted, this includes CMF 19 soldiers who have successfully been branch certified as a platoon sergeant, first sergeant, or command sergeant major. The Order of St. George will only be approved for those who meet the criteria outlined in the nomination process; for specific criteria, see *www.usarmor-assn.org*. There are outstanding officers, warrant officers, and soldiers of other branches serving with Armor leaders. The Noble Patron of Armor was established to honor and recognize them.

Now unto the breach we go. LTC Steve Eden provided me quite an introduction to the job. His article on attrition warfare stirred quite the hornet's nest. Because of the enormous response to his piece, we obligated an unusual amount of "letters" space.

During the Armor Conference in May, several hundred Army leaders gathered at Fort Knox to discuss the Army's Transformation. Training was the focus of this year's conference and we have several articles on how the Armor School is responding to meet worldwide challenges. Changes are coming in the training of our officers and NCOs. These changes will cause a significant emotional reaction from some of you — read CPT Jason Slider's article on the preliminary details.

I am looking forward to the future with my eyes to the past.

– DRM

By Order of the Secretary of the Army:

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

Official:

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

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ARMOR

The Professional Development Bulletin of the Armor Branch PB 17-02-4

ARMOR (ISSN 0004-2420) is published bimonthly by the U.S. Army Armor Center, 1109A Sixth Avenue, Fort Knox, KY 40121.

Official distribution is limited to one copy for each armored brigade headquarters, armored cavalry regiment headquarters, armor battalion headquarters, armored cavalry squadron headquarters, reconnaissance squadron headquarters, armored cavalry troop, armor company, and motorized brigade headquarters of the United States Army. In addition, Army libraries, Army and DOD schools, HQ DA and MACOM staff agencies with responsibility for armored, direct fire, ground combat systems, organizations, and the training of personnel for such organizations may request two copies by sending a request to the editor in chief.

Authorized Content: *ARMOR* will print only those materials for which the U.S. Army Armor Center has proponency. That proponency includes: all armored, direct-fire ground combat systems that do not serve primarily as infantry carriers; all weapons used exclusively in these systems or by CMF 19-series enlisted soldiers; any miscellaneous items of equipment which armor and armored cavalry organizations use exclusively; training for all SC 12A, 12B, and 12C officers and for all CMF-19-series enlisted soldiers; and information concerning the training, logistics, history, and leadership of armor and armored cavalry units at the brigade/regiment level and below, to include Threat units at those levels.

July-August 2002, Vol. CXI, No. 4

Features

Departments

Periodicals Postage paid at Fort Knox, KY, and additional mailing offices. Postmaster: Send address changes to Editor, ARMOR, ATTN: ATZK-ARM, Fort Knox, KY 40121-5210.

Distribution Restriction: Approved for public release; distribution is unlimited.

USPS 467-970

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Commercial prefix– (502) 624-

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ArmorMagazine@knox.army.mil

When sending articles via e-mail, please include a complete mailing address and daytime phone number.

SUBMISSION POLICY NOTE: Due to the limited space per issue, we will not print articles that have been submitted to, and accepted for publication by, other Army journals. Please submit your article to only one Army journal at a time.

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UNIT DISTRIBUTION: To report unit free distribution delivery problems or changes of unit address, phone DSN 464-2249; commercial: (502) 624-2249. Requests to be added to the free distribution list should be in the form of a letter or e-mail to the Editor in Chief.

EDITORIAL MAILING ADDRESS: *ARMOR,* ATTN: ATZK-ARM, Bldg 1109A Sixth Avenue, Room 371, Fort Knox, KY 40121-5210.

ARMOR MAGAZINE ONLINE: Visit the *ARMOR* magazine website at *www.knox.army.mil/armormag.*

ARMOR HOTLINE — DSN 464-TANK: The Armor Hotline is a 24-hour service to provide assistance with questions concerning doctrine, training, organizations, and equipment of the armor force.

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LETTERS

No Standing Ovation for "Three Cheers..."

Dear Sir:

In his March-April 2002 article, "Three Cheers for Attrition Warfare," LTC Steven Eden reveals some of the basic problems armor leaders face as they develop doctrine for future warfare. I applaud LTC Eden for airing a much-needed contrarian argument to enliven the ongoing debate. Too often, discussions of armor doctrine are simply restatements of the conventional wisdom that maneuver warfare equals good and attrition warfare equals bad. However, his article also shows how discussions of doctrine have become bogged down by this false choice between attrition warfare and maneuver warfare. Those terms have been used to vaguely pigeonhole multiple schools of thought on warfighting and have become so overused, misunderstood, and vague that they are practically useless.

Because of this oversimplification, LTC Eden himself seems to ignore his own description of the tank as a unique combination of mobility and firepower. Armor is defined by its unique ability to both inflict large amounts of destruction AND rapidly maneuver on the ground. Any doctrine for the employment of armor has to recognize this fact and move away from simple characterizations of attrition versus maneuver.

LTC Eden convincingly argues that commanders at a disadvantage far more frequently emphasize maneuver. He also correctly points out that the side with an overwhelming qualitative and quantitative advantage usually achieves victory, frequently making maneuver irrelevant in the final result. He then makes a dangerous jump in logic. He concludes that using U.S. materiel superiority to simply destroy large amounts of enemy personnel and equipment will, and should, inevitably lead to victory.

LTC Eden asks, in essence, "Why bother trying to find ways to win wars faster and more efficiently when we can always grind them to a pulp with superior resources and technology?" To accept this logic is to abandon one's professional military ethics; leaders at all levels have a responsibility to accomplish the mission while minimizing costs in men and materiel. Further, relying on materiel superiority means that the military leader passes the responsibility for ensuring victory to scientists, industrialists, recruiters, and budget committees.

This approach also underestimates the primacy of the human element in war. High enemy body counts and favorable kill ratios do not necessarily win wars or cause the enemy's will to collapse. Ask General Westmoreland. Hoping that if you kill enough of the enemy they will eventually give up is not a certain road to victory, because the side that is winning by the numbers may not be winning the war of wills.

In his argument, LTC Eden is not only criticizing maneuver warfare as he understands it. He is also implicitly attacking any approach — like many versions of maneuver theory — that focuses primarily on the psychological, rather than the physical, effects of military force. This is where he goes astray. He is correct that firepower will become more dominant in future warfare, but that does not necessarily mean that materiel factors will become more important than human or organizational ones.

LTC Eden's example of the Gulf War actually shows the primacy of human and organizational factors. We now can say with a great deal of certainty that Iraqi casualties and physical losses from the air campaign were far lower than we thought at the time. Numerically, the damage was far from decisive, but it caused the collapse of the Iraqi army's fragile C3 system, morale, and cohesion. These were the centers of gravity that, when attacked, set up such decisive results. Only after this collapse did coalition armored forces move in to inflict the killing blow on a "hapless and ineffectual" enemy.

The article illustrates that there is a lot more to developing a basis for future armor doctrine than choosing attrition or maneuver — one has to choose between a mathematical/materiel and a human/psychological perspective on warfare. The choice should be clear. Victory will go to the army that most efficiently employs its firepower and maneuver against the enemy's will and ability to fight. Whether or not one actually inflicts the most casualties or destruction in simple physical terms is secondary to defeating the enemy. Since the days of the first tanks, armor's power to defeat the enemy has been as much rooted in the psychological as the physical. If armor leaders remember that, armor will continue to remain the arm of decision in land warfare.

MARKUS V. GARLAUSKAS

On Attrition Warfare and Dead Cats

Dear Sir:

Ouch! Careful when swinging those dead cats, LTC Eden. You might bruise my delicate egg-shaped head.

I would like to take issue with three of LTC Eden's points in "Three Cheers for Attrition Warfare." The first is his using "SAMS graduate" as an epithet, the second his thesis, and the last his poor use of historical examples.

I am disturbed by articles in this magazine by LTC Eden and others denigrating officers who attended the School of Advanced Military Studies (SAMS). Have they considered the effects of their comments? I don't want any sympathy for those of us who have already gone to SAMS. My problem with the comments is the effect that they have on junior majors who are considering attending SAMS. Do you think there are many young armor majors who want to attend SAMs after reading these comments? I have not met one armor officer in the past three years who expressed any interest in SAMs. Many of them cited comments like LTC Eden's from senior officers.

What are the consequences of armor majors avoiding SAMs? After completing SAMS, officers are primarily assigned to G3 Plans in divisions and corps. SAMs graduates are the people who write the corps and division operations plans that battalions and brigades execute. If no armor officers go to SAMS, then who will be writing those operations plans? What is their branch? Will they have any idea how long an armor brigade takes to move, how much ground it occupies, or how long it takes to refuel? If we do not encourage armor officers to attend SAMS, we are likely to face a future of higher headquarters giving us unexecutable, completely unrealistic operations orders written by someone who has no clue how to conduct armor operations.

While we should be encouraging young armor majors to attend SAMs, it does not mean that we should treat graduates with kid gloves. Mentor them just as you would anybody else. When you catch a SAMs graduate, or any officer, floating in the realms of theory instead of slogging through the synchronization matrix, jerk a knot in their chain and bring them back down to earth. In the past, the SAMs curriculum did tend to focus on the "deep thoughts, transformation of war" stuff. In a unit, deep thoughts and bright ideas are the domain of the commander, not the planners. The planner's job is to take the commander's bright ideas and quickly turn them into a well-synchronized plan that can be quickly understood and violently executed by the subordinate units. If your SAMs graduates cannot do that, mentor them and provide feedback to Fort Leavenworth to improve their POI.

I would next like to disagree with his thesis that our future wars are likely to degenerate into battles of attrition rather than campaigns of maneuver. First, maneuver warfare does not depend on technology. In fact, we are far more likely to have it inflicted on us by a technologically and economically inferior foe than we are to wage it against him. Second, while war between evenly matched opponents does often degenerate into attrition warfare, we are very unlikely to meet a peer opponent who can force us into a war of attrition. Last, even if destroying an opponent by attrition is feasible, it is unlikely to be considered acceptable or suitable by the American people.

The last problem with the article is the poor use of historical examples. The author briefly touches on a broad number of historical examples and seeks to impress us with his familiarity with some of the more obscure military leaders. While this name-dropping demonstrates an impressive level of breadth in his historical reading, it does little to bolster his argument and serves to confuse less well-read people. A senior officer who has had LTC Eden's educational opportunities should do a better job of showing younger officers how to construct an argument.

All of the maneuvering "losers" described by LTC Eden kept their forces in the fight far longer than if they had employed other TTPs. They inflicted greater casualties on their enemies and spared the lives of their soldiers. Our enemies are likely to employ the same TTPs on us. Desperate or not, we need to study maneuver to improve our understanding of the art of war. Our soldiers and the American people *do expect us to win with style*, that is, quickly, with as few casualties as possible. Attrition can happen and we must be prepared for it. But it is our duty to avoid the bloodlettings and, instead, maneuver to defeat our enemy quickly and at the lowest cost. It has always been the intent of every commander for whom I have worked, and it will be part of every plan and order that I write. Who will be writing the orders for your higher headquarters, LTC Eden, and do they understand what it takes for an armor unit to maneuver?

ERNEST A. SZABO
LTC, AR
Cdr, 3-362 AR (TS)

Applause for "Three Cheers..."

Dear Sir:

Highest compliments to LTC Steven J. Eden and his article, "Three Cheers for Attrition Warfare," in the March-April issue of *ARMOR.*

The article should be filed away and reprinted every three to five years or as needed whenever a new fad "…that will change the face of land warfare as we know it," comes along.

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

Maneuver vs. Attrition Warfare It's the Culture

Dear Sir:

Responding to LTC Steve Eden's "Three Cheers for Attrition Warfare," I want to thank *ARMOR* again for publishing material that creates intellectual ferment. What LTC Eden addresses is the doctrinal mindset of our current Army (military), but fails to address the cultural aspect of maneuver vs. attrition warfare. History, combined with the changing face of war, supports a need for our Army, our military, to adapt maneuver warfare as its cultural mindset. Let's start with history.

In his examples of material over brains, he forgot several successful examples of maneuver warfare that won wars. A list of ten successful practitioners comes to my mind. I am proud to say, despite the establishment's claim that "maneuverists" (I am often called worse names) are all negative when it comes to referencing the use of maneuver warfare by the U.S. Army, that our Army had several commanders who practiced maneuver warfare: George Washington at Trenton and Princeton, Winfield Scott on his drive to Mexico City, and U.S. Grant at Vicksburg (where did Sterling Price come in?) versus lackluster Pemberton (though Grant could not have known of his incompetence at the time after Pemberton performed well in the preceding months).

Grant's 1864 campaign in Virginia operationally was maneuver warfare (which is what maneuver warfare is all about) while Grant fought a war of attrition at the tactical level (he lost a less percentage of his army than Lee); his "fixing" of Lee loosened other forces to conduct campaigns of maneuver (Sherman's 1864 Northern Georgia campaign is a great study in maneuver warfare at the operational level, and attrition at the tactical level). John Shirley Wood's 4th Armor Division in France in 1944 is another successful maneuver warfare unit; and shifting national gears, how about the Israeli army of 1956, 1967, and 1973 (whose practice of maneuver warfare was created to diminish casualties)? Or, I will backtrack, how about one of the most successful armies in history (and it was outnumbered), the Prussian Army of 1866 and 1870 (practiced maneuver warfare at the operational level). With this in mind, what has attrition warfare won for the United States?

And, I don't know how attrition warfare won Vietnam for our nation? The Gulf War, that is a good one, attrition mindset (which is more cultural and doctrinal) gave us a hollow victory. Why; we failed to understand the battle of encirclement and focused inward on graphics due to our culture of overcontrol and a fear of casualties. Yes, by the way, we used airpower the wrong way. Where was the Republican Guard two weeks after the war ended? How about Somalia? Another example of our great soldiers fighting their tails off, but getting no support — enough said. Oh, yes Kosovo, where the air tasking order required a 72-hour reaction time to adjust to Serbian Army changes on the ground, where video conferences were held with commanders twice a day to ensure no errors. How many Serbian vehicles did we really destroy when the truth was known, released by *Newsweek*? But, we have had a great record with attrition warfare.

Attrition warfare is the absence of strategy. We have chosen this course of action because U.S. military history is filled with the conflict of amateurism versus professionalism driven by the need to create massed armies overnight as part of our national strategy called mobilization doctrine (termed "The American Way of War"). This, in turn, is caused by the neo-Hamilton fear of a professional officer class and army. In turn, attrition doctrine provides an adequate blueprint to bring citizen soldiers and officers more attuned to being peacetime managers up to speed with some coherence in conducting warfare.

The United States can act this way because it has the most dominant economy in world history. In turn, this economy prospered with its citizens having no fear of constantly rebuilding burnt cities, replanting destroyed crops, and finding homes for refugees. This is because it is protected by the two largest moats in the world — the Atlantic and Pacific Oceans; and it is bordered north and south by peaceful neighbors. Thus, with these two themes, we have practiced, with exceptions, attrition or 2d generation warfare throughout our military's history, especially since the Civil War. The question beckons, in the 21st century, with the evolution of 4th generation warfare, will this focus on 2d generation warfare be adequate?

What LTC Eden should address is the cultural mindset of attrition, or 2d generation warfare, with maneuver, or 3d generation warfare. In terms of the controversial form of argument — and one that is more fun — is the one that centers on cultural differences.

Maneuver warfare is directed toward destroying enemy cohesion as opposed to seizing real estate; at taking the enemy force out of play decisively instead of wearing him down through slow attrition; high tempo war; fluid war that has no defined fronts or formations; decentralized armies where troops act on their own with high initiative as opposed to centralized command structures where troops ask permission and wait for orders; war designed to place the enemy in a dilemma, to suck him into traps of his own creation, taking advantage of his stupidities and weaknesses and avoiding his strengths; war where soldiers act on judgment, not on rules; war without rules; war that seeks to penetrate the enemy rather than push opposing lines backwards and forwards; war waged by a cohesive team that is like a family or tribe with a common culture and common outlook; and a willingness to fight close, not just applying firepower from a long standoff, but infiltrating when the opportunity arises, as did 1st Marine Division in Desert Storm.

The current Army culture has developed parallel with evolving and institutionalizing attrition doctrine.

The bottom line is that as long as the leaders of the Army put excuses up front and solve the problem by tinkering with the system, as they did with OPMS XXI, or by using more pay, e-mail to seniors, providing more time off, and consolidating the software

Continued on Page 44

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

Armor Center Committed To Army Transformation

We just concluded the annual Armor Conference at Fort Knox, and from my perspective it was a great success. This year's goal was to offer attendees a broad review of training ideas and opportunities offered by the Armor Center and by other leaders in this field. Subject matter experts addressed training issues across the Army as well as provided updates on critical developments in the mounted force. A number of impressive keynote speakers included Vice Chief of the Army, General John M. Keane; Commanding General, III Corps, Lieutenant General B.B. Bell; Deputy Commanding General TRADOC, Lieutenant General Larry Jordan; Director of the Army National Guard, Lieutenant General Roger C. Schultz; and Commanding General Infantry Center, Major General Paul D. Eaton. A wide variety of vendors displayed the newest equipment and technology offered to the force. As you would expect, we also enjoyed several social events to allow old friends to catch up on the latest events and for new friendships to begin.

One of the key areas discussed at the Armor Conference was the Transformation of the Army. I will share with you the Armor Center's perspective on that topic. Before I do, let me assure you that our primary mission remains the same, and that is to train mounted warriors for our force.

The Armor Center is decisively engaged in providing training strategies and doctrinal products that support both today's Army and the Army of the future. For example, between June and September of this year, the Directorate of Training and Doctrine Development will publish over 10 Legacy, 13 Transformation, and 7 Gunnery Field Manuals and ARTEP Mission Training Plans (MTP).

Fort Knox and the Armor Center remain committed to the Army's transformational efforts for our future Army. The RSTA Squadron continues to move forward in collective training, and is preparing to receive the initial ICV-Reconnaissance variants this fall. Upon completion of training, they will be prepared to deploy as the critical enabling component, the Stryker Brigade Combat Team. Along a similar path, we continue to refine the organization of the 2d Cavalry Regiment from an analog, HMMWV-based cavalry regiment into a digital, Stryker-based Cavalry Regiment, capable of supporting the XVIII Airborne Corps in operations worldwide. The Army Chief of Staff approved the concept and we continue to develop the best force effectiveness we can achieve.

Fort Knox and the Armor community are actively engaged in bringing the Objective Force to reality. As I reported to you earlier this year, the TRADOC Commander has named Fort Knox as the proponent for the Unit of Action, the primary combat unit of the Objective Force, and as the proponent for the Future Combat System (FCS) — a system of systems. In a revolutionary effort to field an entire force rather than just individual platforms, we have stood up the Unit of Action Maneuver Battle Lab. This Battle Lab serves as the hub for collaborative efforts between all TRADOC battle labs, other Army organizations, joint agencies, and academia. Together with these spokes, we will coordinate the development of this system of systems. In the coming years, this organization will prove to be an invaluable asset to the Army and to our nation for force development and force fielding.

The Unit of Action is not about platforms, it is a system of systems approach to designing a force. What that means is that the warfighters, the equipment, the training, and the doctrine must be developed and function in a complementary and synergistic way. Some of that equipment exists today, like the RAH-66 Comanche, a critical component of our air/ground team for our reconnaissance forces, as well as a killing capability that is unmatched. Much of it has yet to be developed, but the development will enable a command driven, information enabled force that will dominate any battlefield.

General Keane reminded us that during its 227 years, the Army has never failed our nation. The Armor Center is engaged in many diverse challenges to support this record, yet one thing remains the focus of all our activities — THE SOLDIER. We continue to develop and implement new and better ways to train multiskilled soldiers, Marines, and adaptive leaders for a wide array of 21st-century missions. The young Army and Marine tankers, cavalrymen, and mechanics who we are training remain the Armor force's focal point. The thousands of young men who complete their basic training at Fort Knox and go on to other branches and specialties are better for being trained here. Our noncommissioned officers and officer courses help hone leadership skills that make our Army what it is today. Despite all the gizmos and gadgets we design, soldiers remain the most amazing technical advantage that America's Army has had for the past 227 years and will have for the next 227 years!

Forge the Thunderbolt!

Hints for Success

by CSM William J. Gainey, Command Sergeant Major, U.S. Army Armor Center

Greetings from the U.S. Army Armor Center and Fort Knox. I would like to remind you that your input field is very important.

The Armor Conference in May was a very successful event and we, as a collective group, accomplished a lot.

I had a great visit with the NCOs from the National Training Center (NTC) and would like to thank CSM Flood from the 11th ACR for hosting our team. I also went to Camp Shelby, Mississippi, and visited with the great National Guard soldiers of the 155th Separate Armor Brigade (E) during their annual training. COL Wood and CSM Booker, your soldiers were looking great and training hard; thanks for hosting us.

I would like to give loud and sincere congratulations to the new master sergeant selectees. Fort Knox did very well on promotions to master sergeant. That may mean that Fort Knox is the place to be if you want to be promoted. The reality is that the promotion board selects sergeants first class for promotion based largely on their success as platoon sergeants at other installations.

As a sergeant first class, platoon sergeant duty is the most critical element of branch certification. The Armor Center's guidance to the board was to select only branch-certified sergeants first class. To be branch certified, you must have a minimum of 18 months in a branch certifying platoon sergeant position.

Not every platoon sergeant position is a branch-qualifying position. Branch-qualifying positions are in the divisions and regiments, with a very small number at Fort Knox. These positions are branch-certifying positions not because of soldier or equipment assets, but because the platoon sergeant is responsible for training tank commanders and platoon leaders. Platoon sergeants must display master warfighting skills. The U.S. Army is in the warfighting business and requires warfighters as its leaders. Warfighting is not an amateur's sport. NCOs must be the professional technical experts, which is attained through experience.

Highly successful platoon sergeants are the NCOs that the armor force wants for its future first sergeants. Every sergeant first class selected for promotion had more than the minimum 18-month platoon sergeant time requirement. All candidates had some platoon sergeant time in an MTOE unit; none of them had only TDA platoon sergeant time. Many of the sergeants first class selected were serving as first sergeants in MTOE units. To be promoted, you must seek out demanding leadership positions in a division or regiment and excel in that assignment. Do not try to move out of a leadership position at exactly 18 months.

The promotion board can only select a predetermined number for promotion; therefore, not every branch-certified NCO is selected. The board can only select the very best.

The master sergeant selection board uses the Armor Center's guidance to assist in selecting the very best of many highly qualified candidates. A current copy of the board's guidance is available on the Fort Knox website through the Office of the Chief of Armor.

The promotion board highlighted the Excellence in Armor (EIA) program. Started in 1985, The EIA program facilitates career progression and increases promotion potential by identifying and rewarding the best and brightest armor soldiers. There are now more than 13,000 Active, Inactive, Reserve, and National Guard soldiers enrolled.

The Memorandum of Instruction for the EIA program can be found on the Office of the Chief of Armor website. It details the procedures for enrolling in the program and lists the program's benefits. Soldiers can be nominated for the EIA program as early as One Station Unit Training at Fort Knox or any time during their careers. Soldiers also receive additional training and should be assigned ahead of their peers. Promotable sergeants enrolled in the EIA program can earn 50 additional promotion points by passing the Tank Commander Competency Test – Level II (TCCT-II) or the Scout Commander Competency Test – Level II (SCCT-II). EIA soldiers are also given special consideration for PLDC and BNCOC.

Historically, the majority of soldiers selected for promotion to the top three grades in armor were enrolled in the EIA program. The soldiers in the program have been identified as the best in their units and will be future leaders.

True leaders take care of their soldiers. When we support soldiers and enroll them in the EIA program, we are doing more than just talking about how we take care of soldiers. We are putting words into action.

Always remember, "PRIDE IS CONTAGIOUS."

I am very interested in receiving concerns, comments, and suggestions from soldiers out in the field. Please send all questions and comments to the following email address:

CSM@knox.army.mil

Two or three questions will be selected and featured in each edition of *ARMOR.*

Transforming Ethics Instruction at Fort Knox:

Molding Ethical Warriors, One Scenario at a Time

by Chaplain (Major) Terrence Walsh

The junior leaders of the regimental task force were having a difficult time. They were in new leadership positions, and they knew that combat would be difficult, dangerous, and deadly. However, they never expected to encounter these kinds of problems so quickly.

Alpha and Bravo Troops were assigned to secure a small village, while the rest of the regiment was engaged in a movement to contact. One platoon of Alpha Troop was assigned to seize a building for use as squadron headquarters. Alpha's soldiers were warned that the building was occupied by war criminals who were wanted by an international tribunal. Pumped on adrenaline, they secured the first floor and then charged into the basement. Seeing movement, they opened fire, only to discover that they had killed two women and a baby. The entire platoon was immediately placed under arrest for war crimes.

While Bravo Troop prepared defensive positions in a townhouse, two teenage boys ran up yelling that an American soldier had raped their sister. Obviously their yelling was going to warn the enemy of the troop's location. The Bravo Troop commander quieted the boys and collected their information. Based on that information, he detained the suspect (who was hiding in another building) until criminal investigators could be called in.

In the open woodland outside the village, the M1A1 crews of Charlie Troop were contending with hungry refugees seeking MREs and other handouts. Perimeter security held, but only after Charlie's commander did some corrective training. During the troop's first night in country, hungry refugees walked freely from tank to tank, unchallenged, asking each crew for a handout. Delta's problem was slightly different; they were besieged by vendors trying to sell them soda and candy — all of which were ever so tempting to the weary tankers.

DOD Photo

"...we must not forget that grand ethical arguments come down to a private first class with a rifle, who will have to decide whether or not to take some other person's life."

As Echo Troop moved toward the line of departure, they received a radio report that sniper fire and grenades had ravaged another troop's assembly area. The report stated that the terrorists were probably from a refugee camp just beyond the LD. The troop commander ordered the platoon nearest the refugee camp to pepper the camp with machine gun and grenade fire, and then to run the platoon's tanks through the camp, "so if we don't kill the terrorists, at least they won't have a home to which to return." The platoon leader hesitated before answering his company commander, then replied with a hearty "Roger!" At the AAR, the platoon leader stated, "I fired up the village to see if any civilians were present."

The regiment was not fighting in Vietnam or Bosnia, but in Kentucky, at the Armor School at Fort Knox. The regiment is the 16th Cavalry Regiment, responsible for the Armor Officer Basic Course, Armor Career Captain's Course, Armor Pre-Command Course, and the Armor and Cavalry (19K/19D) Basic and Advanced Noncommissioned Officer Courses. The junior leaders were students in AOBC, ACCC, BNCOC, or ANCOC.

The mission of the Armor School and the 16th Cavalry Regiment is to turn out warriors who are tactically proficient, self-confident, and adaptive, able to conduct any type of mission along the full spectrum of operations, and capable of doing so in a manner which honors Army values, the law of land warfare, and the inherent dignity and compassion of the American people. But how should the regiment train such warriors, warriors who will not only accomplish the mission but do so ethically? How can the regiment shape warriors who will choose the hard right over than the easy wrong?

The old, time honored method was to conduct classroom training and then test proficiency. These classes in the law of land warfare and ethical decisionmaking were often far removed from the reality of life in combat, and were often taught by special staff (chaplains and judge advocates) whose expertise in warfare was suspect. Students might draw some lessons from these classes, but often regarded them as one more gate to pass through on the road to graduation. Many of my students expressed frustration with school solutions which seem disconnected from the realities of combat.

In contrast, the commander of the 16th Cavalry Regiment has set a different course. The charge to the regiment is clear: fewer PowerPoint slides; more warfighting experience. My particular role was to get ethics out of the classroom and on the battlefield. People remember what they experience, they don't remember lectures. I want students to see and experience ethics in action, not to talk about ethics.

With this in mind, ethics is now embedded in every field exercise in which 16th Cavalry students participate. Each of the following vignettes occurred in the field during maneuver or MOUT training. These scenarios are constructed to follow one of three models. Many involve "civilians on the battlefield," but not all.

First are ethical dilemmas — what should a leader do when values collide? When the students are told to clear a refugee family out of a building so that it can be used for task force headquarters, the mission seems both immoral and unnecessary. How will they resolve the dilemma? Can they apply the ethical decisionmaking process outlined in *FM 22-100, Army Leadership, Be, Know, Do*? Will they carry out the orders, request the mission be re-examined, or perhaps ask for civil affairs help with the refugees?

Second are character issues — when the student knows an order is illegal, will he challenge or disobey the order? Will he question the intent of a superior? Can the student learn to clarify the intent of an order, rather than execute vague or contradictory guidance?

Third are issues involving the law of land warfare, or rules of engagement. During MOUT training, students wrestle with the legality and morality of placing an observation point in the steeple of a church building which has been destroyed, but which is still being used by the civilian population. During maneuver training, the rules of engagement allow buying products from local vendors, but is it a wise tactical move? In another scenario, soldiers are forbidden to give food to civilians, but still must contend with hungry civilians who might be sources of information — either to the Americans or the enemy.

Each scenario is tied to a specific learning objective and military task such as reporting a war crime, applying rules of engagement, disobeying and reporting an illegal order. Each scenario is linked to a situation likely to face students in the near future.

In many cases, the students have shown proficiency in ethical decisionmaking. In particular, students have usually been very good at not engaging noncombatants. But the results are not always pleasing. Students have shown a reluctance to take action regarding an allegation of a war crime by an American soldier; the successful resolution noted in the italics above happened only once. Students disobey or question an illegal order about half the time.

Students have made and will continue to make ethical mistakes on the battlefield at Fort Knox. It is better to make a mistake in Kentucky than Bosnia, Kosovo, or a battlefield of the future. By exposing our warriors to the ethical challenges of combat while they are in training, Fort Knox is turning out leaders fully capable of defeating the enemy while protecting the weak and guarding the innocent.

"I hear and I forget. I see and I remember. I do and I understand. I do the task several times and I know. I do the task many times, and I master the task."

– Confucius

Epilogue: Military Ethics in the War Against Terrorism

By the end of initial entry training, every soldier knows that he or she should disobey an illegal order, report suspected war crimes, and intervene to prevent the murder or rape of innocents. However, having the character to do the right thing is a wholly different matter from simply knowing the right thing to do.

The U.S. Army is greatly enriched by the example of Chief Warrant Officer Hugh Thompson, who used his helicopter to intervene in the massacre at My Lai. Hugh Thompson is an example of both knowing the right thing to do and actually doing the harder right rather than the easier wrong. The 16th Cavalry Regiment aims to graduate armor leaders who will emulate Mr. Thompson's example. All too often the study of military ethics takes place in the classroom. Students learning in the classroom are often absolutely sure they will recognize an illegal order if they get one, and that they will do the right thing. Taking ethics to the field gives them a chance to see that what is crystal clear in the classroom often is less clear in the fog of war — but the fog of war is no excuse to give up on the call to be "proud of all we have done" (Army) and "keep our honor clean" (USMC). Army Values are meant to be lived, not just taught.

The Army officers of today (along with the Marine Corps officers who both teach and train here at Fort Knox) will face immense challenges during the next few years. At a recent conference at the U.S. Army War College, participants wondered if the American military is a victim of its own success. The increasing use of precision guided weapons and the infantry doctrine of precision urban operations have created an expectation that war can be fought without any collateral damage. Yet while war may be more precise, and collateral damage in Afghanistan much less than expected, the international furor over bombing a Red Cross warehouse shows that any collateral damage seems unacceptable to at least the international press — and that the American people certainly expect collateral damage to be limited.

The war on terrorism may involve us in guerrilla warfare once again. In Vietnam, the problem of deciding who was a combatant (and who was not) led both individual soldiers and our society to wrestle with the nature of a war in which the enemy takes advantage of our rules of engagement. Guerrilla fighters may wear civilian clothes, plant bombs in markets, use ambulances to transport weapons and troops, and employ children as combatants. The recent hostile reaction to Israeli decisions to deny ambulances access to battle scenes, based on the Israeli allegation that ambulances have been used to transport Palestinian fighters, should give us pause to consider both the allegation of misuse of medical vehicles by a guerrilla force and how propaganda alleging violations of the Geneva Conventions may be deceitfully used against American forces.

In the winter 2001-2002 issue of *Parameters*, P.W. Singer tells the story of a patrol of the British Royal Irish Regiment who were taken prisoner when their squad commander "was unwilling to fire on 'children armed with AKs.'" The increasing use of child soldiers will pose ethical, tactical, and morale problems for American commanders who may have to order the killing of children in battle. Every American commander should read Singer's perceptive article, "Caution: Children at War."

Part of leading soldiers is being prepared to deal with the sometimes warped and criminal dark side of a few bad apples in our Army. The rape and murder of a child in the Balkans was partially redeemed by the forthright way the criminal case was handled by Army authorities. I have largely focused on battlefield tasks, but the specter of domestic violence continues to haunt the Army as it haunts American society. Here again, leaders must both know the right thing to do, and then choose the harder right.

DOD Photo

"The increasing use of child soldiers will pose ethical, tactical, and morale problems for American commanders who may have to order the killing of children in battle."

Military ethics is widely studied in America. These studies often deal with grand elements of military ethics: decisions about when to go to war; when surrender should be accepted and on what terms; if the use of airpower without a ground commitment is moral; and whether military tribunals are either legal or moral. These are important questions, but we must not forget that grand ethical arguments come down to a private first class with a rifle, who will have to decide whether or not to take some other person's life. The lives of ordinary people in Bosnia, Kosovo, Korea, Afghanistan, and places yet to be named depend as much (or more) on the decisions of individual American soldiers, who have not yet reached the age of 30, as they do on actions of heads of government and legislators. In many war-stricken provinces, an American second lieutenant is the mayor of a town and a staff sergeant is the police chief.

In a variation of the "three-block war" we now have the three-faction war. At one and the same moment, our nation may have soldiers engaged in peacekeeping, peacemaking or enforcement, and full-spectrum warfare in either separate theaters or within a few kilometers of one another. Now, as never before, our soldiers need to move fluidly from restrictive to loose rules of engagement and from peacekeeping to all-out combat. They will need to do this while keeping their moral compasses intact.

In his book, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, LTC Dave Grossman talks about the terrible price that soldiers pay when they are asked to kill. Prior to 11 September, many soldiers rightly assumed that they would probably never fire a weapon in anger. While legions of soldiers have deployed in the past few years, usually on peacekeeping duties, few actually heard shots fired in anger. Now the world has changed. Many more soldiers may face the need to fire a weapon with the intent of killing another human being. And the stresses that Grossman documents will confront a great many soldiers.

In the March-April 2002 issue of *Military Review*, MAJ Peter Kilner makes a compelling argument in his article "Military Leaders' Obligation to Justify Killing in War." Kilner astutely reasons that soldiers who cannot morally justify what they are asked to do will either hesitate on the battlefield or suffer ill effects later (especially post-traumatic stress disorder). Much of military training is designed to prevent that hesitation, but without resolving the moral quandary that is combat. Kilner makes a strong argument that leaders must make a moral case before they ask soldiers to kill. Unfortunately, his article is much better at stating the need to justify killing than actually giving such justification.

American military leaders, especially junior leaders, need to think through why we expect soldiers and their leaders to "do the right thing." I have heard many arguments based on consequences: "so we don't lose the support of the American people;" "so we don't lose the support of our allies;" "so that no American soldier ends up being featured as a war criminal on CNN or the cover of *Time* magazine;" and "so that we do not antagonize the local population." These are all valid arguments, but we need to look at military ethics and character through the lens of a moral strain that runs though every religion I have studied: thou shalt not intentionally take the life of an innocent; thou shalt not bring harm to the innocent and defenseless; and thou shalt protect the orphan and the widow. These are absolute values, not subject to negotiation based on an expected outcome. As an American and as a soldier, I may value the lives of American soldiers more than those of most other kinds of people; in the eyes of God all lives are infinitely and equally valuable. And so we strive to know the right, to do the right, to reject the easier wrong, and to teach, coach, and mentor our fellow soldiers to do the same.

Thanks to MAJ Larry Aikman for his help with this article.

Chaplain (MAJ) Terrence Walsh is the ethics instructor for the 16th Cavalry Regiment. He also serves as the regimental chaplain. Previously, he served as unit chaplain for the 1st Battalion, 81st Armor Regiment (Initial Entry Training) at Fort Knox; 3rd Squadron, 17th Cavalry at Fort Drum, New York; 1st Battalion, 32d Infantry at Fort Drum; and the 10th Aviation Brigade, Mogadishu, Somalia. He is a graduate of the Chaplain Officer Basic and Career Captains Courses.

Paris Revisited:
Preparing for the Uncertain Future of Warfare

by Major Gregory A. Daddis

"The man who is prepared has his battle half fought."

– Cervantes, *Don Quixote*

In 1925, B.H. Liddell Hart published a relatively small, though highly critical, work titled *Paris or the Future of Warfare*. Drawing on his personal experiences from World War I, the British military theorist condemned the general staffs of the world's military powers for being "obsessed with the Napoleonic legend."[1] In their fervid quest for decisive battle, Liddell Hart argues, the generals of World War I had butchered a generation of youth by misapplying the Clausewitzean principle of "absolute war."[2] In the stalemate of trench warfare, destroying the enemy's armed forces became an end unto itself, not a means of achieving political objectives. Alternatively, *Paris* prescribes a more indirect approach to warfare by relying on technological innovations such as the tank and airplane. The key is to "discover and exploit the Achilles' heel of the enemy nation; to strike not against its strongest bulwark but against its most vulnerable spot."[3]

If Liddell Hart is correct regarding the impact of technology on future warfare, his prescience is a rare trait among students of war. In many significant instances throughout history, both military theorists and professionals have had difficulty predicting what the next conflict will look like. Such a task seems all the more formidable in today's murky global environment. The end of the Cold War left us with no certain conventional enemy, while our current war on terrorism may lead us into missions heretofore unimagined in either doctrine or practical experience. In such a climate, how does one prepare for the uncertain future of warfare. More to the point, how do you develop a leader that is, as Major General R. Steven Whitcomb notes, "inventive, adaptive, [and] future-oriented…"?[4]

The Future Past

Soldiers have historically attempted to use lessons from the past to develop theories and ideas concerning the future. Because individual experience in managing violence is often limited, those in the profession of arms have the unenviable task of preparing "themselves for waging war without the benefit of much practice."[5] While realistic training is an integral part of preparing for combat, learning vicariously from others' experiences has invariably been deemed one of the best supplements to practical education. Yet despite all good intentions, the value of historical inquiry has oftentimes been of a dubious nature. As author Michael Howard contends, history, because of its subjective nature, is no guarantor of teaching proper lessons for either the present or the future: "The past is infinitely various, an inexhaustible storehouse of events from which we can prove anything or its contrary."[6]

If such is the case, why then study history at all? Perhaps the best reason is that it offers an intellectual foundation for critical thinking. History offers perspective. Professional soldiers should therefore not be looking to the past for exact lessons of what leads to battlefield success or failure. Instead, they should search for links or trends that will allow them to anticipate things to come. As one military historian notes: "The value of history is that it can provide fresh insight into the past and hence a better understanding of the present."[7]

History provides insight into the past and perhaps a better understanding of the future.

Unfortunately, in their search for applicability, soldiers have all too often misread or even discounted important historical trends. Expectations are generally based on personal knowledge and experiences, and the conceptual framework for what does or does not work is frequently formed early in one's career. Additionally, the longer one matures in a given profession the more difficult it is to be open-minded about incorporating fresh ideas. As an example, American military leaders who were critical of French strategy in Indochina doubted that any value could come from studying their experiences. One general officer in Vietnam quipped: "The French haven't won a war since Napoleon. What can we learn from them?"[8] Thus, by undervaluing critical analyses of the past, profes-

sional warriors can miss indications of what they may face in combat.

Appreciation for change is all the more difficult when transformations in warfare occur on the periphery of global affairs. The Crimean War, begun in 1854 and fought on the outskirts of the Russian Empire, was one such conflict in which both participants and foreign observers largely overlooked new developments in warfare. Though French and British troops aided the Turkish effort against the Russians, few tangible military reforms (besides sanitation and medical services) came out of the fighting. Despite the first widespread use of the new Minié rifle, which greatly enhanced an infantryman's range and accuracy, commentators seemed more absorbed by the celebrated Charge of the Light Brigade than by the effects that the rifle was having on battlefield tactics. Even the American Delafield Commission, tasked to report on the war and including Major George B. McClellan, focused almost exclusively on siege operations around Sevastopol.[9]

The repercussions of misjudging the impact of the Minié rifle would be felt a decade later during the American Civil War. Inculcated with the Napoleonic approach to warfare based on their West Point instruction under Dennis Hart Mahan, numerous Civil War leaders failed to appreciate the ascendancy of the tactical defense. And while tactical doctrine and theory called for entrenching whenever one assumed a defensive posture, professionals like Robert E. Lee failed to do so until late into the war. Instead, soldiers remained wedded to their offensive beliefs despite the terrible costs inflicted by rifled weapons.[10]

If a feature of the rifle was the growing inadequacy of frontal assaults, its use on the American battlefields had relatively little impact overseas. As writer Jay Luvaas contends, "there never was a time when the Civil War exerted any direct influence upon military doctrine in Europe."[11] The increasing emptiness of the battlefield was highlighted even further in 1904 during the Russo-Japanese War. Though the conflict saw the first widespread use of hand grenades, barbed wire, machine guns, and rapid-firing artillery, military observers once again failed to realize that technological advances were necessitating doctrinal changes. If the Russo-Japanese War was indeed "the world's first genuinely modern war," few seemed to comprehend its military consequences.[12]

That is not to say the conflict was ignored or discounted. The British published a three-volume official history on the war, while the French also studied it as an example of contemporary warfare. But as with the Crimean War, the war in Manchuria produced few, if any, doctrinal changes. The French continued to put their faith in a spirited infantry attack by following the prescriptions of Ferdinand Foch who, writing before World War I, declares: "Today as in the past, the attacking mass cannot succeed unless it possesses the firm will to reach its objective."[13] The British likewise focused on the moral aspect of warfare and the continuing efficacy of the infantry assault. The *Official History* downplayed the significance of artillery in the conflict while maintaining that as "it has always been … success or failure depends mostly on the spirit shown by either side."[14] Less than 10 years after the end of the Russo-Japanese War, that offensive spirit would consume a generation of youth on such western European battlefields as Neuve Chapelle, the Somme, and Passchendaele.

It was this failed strategy of the Western Front on which Liddell Hart focuses his condemnation. While *Paris* forecast a return to mobility in future war, an indication of that theoretical aspiration could be found in the Spanish Civil War from 1936 to 1939. In a protracted struggle between Nationalists and Republicans, the war in Spain provided a testing ground for the German, Italian, and Soviet forces that intervened on behalf of the combatants. But as with earlier peripheral conflicts, many observers and participants drew the wrong conclusions from the fighting. The Russians concluded that tanks could not be used in independent formations, while the French judged that the antitank gun had diminished the effectiveness of mechanized armor.[15] Commentators from the United States were equally misguided. U.S. Army attaché reports on the fighting in Spain concluded that tanks were incapable of deep, independent operations and were still best suited to supporting infantry in the close fight.[16] Only the Germans, who were applying the theories advanced by such officers as Colonel Heinz Guderian, used both armor and airplanes in a combined arms team focused on deep offensive operations.

The American and French lessons from the Spanish Civil War underscore the importance of effective analysis when interpreting trends on the battlefield. But understanding, as in the case of the 1920s and 1930s, that the expanding role of mechanization required changes in doctrine is a difficult task at best. As Liddell Hart notes in *Why Don't We Learn from History*, such detached, perceptive thinking does not come naturally: "It is strange," he remarks, "how people assume that no training is needed in the pursuit of truth."[17]

The Future Present

The pursuit of truth in today's strategically uncertain environment is arguably more difficult than ever. While the war on terrorism is providing near-term focus for U.S. Armed Forces, a true conceptualization of what the future will look like still eludes us. Of course, even with clearly identifiable enemies, forecasting how battles will be fought is often nothing more than a speculative process. Writing in 1956 during the height of the Cold War, Walter Millis commented: "Nowhere does there exist a clear and convincing concept of the future in our world society. The ablest students of the subject are either in complete contradiction or in a state of frank bewilderment."[18]

Nearly 50 years later, Millis' observations are as relevant as ever. To deal with this strategic incertitude, military planning, according to the 2001 Quadrennial Defense Review (QDR), is shifting from threat-based planning to capabilities-based planning. The idea is to focus on how an enemy might fight as opposed to identifying whom that enemy might be and where we might fight him. This new approach to threat assessment is one of the driving factors in transformation and is a major departure from our traditional doctrinal approach to warfare. As writer Robert A. Doughty notes, "Even though all of America's conflicts since World War II have been outside of Europe, the Army and the nation have invariably refocused their concerns after these conflicts upon the defense of Western Europe. And doctrine for the postwar Army has centered upon a European-type battlefield."[19] Doctrine was thus consistently tied to a specific threat, that of the Soviet Union, for the last half of the 20th century.

Emerging trends would seem to indicate that threats from weak and failing

states or even nonstate actors will replace those posed by conventional military powers, thus offering no situational templates that fit neatly into our own operational doctrine. In this sense, Operation Desert Storm may very well have been more of an anomaly than a precursor of future conflict. Secretary of Defense Donald H. Rumsfeld commented in the 2001 QDR on how current trends were affecting U.S. defense strategy: "We cannot and will not know precisely where and when America's interests will be threatened, when America will come under attack, or when Americans might die as a result of aggression…. Adapting to surprise — adapting quickly and decisively — must therefore be a condition of planning."[20]

Current U.S. Army doctrine appears to be equally cognizant of the changing nature of warfare. In a chapter titled "The Way Ahead," the new Army *Field Manual (FM) 1, The Army*, discusses how nontraditional challenges will require the Army to be used in various contexts, conducting operations other than war while concurrently preparing for war itself. It goes on to note that, "Combat in the future will likely be multidimensional, noncontiguous, precise, and simultaneous."[21] *FM 3-0, Operations*, continues to refine this line of reasoning by describing how potential enemies will adapt to the American approach to war: "Adversaries will… seek to shape conditions to their advantage. They will try and change the nature of the conflict or use capabilities that they believe difficult for U.S. forces to counter."[22] With a goal of eroding our national will, future enemies will attempt to use terrain to their advantage, inflict an unacceptable number of casualties on U.S. troops, and avoid decisive battle to control the tempo of ground operations.

Such an approach to warfare is obviously nothing new. Throughout the Cold War, only the former Soviet Union could compete with the United States conventionally; even so, it was this military competition that eventually bankrupted their economy and entire political system. During that same time, the limited wars in which the United States fought saw an enemy much less dependent on technological means. They simply could not compete with the primacy of U.S. firepower. Instead, they adapted, avoiding losses and gaining time in hopes that America's willpower would eventually erode. In both Korea and Vietnam, the enemy established precedence on patience and flexibility. According to author Robert H. Scales: "Given the gift of time, a dedicated enemy with the will to endure and absorb punishment by fire eventually learned to maneuver at will without the benefit of a firepower advantage."[23] Without a doubt, we should expect to see the same tactic in future conflict.

This asymmetrical approach to combating a greater power's strengths by avoiding them has deep historical roots. While Western military theorists such as Carl von Clausewitz emphasized the importance of decisive battle — an underpinning of the American way of war — Eastern theorists have often focused on a more indirect approach to victory. The writings of Mao Tse-tung are among the most notable examples of such a methodology. Mao's 16-character formula became the foundation for conducting successful guerrilla warfare operations and was used with skill in the revolutionary wars against the Chinese Nationalists, as well as against U.S. forces during Vietnam. Following the earlier prescriptions of Sun Tzu, Mao advocates: "The enemy advances, we retreat; the enemy camps, we harass; the enemy tires, we attack; the enemy retreats, we pursue."[24]

Patience and adaptability were cornerstones of Mao's approach to conflict and, having been successfully applied in the past, they will likely be used in the future. Unfortunately, such aspects of warfare are not among the strongest traits of the American military. Our historical dedication to the decisive battle is ingrained in initial training, while the specific mission of the armor force is to close with and destroy the enemy. Those in the mounted force are expected to be bold and decisive, not patient and cautious. Yet while we advocate flexibility and audacity in operations, we often train along the lines of the traditional set-piece battle. Phase lines, boundaries, and checkpoints reinforce the concepts of linear fighting where forces move and set along well-delineated coordination measures.

To effectively combat an adversary committed to asymmetric warfare, we must transform not only the vehicles that will take us into battle but the whole way in which we think about combat. Developing a vision for transformation is one thing; executing that vision in an often largely conservative military is another. In the end, the U.S. Army in general, and the armor force in particular, will have to make changes not only in equipment but, more importantly, in culture.

In all likelihood, it is our heavy culture that will hinder our transition away from the Legacy Force. Just as cavalrymen in the 1920s and 1930s adapted to changes in warfare brought about by motorization, so too will our generation be charged with adjusting to a new framework for how wars are fought. This can be a daunting task, as evidenced by the horse soldiers of the interwar years. Their entire professional ethos were centered on their mounts, and many officers who felt that their careers were being threatened sharply criticized the role that mechanized armor would have in future wars. As late as 1938, Major General John K. Herr, Chief of Cavalry, proclaimed: "We must not be misled to our own detriment to assume that the untried machine can displace the proved and tried horse."[25]

Today's armor officers must not fall into the same cultural and intellectual stagnation. Transitioning from threat-based to capabilities-based planning will require a new approach to warfare, especially on a nonlinear battlefield. In the future, armor forces will still be required to mass effects of firepower, but may not be able to mass forces conventionally. Clearly, identifiable divisions between deep, close, and rear operations may be blurred as traditional set-piece battles become obsolete. Fire support coordination lines, easily linked into parallel phase lines, would ostensibly be more difficult to synchronize in a less structured battlefield environment. Peacekeeping operations may not detract from future readiness, but instead become an integral part of our new approach to combat preparation.

With fewer wars and more conflicts being a feasible scenario for the future, one significant question arises: Are we transforming for the right battle? More to the point, what if, in all our haste to change our force structure, we are left more vulnerable to potential adversaries? Certainly those were General Herr's concerns in the late 1930s. Conceivably the best answer falls within the overall realm of preparedness. But as author John Shy maintains: "Preparedness has never been reckoned the strong suit of U.S. military capacity. More or less invariably, the outbreak of war has meant frantic improvisation, not least in raising, arming, training, and deploying ground forces adequate to the conflict."[26]

The Future Uncertain

With no certain roadmap for the future, preparing soldiers for combat will be a challenge. Leaders will have to make assumptions about future warfare, not in terms of a specific threat but pertaining to a full spectrum of enemy capabilities. Achieving dominance across this full spectrum is easier said than done. As *FM 1* acknowledges, the ever-changing strategic environment will provide us a few hints to facilitate readiness. Because "…nontraditional challenges will likely come from unexpected sources at unanticipated times and places," leaders will have to place a premium on flexibility at all levels of command.[27]

For the mounted force to remain viable on the modern battlefield, preparing for future uncertainty must be at the forefront of our daily routines. It would be hubris to assume that 21st-century armor officers have the ability to forecast the future any better than those of the past. As such, we must deliberately and candidly assess preparedness within the larger framework of full-spectrum dominance. The following are recommendations to assist in readying soldiers and leaders for a clouded horizon.

Train to be reactive. While such a statement may appear as leadership heresy on first read, being reactive can be invaluable in today's environment. If current doctrine admits that we are unsure of our adversaries or when and where they may attack, is it even possible to correctly anticipate for future conflict? Certainly, at the strategic and operational levels of warfare, we must be proactive in terms of intelligence gathering and confronting potential threats. But at the tactical level, if platoons and companies are to truly prepare for a wide range of enemy capabilities, they must learn how to react quickly, lethally, and in a coordinated fashion.

While being reactive is often considered a negative leadership characteristic, there are positive attributes in such an approach to training. Part of being reactive is also being flexible and adaptive, two indispensable qualities on a fluid battlefield. One does not necessarily have to relinquish the initiative to achieve such flexibility. In fact, during World War II, Field Marshal Erwin Rommel praised U.S. forces for adjusting their tactics to meet the demands of mechanized battle: "What was astonishing was the speed with which the Americans adapted themselves to modern warfare. In this they were assisted by their extraordinary sense for the practical and material and by their complete lack of regard for tradition and worthless theories."[28]

A capabilities-based force will be compelled to react against a wide array of enemy weapon systems and tactics. To focus training on mounted warfare at the exclusion of all other types of combat will ill prepare the armor force for future demands. Commanders must challenge their units with training scenarios that are unanticipated by their soldiers, forcing them to react, analyze, and adapt within tightly compressed time cycles. Flexibility will be essential in preparing for an uncertain future.

Focus on the basics. One of the characteristics of modern conflict continues to be the merging levels of warfare. With instantaneous media information bombarding both politicians and the public at large, events that happen at the company level can have a tremendous strategic impact. Describing events in Kosovo during Operation Allied Force, General Wesley Clark notes: "Sometimes even insignificant tactical events packed a huge political wallop."[29] There is little doubt that current armor leaders will be judged to a higher standard than their predecessors because of this media association. As such, we must focus on the fundamentals of our trade — accurate gunnery, basic soldier skills, and maneuver at the platoon and company level.

While "move-shoot-communicate" may seem like a worn-out aphorism, mastering the basics will continue to be one of the essential keys to battlefield success. In today's environment, command of the fundamental principles of warfare may be even more important than in the past. If soldiers can do the small things well, then applying those basics to new situations will permit them to be more flexible when encountering the unexpected.

A dilemma confronting present leaders is finding time to concentrate on the fundamentals. Units too often prepare for a training center rotation that includes battalion-level maneuvers and gunnery and then immediately deploying to a peacekeeping operation. These two distinct missions require diverse unit-level competencies that can hamper a commander's ability to gain any fashion of training momentum and continuity. Yet if leaders can emphasize those basic skills that are common in all environments — skills such as communicating, maintaining, and tactical maneuvering — they will make great strides in building a solid foundation upon which they can later expand.

Study military history. Personal experience cannot cover the full spectrum of future possibilities. As much as leaders may conduct a rigorous analysis of their environment, chances are they will be confronted with situations that fall outside of their individual training. Studying the art and science of war complements shortcomings and provides a basis for creativity and resourcefulness. If war is indeed cyclical, then leaders can use history to gain perspective. As two historians assert, such professional study can have tangible benefits on the field of battle: "A thorough knowledge of war demonstrably and dramatically increases the competence — and thus self-confidence — of the military leader."[30]

Studying history should not be an end unto itself. Instead, history should be used as a means to draw lines from the past to the present and the future. One of the best examples of gaining perspective from history was the professional reading program of General George S. Patton, Jr. While Patton was an advocate of cavalry during the interwar years, he was able to quickly adapt to armored warfare in the 1940s because he studied its history. Author Steve Dietrich notes, as early as his cadet days at the U.S. Military Academy, Patton believed that "to become a great soldier one must be familiar with so many military possibilities that he will always have one ready for any situation."[31]

In today's environment, history can be an invaluable tool in preparing for future asymmetric warfare. Mao Tse-tung's *On Guerrilla Warfare* provides a theoretical examination of avoiding an enemy's strengths while Donn A. Starry's *Armored Combat in Vietnam* illustrates how mounted units applied maneuver and firepower in a fundamentally nonconventional theater of war. Studying the works of authors, such as Timothy L. Thomas, can offer a tremendous perspective on the difficulties that Russian armor experienced in the urban setting of Grozny.[32] As noted earlier, the study of history should not be a search for specific lessons, but rather developing a foundation of professional knowledge from which to draw on. Simply put, there is no template for the future that can be found in the past.

Significant technological advances have historically driven revolutions in military affairs. Developments in gunpowder, internal combustion engines, and airpower have all had a dramatic effect on how armies approach and conduct warfare. Arguments abound today that we are in the midst of another revolution, spurred by new information technologies that allow us to collect data at an unheralded rate. But technologies alone do not inevitably create revolutions in military affairs. Doctrinal innovation and organizational adaptation are also vital if military leaders are to effectively use new capabilities bestowed on them.

It is this innovation and adaptation that will be essential if we are to truly prepare for future war. Gathering information will not be as important as synchronizing it with shock and firepower against an enemy unwilling to confront us directly. Nonlinear battlefields will thus require us to change our doctrine, as well as our tactics, techniques, and procedures. It will also require a change in our heavy culture. What we must seek to avoid is the cultural and intellectual conservatism that made military leaders who studied the wars in Crimea, Manchuria, and Spain hesitant to appreciate the value of change on the modern battlefield.

In the end, what will enable leaders of today to become more future-oriented will be their ability to think and analyze open-mindedly. By reacting quickly and decisively and applying the fundamentals of their trade in unexpected situations, the mounted force can successfully meet the challenges of an uncertain future. Supplemented with a disciplined study of history, armor leaders can indeed be prepared for what lies ahead if they are committed to honing their skills as professional warfighters. As Liddell Hart aptly noted nearly a century ago: "Not 'how large' but 'how good' will be the standard of tomorrow."[33]

The author would like to thank Dr. Kevin C. Holzimmer, Air Command and Staff College, and Major Bill Pinter, USAF, for reviewing this article and making invaluable recommendations.

Notes

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[16]George F. Hofmann, "The Tactical and Strategic Use of Attaché Intelligence: The Spanish Civil War and the U.S. Army's Misguided Quest for a Modern Tank Doctrine," *The Journal of Military History* 62, January 1998, pp. 107, 131. Influenced by the attaché reports coming out of Spain, the 1938 War Department "Policies governing mechanization and the tactical employment of mechanized units" stated that the role of armor "is solely that of [infantry] accompanying tanks," p. 124.

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Refocusing the Leader Development Lens

by Captain Jason C. Slider and Captain William H. Goin

"We are working on producing leaders for change, not just leaders who are doctrinally capable and competent leaders for warfighting, but leaders also for all kinds of missions that we are asked to be able to do today across the full spectrum."

The Honorable Louis Caldera
Former Secretary of the Army

Leader development and tactical and digital training can no longer remain exclusive and separate concepts or initiatives. Embedded in all aspects of the combat arms profession is decisive action — decisionmaking. Leadership does not come from a book, but from experience, circumstance, and opportunity. Given the greater focus on constructive and virtual simulations in the unit resulting from increased constraints on live tactical training at home station, leader development schools must position themselves as premier training centers. Just as combat training centers (CTC) are critical to the unit, TRADOC schoolhouses must emerge as premier "battle schools" for leader development.

The Impetus for Change

Resulting from emerging concepts and lessons learned during the Army Training and Leader Development Panel (ATLDP), numerous Army Warfighting Experiments (AWE), and the Digital Capstone Exercises (DCX) I and II, TRADOC is focusing more emphasis on transforming leader development into battle schools equipped with embedded digital command and control (C2) systems. Most military theorists agree that the principles of warfare in the 21st century require continued scrutiny for relevance and applicability. However, adaptive, self-confident leaders remain basic elements of tactical victory, now and in the future. Additionally, the revolutionary changes in information management and distribution realized through the application of automated command, control, communications, computers, and intelligence (C4I) systems require leaders to make decisions more rapidly than ever before. To ensure that the Army continues to develop capable leaders throughout Army Transformation, the Army Officer Education System (OES) and TRADOC is transforming its methods and means of training 21st-century leaders.

Since the fall of the Berlin Wall and Operation Desert Storm, the Army, specifically the armor and mechanized forces, realize the integral imperative of change to ensure a relative and ready force. Today, the terrorist attacks on our financial, political, and military infrastructure on 11 September 2001 and Operations Enduring Freedom and Noble Eagle make this integral imperative all the more immediate. Realizing the operational shortfalls during Operation Desert Storm and anticipating the future personality of conflict, the U.S. Army Chief of Staff unveiled and directed Army Transformation. Clearly, Army Transformation is timely and focused on developing a force structure to better address and dispense with threats to our national security and allies. However, Army Transformation is not solely focused on technologically advanced equipment, organizations, and sustainment initiatives. OES Transformation is Army Transformation — the underpinning is training!

Current training and education methods were implemented and have remained relatively unchanged. Army Transformation becomes the agent by which current learning and education models and methods are migrated to support emerging Interim and Objective Force operational and organizational designs. The purpose of transforming the OES is to grow adaptive and versatile leaders capable of leading the Army successfully to the Objective Force and beyond.

As the Army strives to modernize its force, training models, and, specifically, its training methodology, we must achieve a holistic approach to leader development. In doing so, tasks, conditions, and standards of training and leader development must address several new challenges facing the armor force. These include asymmetric and other operational environments that cut decisionmaking time in half and increase C2 and situational awareness through the application of commercial and militarized C4I systems.

Refocusing the Lens

The principles of war and operations in the 21st century will continue to guide our training focus, but their effect on leader development is (at least) threefold. First, leaders will need a more inclusive, broader base of experience. Second, leaders at the company level will be expected to accept greater responsibility and make decisions with greater impact than previously necessary. Third, full-spectrum operations will require leaders to shift seamlessly between offensive, defensive, stability, and support operations in friendly, hostile, or neutral environments.[1] While these topics do not entail everything a leader or commander needs, they provide a good start for transforming the Army's institutional training base.

The U.S. Army and the armor force continue to remain trained and ready to conduct and participate in a major theater of war (MTW). Army Transformation addresses operational shortfalls in our responsiveness to other complex and diverse worldwide environments, such as small-scale contingencies (SSC), stability and support operations (SASO), and humanitarian sup-

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port operations.[2] Across this full spectrum of operations, it is leadership, not technology, that is critical to accomplishing the mission and protecting our greatest national investment — the American soldier.

Training Decisionmakers for the 21st Century

To maintain operational momentum in Force XXI units and beyond, leaders will have to be willing and able to modify operation orders and make decisions efficiently and fluidly.[3] Information that used to be available only to brigade or regimental commanders is now easily accessible to company and troop commanders properly networked in their M1A1D/M1A2 SEP tanks, M2A3/M3A3 Bradley Fighting Vehicles, M106 Paladins, TOCs, and C2 vehicles. As is the case throughout history, victory will rely on the independent thought and initiative of lower-echelon leaders. Therefore, leader training must focus on development of these traits through digitally enhanced battle simulations and scenarios that are challenging, realistic, mission-focused, and purposely ambiguous and difficult.

Colonel John M. House does an excellent job of describing battlefield scenarios that blur the lines between offensive, defensive, stability, and support operations in his article, "The Enemy After Next."[4] While the threat of a MTW involving large armored formations and clearly defined objectives remains a primary mission and focus of Army doctrine, battlefields like Somalia, Bosnia, Kosovo, and now Afghanistan present convoluted situations to leaders and commanders daily. To address this issue, we must get company-grade leaders out of the classroom and infuse MOUT training and complex environments into our curriculum. We must put lieutenants and captains in realistic training scenarios in unfamiliar territory where the more traditional Soviet threat based model is but one facet of this new operational environment. Incorporating civilians on the battlefield (COB), restrictive rules of engagement (ROE), ethical dilemmas and multiple-faction engagements enhance the realism and confusion of the battlefield and better prepares our leaders to deploy to locations and successfully conduct operations globally.

As discussed above, emerging new world threats and C4I system capabilities require leaders to assess tactical situations, manage information, and make decisions rapidly in an execution-centric, not planning-intensive environment. Battlefield simulations have shown that decisionmaking timelines in MTWs, SSCs, and operations other than war (OOTW) are shortened by half or more.[5] Traditional analytical decisionmaking models and processes, such as the military decisionmaking process (MDMP) — classroom training in small group situations where brigade and battalion staff roles are appointed to each student — do not equip or prepare company-grade leaders with the appropriate tools and skills to visualize the battlefield, assess situations, apply appropriate decisionmaking techniques, and decide and direct action in a time-constrained, fluid environment.

We are changing these traditional methods and focusing more on making logical decisions through rapid processual and intuitive decisionmaking techniques that rely on execution-centric and repetitious training through tactical vignettes at the company and task force levels. This training begins to expand the officer's decisionmaking tool kit and experience. This cannot be accomplished in the classroom. The student must take an active role in realistic and rigorous training simulations where decisions determine tactical success or failure. There must be tactical consequences, stress and rigor like that of Ranger School, not high school.[6] Therefore, it is essential that new training methodologies and models are reevaluated and revitalized to establish within battle schools a leader development program robust enough to train battle command within digitally equipped, constructive, virtual, and live environments. Like the National Training Center, the Armor School is redesigning the Armor Captains Career Course to provide a world class, multifaceted training experience.

Thus the training goal of OES transformation is, and should be, to immerse future leaders and commanders into scenario-based, execution-centric training. Here they can begin to develop battlefield wisdom and build a mental library of tactical experiences. Then, during future deployments, they can recognize typical or atypical situations as a basis for decisionmaking in a time-constrained environment.[7] While Army XXI C4I systems can assist leaders and commanders with C2 and situational awareness, rapid decisionmaking is a uniquely human dynamic that must be learned and become automatic.

Army Digitization

C4I systems are changing organizational structure based on battlefield efficiencies realized through the Army Battle Command System (ABCS) and Army Tactical Command and Control System (ATCCS). With the completion of the 4th Infantry Division's DCX I and II, the Army has secured a substantial base of knowledge and skills in implementing and employing ATCCs, such as the Maneuver Control System (MCS), the All Source Analysis System (ASAS), and the Advanced Field Artillery Tactical Data System (AFATDS). Almost every military professional journal features one or more articles about digitally enhanced job aides, vehicles, organizations, or tactics, techniques, and procedures for training and combat — written by FORSCOM leaders and NCOs. However, the majority of these skills and knowledge remain in units at Fort Hood, Texas; Fort Lewis, Washington; and within the combat development and materiel acquisition community. Exposure to these systems for the rest of the Army is limited to these venues. Meanwhile, the Armor School possesses 17 M1A2 SEP tanks, FBCB2-equipped conduct of fire trainers (COFTs), close combat tactical trainer (CCTT), digital display tabletop trainers (D2T2), and FBCB2 battle command (digital) classrooms that can begin to fulfill training requirements. Until recently, no formal, fully inte-

grated C4I training focused on battle command within the TRADOC OES.

Leadership-Centric Training

The Armor School wants the student experience to be a lot more like a combat training center (CTC) rotation or Ranger School, and a lot less like the current traditional approach for training at all levels across the Army. The traditional approach spends a lot of time and energy on facts and figures that deteriorate and are forgotten rapidly. Instead, the Armor School is moving away from knowledge-based instruction and toward leadership-centric experiences. Students will train as they fight — with other soldiers of ranks above and below. This is the concept underlying the gauntlet training initiated in the 16th Cavalry Regiment and Noncommissioned Officer Academy (NCOA) in 2000. It calls on students to quickly grasp critical and enabling skill sets at three levels.

Master means that the students can accomplish the task alone, to the Army standard and time. Mastery requires repetitive training and multiple experiences. Course master tasks for lieutenants and captains are:

- Troop-leading procedures.
- Rapid decisionmaking that results in a standard overlay order.
- Lethality at the point of contact (plan, prep, and execute direct fires in the defense and offense).
- Inspect a unit (platoon for the lieutenants course and company for the captains course).
- Navigate (map and compass, map orienteering, and map w/GPS).
- In addition, the lieutenants course will add the task fight the tank.

Most of our time will be spent in accomplishing these tasks in constructive, virtual, live, and distributed training environments.

Know means that the student can solve the tactical problem or execute the task with some assistance — either the aid of another officer or NCO, a checklist, decision aid, or a manual. Know tasks include instruction such as MDMP, tank gunnery skills test, and call for fire.

Understand means that the students know where to go to get information on how to conduct the task. These tasks will be accomplished by self-study, distance learning, websites, CD-ROM, or manuals. These tasks will be tested in a self-diagnostic test given twice during the courses.

Why the Gauntlet?

Gauntlets are multiechelon, multigrade, battle-focused leadership experiences conducted in a combination of constructive, virtual, and live training venues.[8] Gauntlets involve NCOs from the NCOA, lieutenants from the Armor Officer Basic Course (AOBC), scouts from the Scout Leader's Course (SLC), captains from the Armor Captains Career Course (AC3) and lieutenant colonels and colonels from the Armor Pre-Command Course (APCC), all working together as units to solve complex tactical problems. This training technique is well described in 2LT Humayun S. Khan's "Enter the Gauntlet."[9]

The Armor School is increasing the capabilities of the training environment to mirror those in digitally equipped combat units because the armor and mechanized force will soon reach a more than 50 percent digital saturation by the end of FY04. The first step toward full integration was creating the FBCB2 Battle Command Training System. Building a partnership with the III Corps Digital Training Division G3, National Simulations Center, TRADOC Systems Manager and Program Manager FBCB2, the Armor School is investing in and conducting digitally enhanced gauntlets and C4I training exercises in constructive and limited virtual training environments. Students from all courses are now attending a FBCB2 Leader's Course at Fort Knox using the FBCB2 Battle Command Training System. This classroom training environment uses a limited number of FBCB2 emulators, such as commercial off-the-shelf computers and web-based training. Once students demonstrate their skills on the FBCB2 emulators, they plan, prepare, and fight battles using the FBCB2 as their interface for C2 and situational awareness.

Installing and leveraging emerging ATCCS stimulation and simulation systems, driven by Janus, creates the constructive training environment where the training focus and conditions shift from technical training to critical leader skills training and rapid decisionmaking. Additionally, FBCB2-equipped M1A2 SEP COFTs, M3A3 Bradley Advanced Tactical Training System (BATTS), and the CCTT enable virtual training exercises where student officers and NCOs can continue to reinforce and demonstrate mastery of a clearly defined and focused skill set. By leveraging current and emerging resources, NCOs, lieutenants, captains, lieutenant colonels, and colonels focus on battle command aided by FBCB2.[10]

By the summer of 2002, the Armor School will field to the 16th Cavalry Regiment the required instrumentation system to facilitate live, digitally enhanced gauntlet training. Moving toward full integration, live digital gauntlets will include mounted exercises and battles in MOUT, live-fire ranges, and maneuver areas on Fort Knox. The 16th Cavalry Regiment recognizes this effort as Phase I. It is necessary and prudent to further replicate the Army's C4I architecture in the Armor School to train companies in a battalion and brigade context — Phase II. While our focus is not in developing staff officers and NCOs, we must train as we fight, by creating a rigorous and realistic constructive, virtual, and live training environment.

The New Captain's Course

This coming fall, the Armor School plans on executing the Combined Arms Battle Command Course (CABCC) with officers from the armor, infantry, engineer, and aviation branches. The rudimentary doctrine, tactics, and constructive battle simulations will be taught through distance learning, similar to the advanced training that Armor Reserve Component officers attend through the Armor Captains Career Course. Applying what is learned will be the focus of the resident phase, focusing completely on virtual and live gauntlet training.

CABCC consists of a three-phased, 10-week course that focuses on assignment-oriented training that will prepare captains for company command in a battalion and brigade context. The purpose is to provide captains with training on combined arms operations and branch-specific tactical and technical skills for company/team command and/or company grade branch qualifying assignments. CABCC graduates will be experienced in battle command and ready to be a successful company/team commander. He will be able to visualize, describe, and direct combined arms operations and plan, prepare, execute, assess, and correct training deficiencies at the platoon and company levels. CABCC consists of three separate and focused phases: distance learning; resident; and 'train the trainer' experience at a combat training center.[11]

Phase I of CABCC will be 4 weeks of knowledge-based asynchronous and synchronous distance learning and tactical training, respectively. The student will attend Phase I at his home station assignment. The asynchronous curriculum focus is on leader development at the company/troop level, including; ethical decisionmaking, building cohesive units, unit maintenance operations, Army family team building, critical thinking skills, supply operations, risk management, training development and management, and Army doctrine and policy. The synchronous curriculum focuses on troop-leading procedures, indirect fire planning, maneuver, intelligence preparation of the battlefield, and offensive, defensive, stability and support, and MOUT operations conducted in constructive battle simulations. During this phase, a small-group instructor is assigned to each virtual small group as a coach, teacher, and mentor to enrolled officers.

Phase II of CABCC is a 4-week resident "how to fight" laboratory, consisting of intensive virtual and live battle simulations and scenarios conducted in a digitally enhanced, multiechelon, multigrade, execution-centric method — gauntlets. CABCC will conduct gauntlets with the NCOA, the Basic Officers Leader's Course – Phase II, and the APCC to create training synergy and depth in the battalion and brigade context. Embedded, digital C2 and situational awareness systems enhance virtual and live training experiences. Battle simulations and scenarios will focus on combat arms leader and tactical competencies — master tasks. Master tasks are supported by offensive, defensive, stability and support, and MOUT tasks specific to maneuver, combined arms operations. This phase is performance-oriented, and each student will be evaluated, pass or fail, on executing critical leadership and command positions.

Phase III of CABCC will be 2 weeks of intensive live training and experience conducted at one of the CTCs where the focus is on small-unit training. Students will attend and complete an observer controller (OC) course at the CTC and perform duties as a platoon OC during a CTC rotation. The student, through the coaching, teaching, and mentorship of a senior OC, will learn how to assess, develop, and correct training deficiencies at the platoon level. The student will deliver at least one after-action review during the rotation where he will be evaluated by a senior OC.

Transformation at the Armor School will ensure that Fort Knox continues to graduate officers who will be able to lead, motivate, and command companies, troops, or teams to win on tomorrow's complex and digitized battlefield.

The Challenges

The current unit set fielding (USF) timelines and the Army digitization master plan (ADMP) fell short of recognizing the branch schools as integral and necessary components of developing leaders for assignment to legacy modernized and interim units. However, across TRADOC, leaders are working diligently to correct this oversight. The Armor School's and the 16th Cavalry Regiment's FBCB2 Battle Command Training System, integrated digital leader development, and its Mounted Leaders Digital Training Course (MLDTC) are examples.

The Army must continue to implement creative and adaptive approaches to developing leaders for 21st century military operations within current and emerging leader development course structure. Digital training is still part proof and part concept. However, TRADOCs approval of the Army Digital Training Strategy (ADTS v2.8) provides a holistic approach to leader development and digital training. Only through such a holistic approach, will we develop confident leaders who can turn away from digital information screens and fight the tank.

As the Army learned from DCX I and II, leaders at all levels lack confidence in digital C2 and SA systems. Leaders consistently migrated backward to traditional or analog methods. Ultimately, these conditions may have impacted the decisionmaker's ability to understand the situation and, ultimately, the quality of a published decision. As a result, we are not leveraging the full potential of ATCCS or the ABCS information infrastructure. This may be a direct result of a lack of integrated training on digital systems within the unit and institutional education programs. Until digital training becomes an integral component of our NCO and officer education system, TRADOC cannot grow leaders for current and future organizations and operations.

Currently, the only venue for initial and sustainment training of C4I systems, at the individual or collective level, resides at the unit where commanders and leaders constantly manage mission and operational tempo. This situation has effectively stymied the Army's ability to forge forward with digitally enhanced units. We can mitigate this situation and effectively place the Army back on a more direct path of transformation by aggressively integrating TRADOC schools into the transformation equation through the development of warfighting-focused battle schools. Therefore, it is necessary that TRADOC and FORSCOM share leader development and training responsibility and that digital training is infused in leader development models and methodology. OES Transformation addresses this need.

Leader development centers and battle schools cannot continue to be left behind while the force is undergoing a rapid and aggressive C4I fielding plan and transformation. TRADOC system managers, combat developers, and program managers are addressing the shortfalls in these plans to train the force and alleviate the unmanageable training burden put on the unit. In either case, neither the institution nor the unit can effectively and efficiently develop leaders or train units under the current circumstances.

From the ground up, the Army must be trained to integrate C4I systems into its development of situational awareness and information management as the basis of rapid decisionmaking, execution of the military decisionmaking processes, and C2. At a minimum, FBCB2 and the ATCCS specific to each battlefield operating system must be fielded to TRADOC leader development schools — sooner rather than later. Embedding these digital C2 and training systems into leader development POIs will satisfy long-term Army transformation objectives. Additionally, when leaders and commanders at all levels report to their units of assignment, they will possess a full range of experiences and critical leader skills.

Notes

[1]*U.S. Army Field Manual (FM) 3-0, Operations,* Washington, D.C., U.S. Government Printing Office, 14 June 2001, p. 1-14-8.

[2]Ibid.

[3]Bernard M. Bass, "Leading in the Army After Next," *Military Review,* March-April 1998, p. 55.

Continued on Page 50

Photos by Robert L. Stevenson

TOC Security

by Captain J.M. Pierre

Major Michael Hurley was livid. The brilliant sun was rising on the far side of Tiefort Mountain, but none of the red-eyed members of the 218th Heavy Separate Brigade's tactical operations center (TOC) could enjoy the natural beauty of the Mojave Desert morning. In the first three nights of maneuver training at the National Training Center, the People's Parumphian Guerrillas (PPG) had managed to enter the commander's primary C2 (command and control) node and disrupt his operations. The PPG came not in a heavily armored formation but in small, lightly-equipped dismounted teams who hit quickly, produced "casualties," and upset the units' battle rhythm. Yes, the TOC had successfully gone to 100 percent security, but Fort Irwin's world-class opposing force, or OPFOR, still entered the main command post (CP) and "killed" planners and TOC workers. Battle planning had been set back for hours.

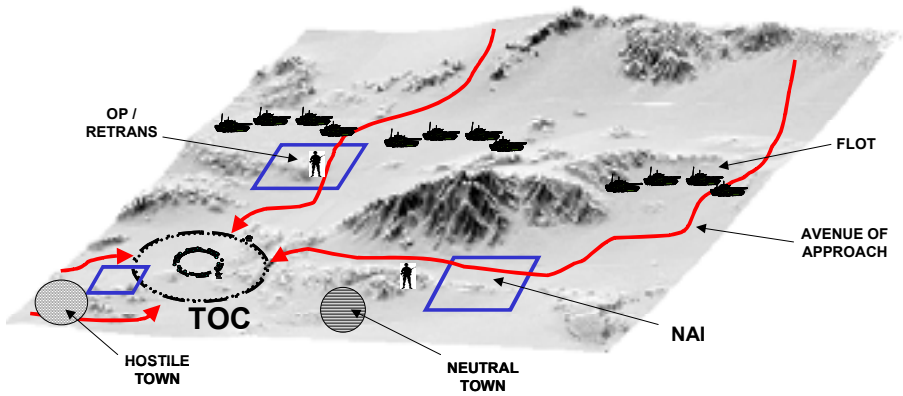
"Where is my wire," Major Hurley demanded. "We've been here for three days and I haven't seen my wire yet!?!"

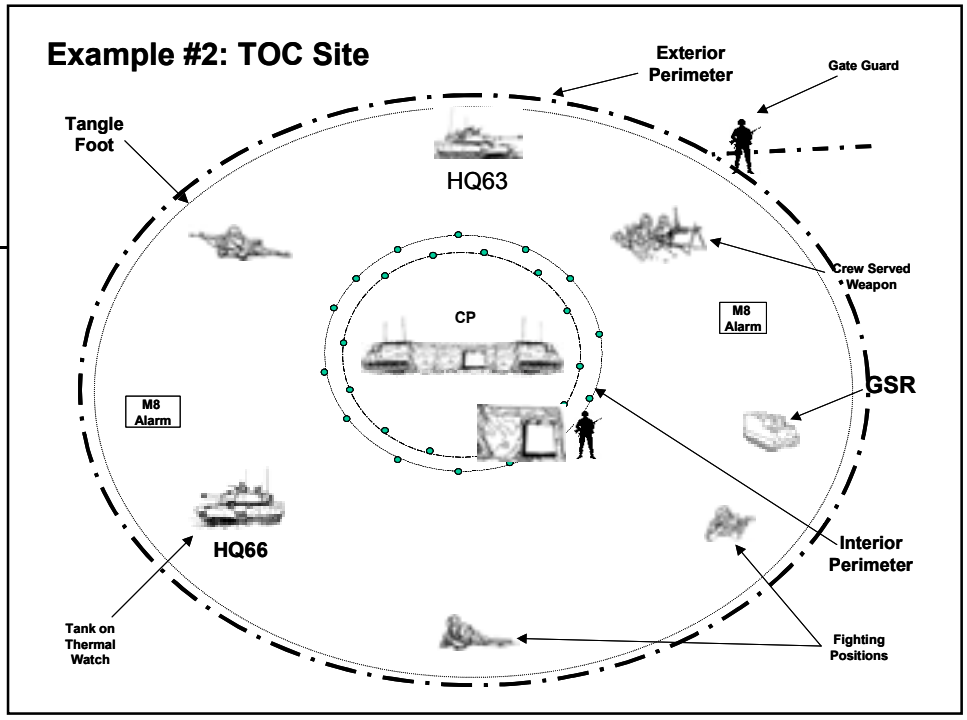
There were other lapses in the perimeter security. That morning a partisan "guerrilla" team had driven to within 100 meters of the facility unchallenged. They entered the CP to trade an American "deserter" for food and water followed by a "news team" with cameras aimed at tactical overlays and combat power charts. The benign event further demonstrated the gaps in operational security (OPSEC). Major Hurley had had enough.

Tactical operation centers are valuable targets preyed upon by guerrilla and special purpose forces, or Levels 1 and 2 threats. Like a boxer protecting his head from his opponent's rabbit punches, TOCs must institute aggressive security plans to remain inviolable to hostile acts. Establishing a C2 site is an evaluated "command and control" BOS (battlefield operating system) found in the *ARTEP 7-20-MTP: Mission Training Plan for the Infantry Battalion* (Task Number 07-6-1104, Establish/Operate Command Post). It has 23 subtasks and 14 requisite leader tasks for successful accomplishment.

This article describes techniques used to protect command and control centers from small attacks aimed at disrupting units' planning cycle. There are three considerations for the successful defense of lightly armed C2 facili-

Example #1: Rear IPB Template





ties: a security manager, passive security, and active security. Defensive fundamentals can be found in *FM 7-8, Infantry Rifle Platoon and Squad* and C2 operating methods are found in: *FM 7-20, The Infantry Battalion*; *FM 71-3, The Armored and Mechanized Infantry Brigade;* and *FM 71-123, Tactics and Techniques for Combined Arms Heavy Forces: Armored Brigade, Battalion Task Force, and Company Team.*

Security Manager

The onus for operational security (OPSEC) at the CP belongs to the security manager. By implementing counterreconnaissance and surveillance measures, he denies the enemy observation of the TOC and prevents an unhindered approach to the site.

The security manager begins with rear area intelligence preparation of the battlefield (IPB). He identifies named areas of interest (NAIs) such as air corridors and dismounted mobility corridors the enemy will most likely use to attack his facility. Further, he factors the civil-military situation in his area of operation as civilians in his area may effect his security plan. IPB produces a template of activity near the TOC used in the unit's integrated R&S plan (see Example #1). At the TOC site, the security manager's priority of work is:

a) Assign sectors.

b) Position key weapons.

c) Establish local security.

d) Identify engagement areas and TRPs.

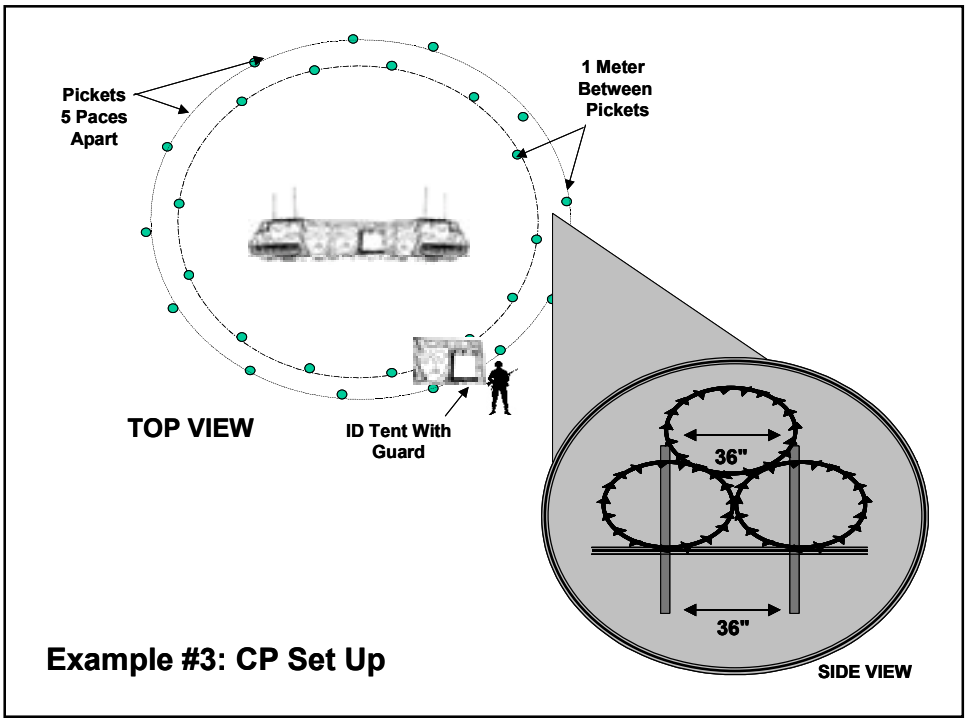
e) Clear fields of observation and fire.

f) Emplace wire, mines, and other obstacles and cover them with fire.

g) Prepare fighting positions and protective positions.

h) Prepare range cards and sector sketches.

i) Establish a wire communications system.



Passive Security

The CP's survivability depends on terrain for cover and concealment in a 360-degree perimeter defense. An exterior and interior ring of obstacles inhibits movement into the heart of the facility, the CP, (see Example #2) while camouflage nets obscure equipment and activity from enemy observation.

The two overriding requirements in the TOC site selection are **defensibility** and **communications**; per *ARTEP 7-20 MTP,* it is located where the unit can maintain control of the battle while minimizing its exposure. The ideal location is large enough to accommodate all the tenant vehicles and is outside of enemy direct/indirect fire range. The terrain has adequate drainage, supports the

unit's heaviest vehicles, affords vehicle dispersion, cover and concealment, and a line-of-sight of ground and air avenues of approach.

The perimeter is established prior to the arrival of the main body. The unit's advanced party, or *ADVON,* enters the site with a Class IV cargo HEMTT of barrier material to construct the obstacles and outline the TOC site dimensions. During the initial occupation, a row of single-strand concertina wire outlines the exterior perimeter. Fighting positions are simultaneously dug behind the wire outside the enemy's hand-grenade range while crew served weapons monitor the enemy's main avenues of approach. The exterior wire has one gate manned by a soldier and overwatched by a crew served weapon. As time and mission requirements allow, the wire is reinforced with "tangle-foot" (barbed wire) inside the first ring and trip flares along dismounted avenues of approach. Simultaneously, the security manager places observation posts (OPs) oriented on ground avenue of approaches and NAIs to provide early warning.

When the main body arrives, it has 10 minutes to assume C2 tasks such as communications, data collection, and information dissemination. The CP is quickly guided to the center of the site by the ADVON and enclosed in triple-strand concertina wire with an identification check tent at the entrance of the wire wrap (see Example #3). All vehicles and tents are finally covered with camouflage nets. The C2 location is now concealed within the terrain with a central point for authorized soldiers to enter the command post.

Active Security

Hiding the TOC is the first step in its protection. Aggressive patrolling assures the world-class OPFOR looks elsewhere for prey. This again falls to the security manager. He directs mounted and dismounted patrols to clear his NAIs. A mounted patrol by off-duty soldiers and military policemen clears open areas quickly while dismounted teams clear ravines or wadis. From different vantage points, the patrols also check the camouflage of the TOC both in the day and at night and looks for gaps in the perimeter.

Lesson Learned

1. The unit templates TOC sites using the Terra Base program. Before deploying troops, this computer model tests potential locations for defensibility, line-of-sight communication, and accessibility.

2. Scout platoons conduct area reconnaissance of the likely TOC sites prior to site selection.

3. The terrain dictates the shape of the facility.

a. Open terrain (NTC) stresses supplies of Class IV. It requires maximum vehicle dispersion, less wire on the exterior perimeter, more wire around the TOC, and more patrols.

b. Restrictive terrain (Korea) produces smaller sites or forces the TOC to divide into clusters around the CP. Smaller sites and clusters are ideal for triple-strand concertina enclosures but do not provide vehicle dispersion.

4. In the brigade, the headquarters company commander is the TOC security manager; the operations NCO is the task force TOC security manager.

5. Speed is essential to establishing a CP in a secure area — the main body has 10 minutes upon arrival to begin vital activities.

a. Since each 300-meter of the perimeter requires 160 long and four short pickets and 56 coils of barbed concertina, the advanced party divides into three teams: one lays the pickets at every five paces, one drops the wire, one raises the wire.

b. A Small Emplacement Excavator (SEE) from the engineer company digs holes for fighting positions which soldiers will improve as time allows.

6. Thermal sights from headquarters tanks or IFVs/CFVs scan NAIs when they are in the perimeter and not otherwise used.

7. Ground surveillance radar and air defense assets not dedicated to the fight are used to pick up enemy signatures.

8. Establish a quick reaction force (QRF) of off-duty soldiers under the control of a sergeant of the guard (SOG). The SOG is also responsible for supervising the "guard mount" during his shift.

9. Always rehearse the perimeter defense during lulls in the battle.

Conclusion

Security at all levels has remained an immutable tenet of warfare and will remain so throughout the history of conflict. Similarly, command and control of battle is critical to orchestrating multiple assets. Active and passive security under the control of one manager protects not only the brains of the unit but is also useful for logistical sites such as the combat trains and field trains.

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Air-Ground Integration: Proven TTPs

by Captain Thomas M. Feltey, Major Brian K. Serota, and Captain Erick W. Sweet II

Just what is air-ground integration? And what makes it successful? The purpose of this article is to share proven tactics, techniques, and procedures (TTPs) associated with air-ground integration with maneuver and aviation forces throughout the U.S. Army. These are the TTPs practiced in the 1st Squadron, 4th U.S. Cavalry, the divisional cavalry squadron for the 1st Infantry Division. The divisional cavalry is a unique organization because it remains the only organization in our Army that possesses both ground and air elements in a single battalion-sized organization. This unique dimension allows us to refine our combined arms TTPs with relative ease on a regular basis. These TTPs can be adapted to every maneuver organization, because as the Kiowa Warrior is part of the division cavalry, there is a great chance the air cavalry could operate along with any company/team or battalion within a brigade combat team. Many of these techniques could also be used when integrating attack helicopters into a close air support role. In fact, the TTPs identified are universal to nearly every aspect of combined arms where ground and air elements operate within the context of a common mission, regardless of aircraft type or ground unit composition.

Prior to the onset of any mission, leaders must understand there are five general opportunities for air-ground integration during an operation:

- Planning
- Operation order (OPORD)
- Rehearsal
- Face-to-face
- Radio coordination

These opportunities may be completed in sequence or may stand alone as individual events, but only time available will determine the level of detail. These opportunities are also multiechelon, occurring at all unit levels from the squadron/task force down to the dismounted scout/infantry squad.

The bedrock, however, to consistent quality air-ground coordination is adhering to standing operating procedures (SOP). Every time both the air cavalry troops (ACTs) and the ground cavalry troops (GCTs) conduct coordination, they must follow this SOP. For units without organic aviation assets, inclusion of an air-ground integration annex may prove useful when aviation assets are included. See Figure 1 for an example air-ground integration checklist.

Planning: Air-ground integration begins during the planning stage. The squadron/task force commander lays the groundwork for his maneuver plan and gives guidance on his intent for air in support of that plan. The staff then develops a recon focus for air weapons teams (AWTs) during execution, getting as specific as possible without limiting the flexibility of AWTs to operate across the squadron/task force front. Logistical planning is also critical, to minimize the limitations of aircraft station time and maintenance availability. It's here that the fighter management decisions are made to ensure that aircraft are available and on station when they can best assist in the success of the maneuver plan. Air planning must be part of the maneuver plan, never parallel or separate. Thus the S3 (air) must be the quality control representative ensuring that the final OPORD products and planning leading to those products have addressed air use from top to bottom, not as an afterthought. Include air assets as you would engineers or field artillery (FA) fires in any plan. Include the air troop/company commander to assist the S3 air in planning when the situation and fighter management cycle will allow it. See Figure 2 for Kiowa Warrior planning capabilities.

The OPORD. Air-ground integration at the OPORD is ideal. At the squadron/task force OPORD, the commander and the operations officer define critical periods, locations, and task-purpose of the ACTs for the complete duration of the mission and possible sequels to the executors in the form of both ground and air troop commanders. The squadron/task force concept of operations provides a common understanding of how the unit will fight while the scheme of maneuver

Air-Ground Coordination Checklist

Briefed to the ACT/air mission commander (AMC) by the GCT commander

- Enemy situation/recent contact
- Bypassed enemy locations
- Friendly situation (front line trace of scout/tank sections, locations of troop commander, troop TOC, and mortars)
- Mission statement (squadron, troop, and platoon)
- Concept of the operations
- GCT graphic control measures
- Commander's critical information requirements (CCIR)
- Actual and templated air defense artillery (ADA) in zone/sector (friendly/enemy)
- Fire support plan (FA/mortar)
- Battle handover line and criteria
- Call signs/frequencies
- Named and targeted areas of interest (NAI/TAI)

Briefed to the GCT by the ACT/AMC

- Number of aircraft/AWTs
- Weapon configurations (area suppress/point track)
- Time on station
- Any limitations to support (weather/flight hours)
- Concept of the operation
- Maneuver/recon-focus of ACT (specified task from squadron)
- Direction in/out of sector/zone
- ACT graphic control measures (ops/ABF/SBF/LZ/PZ/Routes/A2C2 plan)
- Forward arming and refueling points (FARP)/downed aviator pick-up points (DAPP) locations and procedures
- Call sign/frequencies including

Note: If it doesn't apply, simply omit it.

Figure 1

details every action of each subordinate element.

The squadron conducts a movement to contact (MTC) with two cavalry troops forward abreast and one in reserve. ACTs will initially conduct an aggressive zone reconnaissance one phase line (PL) forward of the GCTs focusing on trafficable routes for GCT cav teams and obstacles. Emphasis is on speed to PL Walnut. As the squadron passes into the enemy security zone, the air cavalry troops operate above the GCTs to identify and engage with indirect fires enemy recon forces in zone. GCTs conduct mounted and dismounted reconnaissance to identify and destroy enemy recon forces, ADA systems, and identify CSOPs. Troops in contact conduct hasty attacks to destroy or fix the enemy while the adjacent troop develops opportunities to strike the enemy from the flank. ACTs maintain observation in-depth to identify enemy counterattacks. The reserve is prepared to attack behind the lead GCTs to destroy identified enemy forces, screen the southern flank, or occupy a hasty defense to defeat enemy counterattacks. ACTs are prepared to assist the reserve in movement and battle handover with troops in contact. Indirect fires aim to destroy enemy air defense assets and recon BMPs; obscure the enemy as troops move through danger areas, obstacles, and choke points; and to neutralize CSOPs prior to a GCT hasty attack. On order, indirect fires shift to isolating enemy forces from reserves and supporting positions in-depth and disrupting enemy counterattack. Engineer efforts focus on rapid reduction of obstacles to ensure GCTs freedom to maneuver, then shifts to countermobility to disrupt enemy reserves.

Key to effective air-ground integration is detailed reconnaissance focus for the air troops. Fighter management (FM), weather, and station time are all limiting factors that can be managed by air troop commanders if their recon focus is made clear from the start. In the example above, the AWT recon focus is clear in that they must conduct a zone recon *focused* on trafficability of routes. An even better focus would be to list specific routes in the tasks to subordinate units in order of importance to help AWTs prioritize their recon effort. The tendency to overtask AWTs will only reduce their effectiveness.

From the squadron OPORD the troop/company commanders (TCO/CCOs) know when, where, and with whom they are operating. The initial coordination between the ACT and GCT commanders cover generalities such as the troop form of maneuver, TOC locations, current dispositions, and time and place of troop OPORDs/air mission briefs. Ideally, the ACTs send a representative to the GCT's OPORDs, but fighter management and overlapping TLPs sometimes prevent this from occurring. However, if a representative is available, he or she is best utilized by briefing their troop concept of operations, time on station, number of AWTs available, call signs, frequencies, weapons mixes, and specific tasks they have been assigned by squadron during the friendly forces portion of the GCT's OPORD. Additionally, troop graphics are exchanged and disseminated to the lowest level to better foster a common understanding of the battlefield.

The Rehearsal. The squadron/task force combined arms rehearsal is used to further strengthen the concept of operations as well as to rehearse the synchronization of specific friendly actions at certain times and places on the battlefield. Adjacent unit coordination and cross talk is mandatory. It also identifies opportunities for combined air-ground operations and illustrates when ACTs and GCTs require each other's assistance, such as the S2/threat commander engaging an AWT with enemy ADA forcing the TCOs to rehearse actions on contact and a target handover of the ADA threat to the GCT, which, in turn, will destroy the threat, allowing the

Kiowa Warrior Capabilities

When planning to incorporate air cavalry aircraft in the ground maneuver plan, one must understand the capabilities and limitations of the aircraft involved. Kiowa Warriors use both the thermal imaging system (TIS) and TV subsystems of the mast mounted sight (MMS) to locate and identify targets several kilometers forward of ground scouts. They then verify target location with the laser rangefinder/designator, videotaping the contact on the 8mm video recorder, if desired for later review.

The Kiowa Warrior is one of the most lethal indirect fire platforms in the military due to its laser rangefinder and the ability to directly integrate laser grids into digital calls for fire. Thus, aeroscouts always attempt to use indirect fires first to prevent decisive engagement and compromising the recon mission.

If necessary Kiowa Warriors can employ any combination of two of the following weapon systems: .50-cal. machine gun (500 rounds), 2.75-inch rockets (seven rockets per pod), Hellfire Missiles (two per launcher), and Air-to-Air Stinger Missiles (two per launcher). The .50 cal. and rockets are area suppression systems and the Hellfire and Stinger are point weapons. Stinger missiles are only used when there is a high enemy air threat. The preferable AWT weapons mix is at least one Hellfire launcher with two missiles, and a combination of rockets and 50 cals. between the two aircraft, such as one Aircraft – Hellfire/Rocket, one Aircraft Rocket/.50 cal. In this case, the area weapons are used primarily in a self-defense role, with indirect fires being the primary means of killing the enemy. Hellfires are reserved for high pay-off targets like self-propelled ADA, armor, or C2 vehicles.

Kiowa Warriors, when fully loaded and armed have a station time of approximately 1½ hours. This depends on FARP locations, weather, and actual aircraft weight. Timing these FARP turns is critical to air-ground success. Fighter management allows a crew to fly 8 hours day, 5 hours night, and 6 hours combined day and night within a 12-hour duty day. Flight extensions of up to 1 hour are possible if authorized by the squadron commander.

Figure 2

Photos by Ralph Zwilling

ACTs to continue the mission. During the rehearsal, commanders adhere to a strict call and response sequence orchestrated by the squadron chief of staff or executive officer employing the action-reaction-counteraction of enemy activity to friendly maneuver. TCOs use radio call transmissions/procedures when coordinating/cross-talking, reporting and communicating with higher. Finalized consolidated troop graphics are also distributed to all commanders prior to departing the rehearsal.

If time permits, one of the ACT platoon leaders and his wingman attend the troop rehearsal. The troop rehearsal is similar to the squadron rehearsal but at a micro level which refines the common understanding of the battlefield for the tank commanders, Bradley commanders, and Kiowa Warrior pilots. The benefit of having the aeroscouts present at the troop rehearsal is enormous. Scout platoon leaders have already issued the OPORD and have identified where they would most need the AWT's assistance. Likewise the ACT platoon leader has done the same and they can look each other in the eye and talk the mission through in the presence of the other scout and tank vehicle commanders. It is also an opportunity to tie the ACT into the troop's fire support plan and for the ACT platoon leader to request any mortar targets to assist with their scheme of maneuver. Ground leaders should keep in mind that Kiowa Warriors are best used looking deep and using the maximum stand off of their mast mounted sight thermal capabilities. Air cavalry leaders also have a responsibility to ensure their assets are best used to accomplish the commander's intent, and when they are being underused, they must be persistent with the ground troop leaders to ensure full integration. Observation of primary mounted avenues of approach, flank security, expediting ground unit movement, and observation of indirect fires are all good uses of scout aerial platforms. Observation of restricted/vegetated terrain, locating dismounted threats, rear area reconnaissance, and logistical convoy security may not be the most effective employments of the Kiowa Warrior system.

Face-to-Face. Prior to LD, the air mission commander (AMC) physically checks in at the field trains command post/air TOC for any updated squadron or ACT mission changes such as enemy intelligence, friendly unit locations, and additional squadron graphics. The AWT then lands at the troop TOC, in their assigned zone or sector, for a face-to-face current troop level situation brief. This brief covers in detail any changes to the mission (enemy, weather, or maintenance related) and intelligence updates, and adheres strictly to the air-ground checklist. If good coordination has taken place previously, the AMC may opt for just FM coordination. However, if time did not permit prior integration, this step is crucial. This is an advantageous time to exchange graphics, the troop fire support plan, and concepts of operations. If time permits, face-to-face coordination is always a good idea.

Kiowa Warriors use a computerized internal navigation system that allows them to enter basic graphics on a video display. For ease of entering graphics into the Kiowa Warrior's on-board systems, the squadron staff and troop executive officers should ensure that all graphics and any indirect fire targets are accompanied with a six-digit grid. The squadron SOP should also ensure that all squadron graphic control measures important to air execution are numbered between 31 and 60, such as named area of interest (NAI) 31, 32, 33 and check points (CP) 34, 35, 36. This vastly improves reporting speed and accuracy since the graphics display in the cockpit can coincide with the squadron graphics. This becomes paramount when exchanging graphics at the air-ground face-to-face at any level.

Face-to-face coordination is also critical following squadron-level fragmentary orders (FRAGOs). This could be a FRAGO to either the ACT or GCT or both. Following a FRAGO, the ACT commander normally lands his helicopter near the GCT commander's tank or the troop TOC to quickly cover all the information in the air-ground coordination checklist and to refine their joint scheme of maneuver. The troop fire support officer (FSO) will also assist in developing both FA and mortar targets to support the mission, and should always develop his fires plan with Kiowa Warrior observers in mind. With practice, this can be done in less than 10 minutes with the endstate being a well-integrated troop FRAGO.

Radio Coordination: This step is the most critical and is continuously performed while air and ground elements are working together. It is normal for an AWT to talk with scout section sergeants or dismounted teams; however, for the AWT to drop to a lower net, they must first receive permission from that unit's commander or platoon leader. It is also important that reports are sent up quickly and accurately and that the AWT's location is constantly passed higher and laterally. Reporting procedures for spot reports, situation reports (SITREPs), and clearance of fire must be clearly defined before AWTs drop to a lower radio net.

Michael D. Doubler illustrates an early example of radio air-ground integration in his book *Closing with the Enemy: How GIs fought the War in Europe, 1944-1945:*

"ACC (armored column cover) missions flown during 25-31 July reflect the effectiveness of the new air support techniques and the growing rapport between the combatants, as command-

ers and pilots coordinated their efforts by talking directly with one another. In one case a tank unit commander asked a circling P-47 pilot, 'Is the road safe for us to proceed?' The response 'Stand by and we'll find out' came over the radio as supporting fighter-bombers performed a closer inspection of the road ahead. Spotting a number of German vehicles, the aircraft attacked with bombs and machine guns that disabled the targets. A report of 'All clear. Proceed at will,' from the P-47s let the ground commander know that it was safe to resume his advance."

Below is an example of a modern FM radio coordination where no previous air-ground integration has taken place:

"**Eagle 6:** Saber 6, this Eagle 6 on station in five minutes with one AWT configured seven MPSM rockets and two Hellfire missiles each, call signs Eagle 6 and Eagle 13.

SCO: Eagle 6, Saber 6, roger, contact Avenger 6 his net.

Avenger: Eagle 6, this is Avenger 6; meet me on Avenger Troop command net to receive a SITREP in my zone.

Eagle 6: Roger…Avenger 6, Eagle 6 your net, send SITREP.

Avenger 6: Eagle 6, this is Avenger 6…SITREP follows.

Eagle: Avenger 6, this is Eagle 6, send it, over.

Avenger: Situation: Enemy. Red and Blue have identified and destroyed enemy BRDMs at QV 055626 and QV 036615 at 1530 hours. Red also destroyed a dismounted ADA team at QV 033627 at 1500 hours. We currently have no enemy contact, but expect enemy BMPs vicinity CPs 41 and 42 and possible tanks along PL Hickory at CP 16.

Mission: A Troop conducts zone recon from PL Willow to PL Spruce to identify and destroy enemy recon forces in order to support 1st ID's attack. On order, conduct hasty attacks to destroy enemy platoon-size forces.

Concept of Operation: Avenger Troop conducts a deliberate zone recon from PL Willow to PL Spruce in a troop split vee formation focusing on enemy forces and trafficable attack routes for subsequent tank use. Dismounts will move forward of their Bradleys to gain contact on our own terms with enemy recon forces. Tanks initially follow and support scouts. Upon detection of two or more mutually supporting vehicles or one tank, the troop executes punch drills to destroy enemy vehicles. Mortar fires obscure and suppress enemy recon forces in order to support scouts and tanks crossing danger areas and hasty attacks. The troop is prepared to conduct hasty attacks south into Bulldawgs zone east of PL Oak.

Friendly Situation: Red Team is in the north with Red Alpha at QV 055629, Red Bravo at QV 056626; White is located at QV 045624 providing overwatch for Red; Blue team is in the south with Blue Alpha at QV 055616 and Blue Bravo at QV 054606; Green is located at QV 049619 providing overwatch for Blue. All scout platoons have dismounts on the ground. My mortars are at grid QV 029629 and my FSO is set at QV 046622 overwatching squadron target AH 0074. My trains are stationary at CP 47 and I am moving with Green.

My priority intelligence requirement (PIR) is the location of any tanks and obstacles and my friendly forces intelligence requirement (FFIR) is the destruction of any scout or tank sections.

The coordinated fire line (CFL) is currently PL Oak, on order PL Hickory. My mortars are prepared to support any fire missions you need once cleared by me. They are currently operating on A Troop mortars day 3's freq.

I request your help in clearing the mounted routes in the wooded terrain to the north and south of my troop zone, particularly NAIs 21, 24, and 51 for enemy recon elements. Also request to observe the terrain vicinity CPs 16 and CPs 41 and 42 to confirm or deny enemy platoon-sized formations in that area since the terrain denies me direct observation.

Contact Blue 1 on his platoon internal for further coordination, over.

Eagle 6: Avenger 6, this is Eagle 6; I acknowledge all…break…my current SITREP as follows… I have three AWTs in your zone — each AWT has a complement of .50 cal./rockets and Hellfire/.50 cal. We can support you with 1 hour of day and 5 hours of night vision goggles (NVGs). There is a west wind at 10 gusting to 22 that we'll have to watch as we maneuver and observe to the east and a 25-minute turn around time for one AWT breaking station to forward arming and refueling point (FARP).

Eagle will LD PL Willow at PP 1 with two AWTs abreast, one AWT in the north with Red and White teams and one AWT in the south with Blue and Green teams…providing continuous coverage along your forward line of own troops (FLOT). I will phase the third AWT for refuel. We will occupy OPs in-depth 10, 11, and 15 oriented towards NAIs 21, 22 and CP 16. We will also occupy OPs 17, 18, and 20 oriented toward NAIs 24 and 51 and CPs 42 and 41.

AWTs conducting relief on station will enter from the southern boundary and depart along the northern boundary of either Red or Blue team's zone making radio contact at PP 1 and calling two-way traffic at air control points (ACP) 1, 2, and 3 along Route Raven.

I am the AMC, but you will hear traffic on your net from Eagle 13 AWT and Eagle 25 AWT…nothing follows, over.

Eagle 13: Blue 1, this is Eagle 13, your platoon net, over.

Blue 1: Eagle 13, this is Blue 1…in addition to my Alpha and Bravo sections, I have two three-man dismounted teams vicinity CP 41 and 42 at grids 056617 and the other at 059615. My dismounts at CP 42 have an audio on a possible tracked vehicle on Route Lucy at grid 058610. Request your help in confirming this spot report, over.

Eagle 13: Roger Blue 1, I am moving to the ridgeline just SW of CP 41 to establish observation and develop the situation.

Eagle 13: Blue 1, this is Eagle 13, spot report, over.

Blue 1: This is Blue 1, send it, over.

Eagle 13: One stationary BMP oriented north on Route Lucy at Grid 058612, time 1010 hours local… request mortar fire, over.

Blue 1: This is Blue 1…roger…wait one.

Blue 1: Avenger 6, this is Blue 1, spot report, over.

Continued on Page 50

Red Star – White Elephant?

Were the IS-3 and T-10 Series Soviet Tanks the Monsters They Seemed in the 1950s?

Not According to Russian Sources…

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One of the eternal symbols of the Cold War in the 1950s was the annual Moscow "October Revolution" Parade, in which hundreds of tanks and armored vehicles would thunder across Red Square every November. Western intelligence scanned for new weapons to be introduced, and high on the list for many years was the IS-3 "Joseph Stalin" series of tanks, ending with the T-10M in the early 1960s. To many people, no other weapon personified the "Evil Empire" and its domination of Eastern Europe than these monstrous tanks. As a point of fact, both the U.S. and the U.K. created and fielded their own heavy tanks specifically to combat these monsters.

But were they really the threat that they seemed? One joy of an open society is open archives, which permit access to a different picture of reality than that once accepted as fact. The archival view of these monsters today is that they were enormously clumsy and disappointing clunkers, armed with obsolete guns and ineffective fire control systems that were marginal at best. Worst of all, more than 10,000 of these heavy tanks were built at enormous cost. Only a small percentage of that number ever found their way into units, and most lived out their lives rusting in Siberian storage depots.

In the land of the "new Socialist man," how could this happen? As with all things Soviet, in a word: politics. The same machinations that nearly killed the T-34 before WWII were still present after the war and, mixed with the volatile atmosphere of the Khrushchev era, made for some nasty infighting within the Soviet military hierarchy.[1] But while the Kotin Bureau pushed the heavy tank philosophy, the Morozov Bureau fielded its T-54 tank, the Kartsev Bureau refined that into the T-55 and T-62, and the Morozov Bureau finished with the T-64, a true breakthrough in conceptual armor thinking, which spawned the T-72 and T-80.

Background: The Soviet Love Affair with Heavy Tanks

The Soviets were far in advance of the world in the 1930s in the area of armored vehicle design and conceptualization, and in many areas were superior to the Germans in planning for their employment on the battlefield. By the late 1930s, the Soviets determined the following tank types were required:

- Light scouting tanks, preferably amphibious.
- Light fast tanks, capable of rapidly exploiting a breakthrough.
- Light-medium "infantry escort" tanks, mounting a useful gun and moving with the infantry to eliminate nodes of enemy resistance.
- Medium tanks, capable of dealing with enemy resistance and troops under cover.
- Very heavy tanks used for breaking through into the enemy's rear areas.

To that end, they went from having only one tank design bureau in 1929 to four by 1937. However, there were really only two controlling minds: Zhosif Ya. Kotin controlled Factories No. 100, 174, and 185 in Leningrad and Mikhail I. Koshkin Factory No. 183 in Khar'kov.

Until the arrival of Koshkin, tank designs were created in Leningrad and sent to other factories, such as Factory No. 183, for production. This had been the case with the ill-starred T-24 medium and the overblown T-35 very heavy tank.

Kotin placed his hopes in intimidating "flagship" tanks that could easily crush the enemy. His bureaus produced the 25 metric ton T-28, a bulky three-turreted medium marred with thin armor. The 54 metric ton T-35 was even worse, possessing the same level of armor protection, but now five turrets and a crew of 11 to 14; fortunately for the Soviets, only two regiments' worth (61) were built. Undeterred, in 1937 Kotin held a competition between his

This KV-1 Model 1941, has a cast turret and main gun similar to the F-34 gun of the T-34/76 tank. Mechanical failures took more of a toll than the enemy, and many were abandoned due to lack of repair time.

design bureaus in Factories No. 100 and No. 174. Each was to create a new very heavy tank, mounting two 45mm antitank guns and one 76mm cannon. In 1938, each bureau presented their design to Stalin. In the infamous meeting, he laughingly dismissed the designs as "Department store tanks, with a gun for every occasion." He broke off a turret from one model and suggested they try it that way.

The two bureaus then produced nearly identical tank designs: the T-100 from the Factory No. 100 team, and the SMK from Factory No. 174 (for Sergey M. Kirov, the man for whom the factory was named). Both were long, boxy, and carried two turrets in two tiers, a lower turret with a 45mm gun and a machine gun and an upper turret with a short-barreled 76mm gun and another machine gun. Neither made it past the prototype stage; however, both were used during the Finnish War of 1939-1940.

The only prewar Kotin tank that made it into service, with help from its namesake and Kotin's father-in-law, Kliment Voroshilov, was the single-turreted KV heavy tank. It was a more conventional design weighing 47 metric tons and carrying three 7.62mm machine guns and a 76mm cannon. In fact, it was ordered off the drawing board; this point was later glossed over by sending the prototypes to the Karelian Isthmus for testing at the end of the Finnish War.

The developed version, the KV-1, entered production in 1940 at nearly the same time as the T-34. Both used similar guns, effective 76mm weapons capable of destroying any tank in the world at that time. But the KV-1 was clunky, using a 1920's U.S. tractor transmission and an overstressed engine, and while it had thick armored protection, it had poor visibility and crew ergonomics, making it nearly impossible to use effectively in combat. Approximately 2,300 KV-1-series tanks were built between 1940-1942.

Once the war broke out, the KV-1 was soon revealed to be a deathtrap. Fear of angering Kotin prevented many commanders from telling him how bad the tank really was. Finally, after many senior leaders complained about its failings, Kotin ordered the problems fixed. Nikolay Shashmurin, a skilled engineer, redesigned the tank, cutting five tons and adding a new transmission. While still not perfect, it was now functional, and the final production run of KV tanks (around 2,400) was built as the KV-1S (for speedy) heavy tank. A small number were built as KV-85 tanks, which mounted the turret of the IS-85 on a KV-1S chassis.

As a reward for fixing the KV, Shashmurin earned the privilege of designing its successor. His team created two new heavy tanks, the IS-1 (for Iosef Stalin) and IS-2. The IS-1 or IS-85 mounted the 85mm D-5T gun, which also equipped the T-34; the IS-2 or IS-122 mounted a modified version of the 122mm A-19 corps artillery piece as the D-25T tank gun. While the IS-1 was found to be less effective than the T-34/85, the IS-2 with the 122mm was a devastating weapon. By the time that production ended in 1945, 107 IS-1 tanks and 4,392 IS-2 tanks had been built and served with combat units.

Enter the IS-3

While the IS-2 proved itself capable of dealing with most battlefield threats the Germans presented, the old Russian adage of "better is the enemy of good enough" came into play. A group of Soviet engineers extensively studied how and why tanks were knocked out in combat, and came to the conclusion that most "kills" came in the front 60-degree arc of the vehicle. If this area could be made impenetrable to enemy shells, the tank would most likely survive anything encountered in combat. Work was authorized in the late summer of 1944 on a new tank, dubbed "Kirovets-1."

In 1941, the three tank bureaus from Leningrad were evacuated to the Chelyabinsk Tractor Factory. There, they amalgamated to form Chelyabinsk "Kirov" Factory No. 185 or "Tankograd." In late 1944, after Leningrad had been liberated, the old Factory No. 100 design bureau returned to the city. Thus, when Kotin decided to work on a new heavy tank, he set up a competition between the old Factory No. 100 group,

led by Kotin himself and his chief assistant A. S. Yermolayev, and the design bureau at Factory No. 185, led by N. L. Dukhov and M. F. Balzhi.

Both bureaus took different approaches to the new vehicle. Kotin's team used a turret similar to that of the IS-2 but on a radical chassis that used three heavy welded armor plates at the front to form its bow and glacis section. While the factory engineers proudly dubbed this very heavily armored section the "eagle's beak," it was called the "pike nose" by the military for its appearance, and later led to the tank's nickname — "Shchuka" (pike). This tank was given a number of interim designators, including Object 240, 240M, 244, 245, and 248.

Above, a column of IS-2s on the Berlin Highway in the spring of 1945. The most successful of the series, the IS-2 helped to keep Soviet heavy tank production alive during the early '40s.

The Dukhov team preferred castings, and came up with a radical cast hull with an even more avant-garde cast turret design that looked like an inverted frying pan. They called this tank the "Pobeda" (victory) and gave it the factory designator Object 703.

Both bureaus were convinced of the superiority of their design, so Peoples' Commissar for Tank Production V. A. Malyshev was called in to referee. He did so by compromise; the hull of the Leningrad proposal would be used for the new tank, but it would use the turret from Chelyabinsk. The tank would be dubbed the IS-3, but would retain Object 703 as its designator. However, the weight of the new tank could not exceed that of the IS-2 — 46 metric tons. This meant some redesign was required to slim down the new tank.

The designers provided two novel solutions: first, they "notched" the lower hull by cutting away the area between the suspension torsion bar mountings, filling them in with angled armored plates. While it got the weight down, this also weakened the stiffness of the hull — the Achilles' Heel of the IS-3 throughout its life. Second, to get the level of protection needed, they "folded" the upper part of the hull over to get a "keystone" shape providing extra armor protection above the fender level; this was disguised to prying enemy eyes by a flat, sloped steel plate that joined the top of the hull to the edge of the fenders.

The first Object 703 rolled out of Chelyabinsk in October 1944. Using many internal components of the IS-2, it did not require a great deal of major changes in those parts for use on the new tank. After passing its factory, state, and troop tests, it was ordered into production in 1945.

But production ran into problems when the failings of the new tank began to surface. Thanks to the "flex" of its hull, it tended to snap hull welds and motor mounts easily. The flex also damaged the IS-2 road wheel bearings. As a result, while production roared ahead full speed, the amount of unacceptable tanks began to increase. Nevertheless, the Soviets decided to give their allies an unpleasant surprise.

At the September 7, 1945 Victory Parade in Berlin, 52 of the first production series IS-3 tanks, equipping the 71st Independent Heavy Breakthrough Tank Regiment of the 2d Guards Tank Army, formed the final unit in the parade down Charlottenburgerstrasse. While the tanks were not truly operational, they were a total shock to the thunderstruck observers on the reviewing stand. In addition, plans to send them to fight the Japanese in the Far East were shelved, because of the problems with the tanks.

Between 1945 and 1947, the Chelyabinsk Kirov Factory No. 185 built 2,311 IS-3 tanks. While IS-3 tanks were touted as the best in the world by the Soviets, and were paraded at every chance, the fact of the matter is that they were mechanically unreliable. While Western analysts raved about the ballistic shape of the turret and the seemingly invulnerable glacis, in reality the crew worked under cramped and dark conditions. Due to flexing and cracking of the hull welds and road wheel bearings that burned out all too soon, the IS-3 did not meet minimum Soviet operational standards for reliability.

Consequently, the Soviets found themselves in the embarrassing situation of tanks rolling off the production line in Chelyabinsk onto trains to go to the factory in Leningrad for correction of their defects. Even in 1946 a committee was formed to fix the problems of what had become the flagship Soviet tank, and to prevent Western intelligence agencies from finding out how bad the tank really was. As a result, the IS-3 began a nearly continual cycle of upgrades and repairs, with every single tank receiving three major rebuilds and upgrades between 1948 and 1959.

The first major upgrade cycle took place between 1948 and 1952 as the UKN-703 project (for "Correction of Design Shortcomings in Object 703"). While the IS-3 cost R350,000 (approximately $549,000) new, for an additional R260,000 (approximately $408,000) per tank the Soviets added new road wheels, turret race, engine subframe mount, main clutch, oil pump, and radio. However, the additions also brought the tank's weight up to 48.5 metric tons.

Another interim change, introduced during 1953-1955, essentially focused on fixing problems with the weak and short-lived running gear of the tank.

Finally, in 1957, a full-scale upgrade program began, including more stiffening for the belly and engine mounts, new machine guns, new sights and infrared lights, a new and more reliable V-54 type engine (the same as used in the T-54 series tanks, an ironic twist), new air cleaners, a new electrical system, more new road wheels, new auxiliary fuel tanks, another new radio, and externally, new fenders and stowage bins. This time, the tank was redesignated as the IS-3M.

Militarily the IS-3 offered little more than propaganda value, as it was an embarrassment and seldom offered to Soviet allies. Poland held trials with two tanks and rejected them; later the Czechs got one and kept it for parades after it failed their trials. It was only in the 1960s that approximately 100 tanks were sold to North Korea, a small lot to China, and 120 to the Egyptians. While the Russians used the IS-3 in Hungary in 1956, losing a few to the rebels, the

only real combat use of the tank came at the hands of the Egyptians in 1967. Here they were so poorly handled that, coupled with the tank's intrinsic failings, 73 were lost.[2] The remaining tanks were regrouped into a single regiment, which formed a deep reserve unit during the 1973 Yom Kippur War.

The Soviets quietly converted most of those that did not serve as "hard" targets on ranges into pillboxes along the Chinese border in the 1970s and 1980s, and some still remain in service there today with machine gun artillery units in the Fortified Regions.

The IS-4: Independent Thinking

The Chelyabinsk design bureau quietly began to design another new heavy tank completely on their own, without letting Leningrad know what they were doing. They took their preliminary designs for a product-improved version of the IS-2 and developed a new heavy tank, Object 701-6. They built a prototype, catching Kotin and his team off guard.

The new tank, designed by a team headed by L. S. Troyanov, was done with the knowledge of factory manager Isaak Zal'tsman and chief designer N. L. Dukhov, but was kept out of view of VKP(b) Committee representative N. S. Patolichev (the local party stooge, who would have immediately reported it to Kotin, who would not have tolerated what he deemed a "satellite production facility" of Leningrad building their own tank designs).[3]

The tank improved on the IS-2, but it also weighed in at 60 metric tons, 10 tons over Stalin's explicit limit for heavy tanks. The tank was enormous and roomy, but because the only way the small V-11 series engine (520 hp) could be made to power the vehicle was to turbocharge it to 750 hp, it also required far better cooling and lower gearing to remain operational. This resulted in a loud screaming when the tank was in operation; troops joked that you could hear this tank long before it got within range of its target.

Once the matter was a fait accompli, the Soviet government formally accepted the tank for service and placed it in production in 1947 as the IS-4. However, behind the scenes, it was the other way around; Chelyabinsk produced 250 tanks between 1945 and 1946, and it was actually taken out of production in 1947.

The tank never served in the West, as it was too heavy for the bridges. Therefore the tanks were sent to the Far East and Transbaikal Military Districts during the Korean War in case they were needed. With the end of the war, and with changes in thinking and Kotin's desire to get another new tank of his design into service, the IS-4 was pulled from units and placed in long-term storage until scrapped.

The T-10: A Bad Tank Made Worse

By 1948, the Soviets had an unhappy situation regarding heavy tanks; they had three different ones in service (IS-2, IS-3, and IS-4) sharing little except for road wheels and guns, with different levels of reliability. The IS-2s were still the most combat capable as regards functionality, but were falling behind world designs. The IS-3s were "hangar queens" that had little to recommend them, and the orphaned IS-4s were soon condemned to the east, out of sight and out of mind.

Nonplussed, Kotin stepped forward in 1948 to meet a new GBTU (Main Armored Vehicle Directorate) requirement for a heavy tank that again had to better the IS-2 but weigh no more than 50 metric tons. Kotin personally took charge of the design team and proposed his Object 730 to meet the requirement.

The new tank, unofficially designated the IS-8, was a warmed-over version of the IS-3 design. Zhosef Kotin was a firm believer in the formula that "If X is good, and X+Y is better, then X+Y+Z ought to be better still." But here the X was the IS-2 design, and X+Y the ill-starred IS-3; needless to say, X+Y+Z (IS-8) was not an improvement.

The new tank took the suspect components of the IS-3, its flimsy hull and cramped turret, and made them more extreme. The hull now sported a stamped belly plate in a shallow V shape, a larger and heavier turret, and a more heavily stressed engine. The tank replaced the coaxial 7.62mm machine gun with a 12.7mm DShK type, and another DShK was mounted on the loader's hatch ring.

The new tank offered little improvement over the IS-3. Chelyabinsk factory director Zal'tsman was not a fan of the project, which he saw as a waste of time and assets. Kotin, always a venal sort with a long memory and no sense of humor with people who did not agree with him, was not pleased.

There appears to be a direct relationship between Zal'tsman's attempts to stop the IS-8 project and his abrupt denouncement to the NKVD. Zal'tsman was removed from his position and brought to Moscow for questioning. Zal'tsman avoided imprisonment and execution, but was removed from Chelyabinsk and sent to run a small factory that made track shoes. Immediately after his departure, and with a Kotin crony firmly in charge of the plant, the IS-8 program continued.

The IS-8 design underwent two massive revisions before it was ready for production in 1952 as the IS-10, but after Stalin died in March 1953, the tank design was quietly redesignated the T-10 and ordered into production on November 28, 1953.

By 1953, there were no strong advocates of heavy tanks in the Ministry of Defense. The minister at the time, N.A. Bulganin, was more politician than combat leader, and apparently saw no benefit from the new tank. Likewise, Chief of the General Staff V. D. Sokolovskiy, an infantryman, was not interested in the differences between heavy and medium tanks. The T-10 had even more problems than its predecessor, the IS-3, and was placed in very low-rate production based on the hope that, if they solved the problems with the IS-3, the T-10 could be produced without the same flaws.

In the mid-1950s, a movement began to fit Soviet tanks with stabilizers, permitting them to fight on the move. Military theoreticians were now looking at concepts found in the West, and figured that tanks that had to stop to fire would soon be knocked out. As a result, both the T-54 series of tanks (designed by Morozov) and the T-10 were fitted with stabilizers.

The initial stabilizers fitted to these tanks in 1955 were the SPT-1 "Gorizont" (Horizon) in the T-54A and the PUOT-1 "Uragan" (Hurricane) in the T-10A. Both stabilizers worked well in keeping the guns aligned in the vertical plane. But while they made firing from the short halt easier (the gunner no longer had to wait for the gun to stop bouncing before preparing to engage a target), they still did not have the ability to engage targets on the move.

Consequently, both the T-54A and T-10A were produced in small numbers during 1956 and 1957, with the emphasis placed on their follow-on variants. The T-54B was fitted with the STP-2 "Tsiklon" (Cyclone) stabilizer, and the

T-10B with the PUOT-2 "Grom" (Thunder) stabilizer.

Most Soviet tanks at the time used a hinged telescopic gunsight (TSh) coupled to the main gun. The T-54B only required that the gun be stabilized; as its TSh-2-22 gunsight was linked directly to the gun, the gunner simply fired when he had a good stable sight picture of his target.

Instead of using a simple telescopic sight, the T-10 used the TP-2-27 periscopic sight linked to the main gun, requiring both gun and sight be stabilized to work together. With 1950s technologies being what they were, this added more weight, heat, and complexity to the tank. While the T-54B gunner only had to point and shoot — with an estimated success rate of 60 percent — the hapless T-10B gunner had to hold his T2S-2-29 sight on the target and hold the trigger down until the main gun fired. This required the stabilizers to align both sight and gun, and as a result, the gun could "hang" for several seconds before firing. This was not a standard skill task, so most tank gunners of the time could not make use of the bulky — and expensive — stabilization system.[4]

The T-10 now needed changes to stay competitive, and, in 1957, it was reworked into the T-10M. But once again, both Leningrad and Chelyabinsk had different ideas on how to fix the tank's problems. The Leningrad version, Object 272, was opposed by the Chelyabinsk version, Object 734. The same stalemate that had produced the IS-3 controversy was present. However, as Malyshev had died in 1957, this time it was easier for Kotin to make the decision, and Object 272 won out after five years of arguments. Externally, the two were indistinguishable, but there were a number of internal controls and component locations inside the two tank designs that were incompatible. Overall, the Leningrad model was heavier by 1.5 metric tons and used a different model engine (V-12-6B versus V-12-6), and a different AA cupola.

Both tanks did use a new gun — the M-62T2 — that was essentially a modernized D-25T. It was provided with a small rammer to ease loading, a bore evacuator, and a muzzle brake similar to that fitted to the contemporary 122mm D-30 howitzer. In 1967, the Soviets even created a totally new line of ammunition for this gun, which used a combustible case charge similar to those used by the 115mm D-68 and 125mm D-81 tank guns from the T-64 and T-72 series tanks. These included an HE-FRAG round, an AP-T round, an APDS round, and two HEAT rounds. The tanks also replaced their DShK machine guns with 14.5mm KPVT weapons to enhance their ability to deal with lightly armored targets; again, the new coaxial gun added weight and took up more space inside the turret.

The T-10M heavy tank above has been preserved as a "gate guard" at a Russian base.

Photo by Steve Zaloga

The biggest red flag to the future of heavy tanks came in 1960. In mid-February, the Council of Ministers of the USSR published Resolution No. 141-5, which prioritized programs for accelerated completion and production. While medium tank programs like the T-64 were covered, nowhere were any heavy tank programs mentioned or described. Even though the T-10 tank had theoretically been in production since 1953, only a few hundred tanks appear to have actually been built by that time.

In July 1960, Khrushchev was presented with a display of the accomplishments of the three design bureau chiefs of the time — Kotin, Kartsev, and Morozov. Kotin showed the T-10M, Kartsev the prototypes of Object 166 (T-62), Object 167, and the missile-firing Object 150 (IT-1), and Morozov the Object 432 production prototype of the T-64. While Khrushchev liked the concept of the latter, and authorized low-rate production, he told them to stop making tanks and design missiles. If tanks were going to remain, they must fire missiles and use a drum-canister inside the tank for storage. Kartsev argued that this was a dumb idea, and that the USSR was more likely to need gun tanks than missiles. While he and Khrushchev argued, it was apparent that Khrushchev was listening to him. But after seeing the old-fashioned T-10, Khrushchev was adamant: no more heavy tanks. Kotin was told to drop all work on the T-10M and cease production.

Kotin, having been the pampered scion of politicos, apparently felt that both the Council of Ministers' resolution and Khrushchev's directive did not apply to him; to hedge his bets, he produced a series of missile armed heavy tanks such as Object 282, a missile armed version of the T-10M. Khrushchev, stinging from the disastrous 1962 Cuban missile crisis, wanted no more tanks, but missiles instead. The flimsy attempt by Kotin to get around Khruschev's ban on heavy tanks was not well received: Khrushchev was livid, and gave Kotin a very pointed warning to either find a way to build missiles or prepare to be removed from his office.

But in 1964, when Khrushchev fell from power, Kotin garnered three old-line Soviet commanders as allies. Marshal R. Ya. Malinovskiy (Minister of Defense), Marshal V. I. Chuykov (Chief of the Ground Forces), and Marshal Poluboyarov (Chief of Tank Troops). All three were fans of heavy tanks, so between 1964 and 1966 the majority of the 8,000 T-10 tanks produced rolled off the production lines. But in 1966, Marshal M. V. Zakharov became the Chief of the General Staff. Zakharov, who began his service as an artilleryman in WWI, managed to terminate their production.

The T-10 tanks did serve for some time in heavy tank regiments and independent tank regiments. Slow and short-ranged, they were not popular with maneuver-oriented commanders.

They were shipped off to storage depots in the late 1970s and finally removed from service in 1993 and scrapped. While numbers of IS-3s remain as fixed fortifications in the Fortified Regions, nearly all of the T-10s are gone.

Heavy Organization and Tactics

During WWII Soviet heavy tanks were organized in heavy tank breakthrough regiments of 21-22 tanks each. These regiments were attached as needed to specific units and formations. These regiments remained from 1946-1957 with minor changes to the strength of the units. However, heavy tanks required special training, and in 1956, their sole heavy tank training regiment, the 23rd TTP, was reorganized and enlarged to deal with an increasing demand for heavy tank crews.

From 1947 to 1957, heavy tanks and SP artillery pieces were combined to form heavy self-propelled regiments, assigned to line tank and mechanized divisions. These included at least 20 heavy tanks and 20 ISU-152 SP guns each. They were disestablished when the mechanized divisions were reorganized as motorized rifle divisions and tank divisions converted over to homogenous tank designs.

In 1957, at the order of Minister of Defense Marshal Georgiy K. Zhukov, the Soviets reassigned them to new heavy tank regiments and also created special heavy tank divisions with two heavy tank regiments and one medium tank regiment. This was a response by a military panicked by Khrushchev's force reductions, which cut the overall strength of the armed forces from 4.81 million to 3.62 million, attempting to keep as much heavy combat power as possible.

The new regiments paralleled the postwar medium tank regiments — three battalions of 31 tanks each, plus one or two command tanks. A total of six heavy tank divisions were created: two in GSFG, two in the Byelorussian Military District, and one each in the Kiev and North Caucasus Military Districts. Each division had up to 186 heavy tanks, or a total of around 1,000 IS-3 and T-10 tanks in these special divisions.

The given mission of these heavy tank divisions and regiments was "breakthrough." But by 1965, heavy tanks were recognized as overcome by events. Most divisions were deactivated in 1965, and in 1967, the heavy tank mission changed to "countertank combat," something they were ill prepared to carry out. Most tanks that remained in the west were reformed into independent tank regiments of around 148-150 tanks, assigned at the ratio of one per army. They were replaced in the 1970s when the T-64 was designated a main battle tank, and only main battle tanks were fielded in forward areas.

The one, and only, time the T-10 regiments saw any action was in 1968. They were part of the invasion of Czechoslovakia, and some T-10M tanks can be seen in photos as roadblocks in Prague and other large Czech cities.

"Minor Details"

What killed the T-10, once the most feared of Soviet tanks?

The T-10 was its own worst enemy, as it was favored only by a very narrow (but influential) group of Soviet officers. Commanders liked the highly reliable and maneuverable T-54 and T-55 tanks, and found the clunky T-10 to be an albatross in the lightning warfare concepts the Soviets envisioned during the 1950s and 1960s.

WWII tactics, and the technological developments of the German army, forced the Soviets to adopt two main types of combat tanks: a medium tank, capable of high-speed maneuver and infantry support, and a heavy tank, capable of taking enemy fire while suppressing their defenses and knocking out their artillery and tanks. While the T-34 and T-34/85 met the first point with stunning success, the KV-1 did not make it as a heavy tank. The only thing that kept the heavy tank alive was introduction of the IS-2.

After the war, commanders who had found success with tank formations spearheaded by IS-2s wanted to ensure they would have the same capabilities. They were willing to put up with its problems (parts, ammunition, crew training, etc.) to keep those capabilities, as the IS-2 was a known quantity: it was reliable, effective, and when used properly, capable of breaking any enemy defense or formation.

Early on, most commanders realized that the impressive looking IS-3 was actually worse than the IS-2 and wanted no part of it. They still remembered 1941: tanks that cannot roll out the gate are of no use to the commander, no matter how great their superiority on paper.

Kotin, unfettered by the reality of changing technologies, still felt that he could "sell" heavy tanks to commanders, thus taking prestige away from Morozov's medium designs. But the changing technologies of the late 1940s and early 1950s doomed his thinking, as the development of HEAT ammunition and antitank missiles doomed tanks using thick, heavy homogenous armor. By the late 1960s, a T-54B with a HEAT round or an AT-3 missile could knock out any tank that a T-10 could, so one of the heavy tank's prime reasons for existence was no longer valid.

The T-10 also had no range. While the T-54 had a range of over 400 kilometers, and the improved T-55 a range of 500 to 700 kilometers with 400 liters of auxiliary fuel, the T-10 was limited to feeble highway ranges of 180 to 280 kilometers. This compared well with the early M48 or Centurion, both of which had ranges of only about 160 kilometers on full internal fuel; but by the time the T-10s were fielded, they were facing the M60 and Chieftain, both with diesel engines and much greater ranges of around 500 kilometers.

One recent observation made by Russian analysts is the tremendous cost of rebuilding and modernization programs, and the T-10 fleet must have been a particularly nasty subject. Objectively, obsolete tanks being given star treatment and having scarce resources drained off to upgrade them must have galled planners on the General Staff. The case of creating high-tech ammunition for the tanks is a clear-cut case of such gold plating. The T-10 tanks probably cost around R1 million new — and with the cost of their annual maintenance, intermediate rebuilding, capital rebuilding, and adherence to updating orders, the 8,000 of them would appear to have cost over R8 billion, plus nearly as much in upkeep over their 40-year service history. Even given the artificiality of the fixed Cold War rate of $1.57 to the ruble and fantasy Soviet budgets based on those rubles, a waste of over $25 billion is damaging to any economy.

During these rebuilds and updates, some of the changes included:

- Expanding from only one tank in five being equipped with an AA machine gun to all tanks having AA mounts (1959);
- replacing the balky and difficult eight-speed transmission with a new, simpler six-speed one (1960);

- adding the OPVT underwater crossing equipment to the tank so it could perform the same maneuvers as the medium tanks (1963); and
- providing the tank with a complete new suite of ammunition with combustible case propellants (1967).

Development of high-power smoothbore guns and APFSDS ammunition in the late 1960s and 1970s also proved that the heavy tank no longer had the ability to dominate the long-range battlefield. Where the AP round of the T-10 could penetrate about five inches (127mm) of RHA at 2,000 meters, the new APFSDS rounds easily blew through twice that thickness at the same range. Even with its 250mm thick armor, the T-10 found itself in the embarrassing position of being vulnerable to U.S. and NATO medium tanks armed with the 105mm L7-series guns, yet unable to knock them out in return at the same combat ranges. To this day, there are some Russian authors who state that the T-10M's M-62T2S gun was finally able to fire a powerful APDS round capable of destroying any NATO tank. Even if the penetration was up to it, the slow loading, poor ergonomics of the tank and poor fire controls made that irrelevant.

The biggest nail in the T-10's coffin came once again from Aleksandr Morozov. In the mid-1960s, he produced a revolutionary tank with a 115mm gun fed by an autoloader, a three-man crew, better armor protection, and weighing only 36 metric tons. While Malinovskiy, Chuikov, and Poluboyarov all hated this machine, Khrushchev and the forward thinkers in the General Staff loved it. This tank, accepted for service as the T-64, was so good in the eyes of the Soviet government that it was dubbed "osnovnoy boyevoy tank" — the main battle tank. While the T-64 later turned out to have nearly as many flaws as it had advantages, it paved the way for the later T-72 and T-80, and with the advent of those tanks, the day of the heavy breakthrough tank appeared to be at its end.

Conjecture

Today there are rumblings from Russian military writers and theoreticians that they should revisit the heavy tank, as the main battle tank today is closer to the old heavy tank designs. Citing 70-ton weights by the M1 Abrams and the Challenger series of tanks, they feel there is a place for a new heavy tank. But they have ignored the problems these tanks caused in the West, namely the requirement for heavier transport and an inability to rapidly move them anywhere in the world when needed. Also, with the introduction of reactive armor and modern armor arrays, the security of ten or more inches of solid steel armor can be attained with only a few inches of mixed media or explosive plates. It is likely now, with new U.S. Army future combat systems, that tactics should be re-examined, rather than worry about how to build new oversized tanks and other armored vehicles to do missions better performed by lighter, smaller machines.

Notes

[1]For the story of the T-34 and the problems among the three tank design bureaus, see "Why Three Tanks?", by the same author, *ARMOR,* July-August 1998; available online at *www.knox.army.mil/armormag* under "Back Issues."

[2]The Israelis converted most of the survivors to pillboxes on the Bar-Lev Line along the canal by removing their engines and cutting open the bellies for access from below. The IS-3M on display at Aberdeen Proving Ground was one of these tanks, and was given to the U.S. after the 1973 Yom Kippur War. The engine deck from a T-62 was welded on after its arrival at Aberdeen as it was restored for display. The tanks were not, as reported some places, given T-54 engines and transmissions.

[3]This same problem existed in the late 1990s, when the production factory at Omsk produced Object 640, the "Black Eagle" tank, without clearing it with the Popov Bureau in St. Petersburg. Russian tank enthusiasts, however, have indicated that the "Black Eagle" is only what happens when tank builders have a lot of parts and time on their hands, and is not a serious effort to produce a new combat tank, as the IS-4 was in the late 1940s.

[4]Soviet tank sights used a standard nomenclature system. They were usually T for tank, followed by either Sh for hinged telescopic or P for periscopic sights. There was often a one-up model identification number, but a two-digit number followed that which indicated which ballistic sight insert was installed, based on a specific ballistic table. For example, the 100m D-10T gun was pattern 22, but the D-10T2S was pattern 32. Here the 122mm D-25T was pattern 27, but the D-25T2S or later 122mm M-62T2S were pattern 29. This may have been due to the introduction of the HEAT round for those guns, which required different tabular settings for firing.

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Stephen L. "Cookie" Sewell joined the Army in 1968 and retired in 1990 as a CW2. He served 9 years in strategic intelligence assignments and 9 years in tactical assignments with four divisions. He was the chief translator and content editor of the 3d Armored Division G-2 *OPSINT,* an open source intelligence publication. He holds a BA in English Literature and is currently employed as an intelligence analyst by the National Ground Intelligence Agency.

Russian Tank Expositions Focus on Tank Upgrade Kits

by Lieutenant Colonel John C. Paulson

What's old is new again. Last year, the Russian Ministry of Defense sponsored two military equipment expositions in Omsk, Siberia, and Nizhniy Tagil in the Urals. While the T-80U and T-90 were displayed at both shows, the expositions focused on marketing upgrade kits for older version tanks rather than showcasing new breakthroughs such as the Black Eagle or the T-95 tank.

The exposition in Omsk, VTTV Omsk 2001, was sponsored by the Design Bureau of Transport Machine Building (KBTM) at the Omsk tank plant and was the regularly scheduled show for 2001. The Russian Defense Exposition (RUDEX), held in Nizhniy Tagil, is normally conducted during even-numbered years. RUDEX 2001 was a special show held in July 2001 to commemorate the 60th anniversary of the Nizhniy Tagil tank plant.

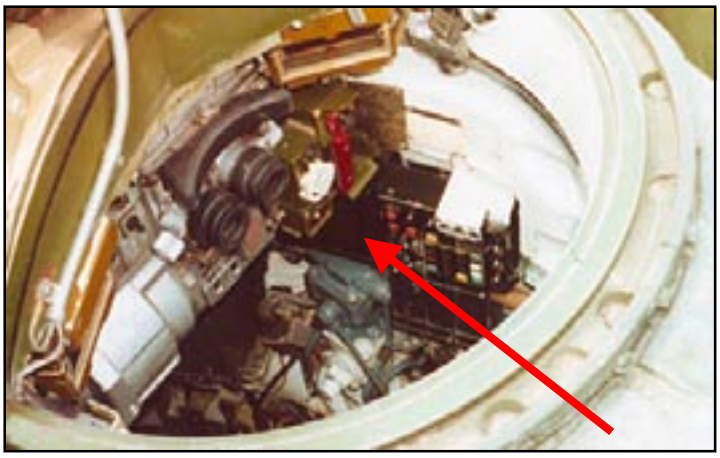
A Russian T-80U "flying tank" is shown above in a demonstration at RUDEX 2001.

VTTV Omsk 2001

Let's begin with the Omsk exposition, where a wide variety of Russian vendors displayed combat, combat support, combat service support vehicles, small arms, optics, thermal sites, uniforms, and other military accessories. In 1997 and 1999, the Black Eagle tank drew a great deal of interest and was demonstrated on a combat mobility course. This year, the Black Eagle failed to appear. When asked about its conspicuous absence, representatives from the Omsk tank plant stated that the tank was not yet ready for the next stage of demos, but that in 2003, the tank would likely be seen again.

The Omsk tank plant produces the T-80UM1 (improved) and displayed it at the 2001 venue. Few changes have been made over models previously displayed at the 1999 Omsk exposition; however, the tank's digitization appears to have improved. The display T-80UM1 boasted digital computers for the TC and gunner and offered a built-in test system and self-tests for various fire control checks. This year's tank also showed a digital data bus system. During a demonstration of the fire control checks for the tank, the demonstrator found a maintenance fault in the tank. He ran a fault isolation test and isolated the problem, which was fixed on the spot. Additionally, this model offers the active protective systems (APS) Shtora-1, Drozd, or ARENA-E as options. The APS's controls and warnings can be displayed on these digital boxes.

The T-80UM1 gunner's station has a thermal sight, and both the TC and gunner stations have small video screens that display exactly what the gunner views through his thermal sight. The Russians advertised that foreign customers can choose to add a foreign-made thermal sight to the tank. (The Ukrainian-made T-84 has demonstrated the incorporation of the French SAGEM



At left, the arrow indicates the digital box in a T-80U (improved) commander's station; above, a T-80UM1 (improved) turret with ARENA-E active protection system.

All photos by author

The T-55 above, equipped with modernization kit, is shown in a demonstration at the Omsk show; at left, with a 125mm cannon and built-in ERA; and below, with modernization kit and ammo bustle compartment.

2d generation FLIR.) The Russian 2d generation Nocturne thermal sight is also available for export.

The T-80UM1 also offers a 2A46M-4 main gun. In 1999, the tank showed a muzzle reference sensor (MRS) on the end of the gun tube. This year the muzzle reference device was missing. The Russians still advertise a "20 percent increase of fire effectiveness" over the 2A46M-1 main gun in the standard T-80U. The tank is capable of firing APFSDS, HEAT, HE-Frag main gun rounds, and 9M119/9M119M antitank laser-guided missiles. The T-80U brochure states that the REFLEX laser-guided missile system is intended to engage land and low-altitude aerial targets at a range of 100 to 5,000m. During the firepower demonstration, both the T-80U and T-90 shot missiles at a distance of approximately 5km. All rounds were dead-center target hits. The tank carries 45 rounds total. There are 28 rounds available in the autoloader carousel and 17 rounds stored in the hull.

The 46-ton T-80UM1 has an air conditioning system (turbo cooler) that reliably and effectively cools the electronics and crew compartment in hot weather conditions and is also equipped with a fire-suppression system and an NBC protection system. An electromagnetic wave deforming coating, referred to as "dazzle paint," covers most of the tank's surface and is used to prevent radar detection.

The driver's steering laterals have been replaced with a steering wheel. The tank has an improved GTD 1250G hp multifuel gas-turbine engine with (according to a brochure) a hydraulic volume-tuning mechanism producing a 29 percent increase in average speed on winding routes while reducing fuel consumption by 9 percent over the standard GTD 1250 turbine. Dubbed the "flying tank" at the 1999 show, the T-80U has a higher power-to-weight ratio than any modern main battle tank in the world.

The maximum range for the tank is listed at 440km with external fuel tanks and 335km without external tanks. The vehicle's maximum speed is listed as 70 kph highway and 40 to 45 kph cross country.

Additional features on the tank include a small turbine 18kW GTA-18 under armor auxiliary power unit (UAAPU). This UAAPU powers operation of all the tank's systems when the main engine is switched off. The GTD 1250 engine has an automatic air cleaning system and a one-point refueling location for the fuel tanks.

For additional protection, the T-80UM1 can mount either the Shtora or ARENA active protection systems. The complex Shtora-1 optical-electronic countermeasures system has a 360-degree laser emission detection system and an aerosol grenade screening system. The brochures claim Shtora triples the protection of the tank.

ARENA-E Active Protection System. The complex ARENA-E system is also available on the T-80UM1 and was displayed on one of the tanks at the expo. ARENA is an active protection system against rocket grenades and ATGMs that can detect incoming missiles at 50m with an automatic system reaction time of .07 seconds. The system has a 360-degree radar mounted on top of the turret. A series of grenades

are mounted on a ring along the front 110-degree arc of the turret. The range of speed for the missiles the system can engage is between 70 to 700m per second. Once a ground or air launched missile is detected, the ARENA system launches a grenade in that sector at approximately a 70-degree angle; the grenade then shoots down at the incoming missile to destroy or deflect it before it hits the tank. The danger zone for dismounted soldiers is a conical area of 20 to 30m around the tank. The combined protection level of a tank is claimed to increase five-fold with Shtora and ARENA. The ARENA system is available for the T-80 tanks, T-90, T-72C, and BMP-3.

Modernized T-55 Upgrade

Mentioned earlier, the focus of both the Omsk and Nizhniy Tagil exhibitions was not new equipment, but rather upgrade packages available for older tanks. The KBTM displayed a modernized T-55 with 125mm gun. This tank appeared to have a Black Eagle-style turret mounted on an upgraded/uparmored T-55 chassis. The weight was listed as between 43-44 tons with a power-to-weight ratio of 18.8 hp/ton. The advertised maximum speed of the upgraded tank is 50 kph and it has a max cruising range of 500km. The tank has an electric turret drive, fires a laser-guided missile and the gun is stabilized in both the horizontal and vertical axis.

A major change in this tank is that it has a conveyor type enclosed autoloader mounted in the turret bustle with 22 rounds readily available in the autoloader.

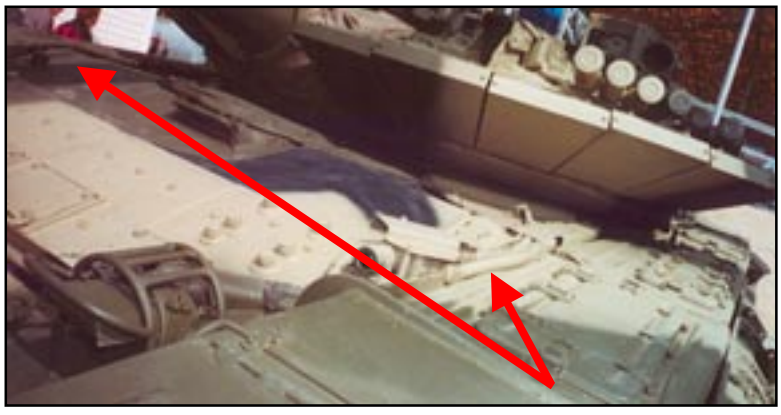
Another change can be found in the tank's frontal armor, which appears to have advanced explosive reactive armor (ERA) built into it. The protection level is stated as equal to the T-80U tank. According to the engineers at the vehicle display, a wide range of thermal sights were available as options for potential customers. Although prices were not provided, the engineers stated that it was considerably less expensive than a new tank.

KBTM also displayed brochures that had what appeared to be this same turret listed as a "Cal. 125mm welded turret to mount on the main battle tank chassis." The brochure depicted drawings of the tank with the turret mounted on the chassis of a T-62, U.S. Army M48, U.S. Army M60, and the German Army Leopard 1. The brochure states: "The welded turret possesses the protection level equal with those of main battle tank and is equipped with an advanced fire control system and autoloader which is enclosed into a detachable armored container mounted on the turret rear."

T-55 Modernization Kit. For shoppers with a smaller budget, the KBTM firm offered a much less expensive option for upgrading the T-55. It was displayed as a T-55 tank modernization. This tank maintains the standard

RUDEX 2001

The modernized T-72 tank at left is fitted with the Shtora system; below left, the NHK-4M commander's sight; and lower right, the front slope of a modernized T-72 with anti-mine tubes.



T-55 turret, but has an automated fire control system and guided missile system. It adds a 12.7mm anti-aircraft machine gun. The tank's survivability improvements are achieved by built-in ERA and a smoke grenade launcher system.

The upgrade kit includes a modernized commander's sight (TKH-1CM); advanced communications (details not stated, but appeared to be improved radio and intercom system); mine resistance improvement measures (similar to that of the T-72 improvements listed below); full hull length anti-HEAT side skirts. The tank also has a new driver's day/night vision device, a 620 hp V-55 diesel engine, and rubber-bushed tracks with increased ground grousers. The tank kit can be tailored to the customer's desires. The full suite of improvements is stated to increase combat effectiveness of the T-55 by 2.1 to 2.2 times a standard T-55. The kit is listed as a very affordable option to buying new main battle tanks.

Nizhniy Tagil RUDEX 2001

The RUDEX 2001 displayed military and commercial equipment made in the area. There appeared to be more commercial industrial equipment displayed at this show than with previous shows. The highlight of the show, and the only vehicle that had not been seen previously, was the modernized T-72M1, presented by Uralvagonzavod. The placard in front of the vehicle read "experimental prototype." The chief designer of the vehicle stated that the upgrade package was considerably less expensive than buying a T-90 or T-80. The package was available for Russian army and foreign customers.

The modernized T-72M1 tank weight increased from 43 to 45 tons. It has a power-to-weight ratio of 22.2 horsepower-to-ton with a B92C2 1000 hp diesel engine. The tank is also offered in the 840 hp version, and the average speed of the vehicle has been improved to 45 kph cross country and 65 kph on paved roads. The added weight and increased horsepower of the engine required some improvements to the transmission. One of the improvements made by Uralvagonzavod was to harden the planetary gears.

The upgraded T-72M1 has the 2A46M 125mm smoothbore cannon (same as T-80U and T-90). The tank can fire standard tank SABOT and HEAT rounds and can also fire the 9K119 laser-guided missile at ranges of up to 5,000m while on the move during both day and night operating conditions. The 12.7mm commander's machine gun can be fired while buttoned up with its electromechanical remote control.

The gunner's station in the improved T-72 has an upgraded thermal night sight. It is a French-designed Thompson 2d generation FLIR made with the assistance of Belarussian and Russian technologists. The upgrade package has a combined optical, thermal, and laser missile guidance channel. The sight is stabilized in both the vertical and horizontal planes. Identification range is between 3,000 to 35,000m. The tank also has the TNHK-1 sight as a back up.

The commander's sight is an NHK-4m day and night sight (passive) that is stabilized in the vertical plane only. The commander's fire control is also tied in with the gunner's thermal sight. The commander has a TV monitor that displays the gunner's sight picture and allows the commander to fire the main gun bullets or missiles using his monitor.

The tank also has an automatic target-tracking device. The chief designer explained that this autotracker works similarly to those in helicopters and fixed wing aircraft. Once the gunner tracks a target for approximately two seconds, and lases to the target, the system will automatically track the target.

The tank is advertised to have 1.25 to 1.8 times the level of protection over the nonmodernized T-72M1s. This claim is due to some increase in armor package, improved explosive reactive armor around the turret, and the Shtora-1 system. The sharply angled improved ERA looks almost like an ARENA grenade ring package. The chief designer stated that the package was a cooperative effort between NII Stali and Uralvagonzavod. It has four radar-laser warning receivers — two in the front and two in the rear. The tank also has an electromagnetic protection system that protects against mines and antitank guided missiles with magnetic induction fuses. The antimine system is a series of metal tubes that surround the entire upper hull of the vehicle.

Other improvements included on the upgraded tank include a Glasnost space navigation system (similar to global positioning system). The tank also has an improved in-tank fire extinguishing system and is available with metal or rubberized track pads. The T-72M1 is yet another example of Russian tank-builders focusing on improving legacy systems for domestic and international customers instead of developing new tanks. This is a reflection of the large number of these systems already in foreign inventories and domestic Russian inventories.

The Russians put a lot of effort into producing these shows, and both were clearly world-class arms and industrial expositions with military and civilian leaders from around the world in attendance. There appeared to be a lot of interest in the upgrade packages of the T-55 and T-72 by foreign military representatives. It is clear by the technology represented at these expositions that the Russians continue to build on their successful active protection systems. They are making improvements to their thermal sight capability, and are following the western trend toward bustle stowage of ammunition as a lesson learned from the Gulf War. Thousands of T-55s and T-72s remain in the inventories of many nations. These low-cost upgrade kits may change the countries that still maintain these ancient tanks back into very lethal and ubiquitous forces.

LTC John C. Paulson has written numerous articles on foreign tanks. He has traveled to Russia to visit tank expositions on three separate occasions. He also participated in the Greek and Turkish International Tank Trials. Commissioned as an armor second lieutenant from the U.S. Military Academy in 1981, he has served in a variety of armor assignments with 2-64th Armor in Schweinfurt, Germany; 2-10 Cav, 194th Armored Bde, Fort Knox, Ky.; and as the S3 and XO of 3-8 Cav, and G-3, Force Modernization, 1st Cavalry Division, Fort Hood, Texas. He has also served in several acquisition assignments, first as M1A2 Test Officer for PM Abrams, APG, Md., and later as Training Division Chief, TRADOC Program Integration Office - Army Battle Command System, Fort Leavenworth, Ks. He is currently assigned to the Project Manager's Office, Abrams Tank System.

Abrams Update: Final Review

by Colonel James H. Nunn,
Outgoing TSM for Abrams Tanks

Photos by Robert L. Stevenson

These are exciting times to be a tanker! Even though there is a lot of talk about the Interim Brigade Combat Team and the Objective Force, there is more happening in the Abrams tank program today than at any time in its history. Everywhere you look, tankers are replacing their old tanks with new equipment.

As the TRADOC System Manager (TSM) for Abrams, I want to highlight some of the improvements made to the Abrams fleet over the past four years and address its future direction. Throughout my tenure as the TSM Abrams, I focused on providing the "tanker in the mud" with the necessary tools to be successful if called into harm's way.

As the U.S. Army moves toward the Objective Force, resources must focus on transformation and the future while ensuring the current force has the capability to fight and win our nation's wars until this new force is fielded. The challenge for all leaders is to find balance and ensure the armor force maintains combat capabilities overmatch against current and projected threats.

The Army is fielding two improved variants of the Abrams tank which will improve combat capabilities overmatch in both lethality and survivability, move toward a digitized networked battlefield by increasing information dominance, reduce sustainment and logistics costs, and much more.

There have been significant improvements in survivability, lethality, command and control (C2), sustainment, and training.

Survivability

The M1A2 SEP is equipped with the latest in ballistic armor protection and the M1A1 frontal armor package was updated during the Abrams integrated management (AIM) rebuild program. While the M1A2 SEP has an improved internal side armor protection, we are also working some technical solutions aimed to increase the side armor protection on the M1A1 fleet. Side armor protection is a priority because of the proliferation of rocket-propelled grenades (RPG). As we search for ways to provide crewmen additional protection, we also search for a better solution without adding weight to the tank. We are keeping a watchful eye on the development of the defense systems, such as laser and missile warning capabilities and active protection systems that provide the capability to defeat a munition before it hits the tank.

Lethality

Lethality efforts are focused on target acquisition, fire control improvements, and ammunition. The M1A2 SEP is equipped with the commander's independent thermal viewer (CITV) and improved forward-looking infrared radar (FLIR). Second generation FLIR (SGF) markedly improves target acquisition and increases the ability to destroy numerous targets more quickly. SGF, with 50-power magnification versus the first generation's 10-power FLIR sights, dramatically expands the battlespace while increasing our ability to acquire targets throughout that space. I often tell tankers that if you cannot find and kill a target using 25- or 50-power magnification, then you may want to change career fields. We continue to have an unfinanced requirement for SGF capability on the M1A1 fleet, but are closely monitoring the U.S. Marine Corps' efforts to find a cost-effective means to provide SGF capability for their M1A1 fleet. Additionally, SGF, when linked with new C2 systems and far target locate capability, provides the capability to increase not only system lethality but combined arms lethality, by enabling us to pass targets digitally to other members of the combined arms team.

A new or rebuilt tank without munitions improvements is suboptimal. To be decisive, we must enable these great platforms with more lethal munitions that extend the close combat fight. To maintain lethality overmatch, we continually improve our SABOT round to penetrate any known enemy armor at greater distances. The M829E3, which goes into production in Fiscal Year 02, gives the armor force the punch it needs to win on the near future battlefields. We intend to leverage Objective Force lethality work to increase our capability in both lethality and survivability for the future. Finally, tankers in Korea and other theaters need a canister/antipersonnel round to deal with dismounted RPG ambushes in complex terrain. One of the Armor Center's top priorities is getting an effective canister round to the field. We recently received approval of the XM1028 canister ammunition requirement and expect to see the canister round in the field within the next few years.

Command and Control (C2)

Improvements in the C2 arena are best seen by implementing the information systems capabilities brought by Force XXI Battle Command Battalion Brigade and Below (FBCB2). The M1A2 SEP has embedded FBCB2 and the M1A1D is fitted with the common FBCB2 computer and terminal. We have come a long way since fielding inter-vehicular information system (IVIS) on the first M1A2s. FBCB2 provides shared situational awareness and real-time force synchronization. We now have a common view of the battlefield where each tanker knows his position,

the location of friendly forces, and known or suspected enemy location — all in relation to the terrain and operational graphics. Using FBCB2 allows commanders to place combat power at the right place and time. No more guessing where your unit is or where you can achieve the best results on the battlefield.

Sustainment

Fielding of M1A2 SEPs to the fifth unit at Fort Hood, Texas, was completed this fiscal year. M1A2 SEP fielding will continue well into the next decade. Not every unit will have an M1A2 SEP, but we have an outstanding program to improve the aging M1A1 fleet. We are rebuilding M1A1s and conducting selective upgrades such as replacing analog components with digital systems. AIM is an innovative teaming of the prime contractor, General Dynamics Land Systems, with Anniston Army Depot to overhaul the tanks to like-new condition. AIM increases readiness, significantly reduces operating and support costs, standardizes configurations, and minimally sustains the Abrams industrial base. The Army National Guard has also ventured into this program and received five rebuilt M1A1s last year.

In addition to improving the M1A1 fleet through the AIM process, we are also reducing the logistics burden of supporting the Abrams fleet by introducing embedded diagnostics (ED). The M1A2 SEP has a full-time onboard ED capability, and a built-in test and fault isolation test capability. The M1A1 fleet with revised turret and hull networks boxes (RxNBs) provides similar capability by using a sidecar module attached to line replaceable units (LRU) that allow the revised turret networks box to monitor the health of the system.

Since the Abrams was fielded in the early 1980s, no major improvements have been made to its engine. The reliability of the Abrams' engine is always an issue and is approximately 60 percent of the operational and support cost for the Abrams tank fleet. Increasing the reliability and fuel efficiency of the engine is an Armor Center priority, and in the future, there will be a new engine that will reduce the logistics footprint, increase operational readiness, have 30 percent better fuel economy, and provide up to six times better reliability. During 2004, approximately 200 M1A2 SEPs will come off the production line with the new GE/Honeywell LV-100 tank engine.

Training. Training is the foundation of the Army's success in any mission. While we have a great tank, it is training that makes a great armor force. Training aids, devices, simulators, and simulations (TADSS) create a realistic training environment for armor crewmen. These training tools provide alternate means of training gunnery and tactical skills when live resources are unavailable or too costly.

The Army is constantly improving its simulators, such as the M1A2 advanced gunnery training system going through a complete system upgrade much like the COFT program. While using some of the more traditional TADSS, we also look at ways to improve training capabilities. One such means is the embedded training capability that allows the tanker to train in his tank, in the motor pool, and at the leader's discretion. The Armor Center will continue to evaluate embedded training as the preferred course of action for mid- to late-term sustainment training of the Abrams tank systems. The goal is, of course, to sustain and improve training and tactical team combat readiness through enhanced integration of full-spectrum training capabilities in the tank.

The Abrams tank program is alive and well. The Army continues to upgrade its systems to ensure that Abrams-equipped combined arms teams dominate on any battlefield. If the United States goes to war between now and 2015, the Abrams tank will be the cornerstone of the force that goes into harm's way. We must ensure our soldiers maintain combat capabilities overmatch over any known enemy. As the Armor Center picks up the lead for developing the future force, Team Abrams will ensure America's soldiers maintain combat capabilities overmatch over any known enemy.

TSM Abrams #9 out.

COL Jim Nunn is a 1976 ROTC graduate from the University of Florida where he received his Armor commission. He has served in various command and staff positions, including tank platoon leader, battalion S3 and S4 with HHC, 2-32 Armor; commander, CSC and A Company, 197th Infantry Brigade; separate troop commander, 15th Cavalry; TRADOC DCST operations and plans training officer; brigade S3, 5th Infantry Division; and brigade S3 and XO, 2d Armored Division; battalion commander, 3-8 Cavalry, 1st Cavalry Division; deputy chief of staff, 1st Cavalry Division; and political-military affairs planner (J5), European Command. He wrote this article while serving as the TRADOC System Manager for the Abrams tank system, Fort Knox, Ky.

Task Force Casualty Evacuation

by Captain Dan Brant

"The only certain result of your plan will be casualties — mainly the enemy if it is a good plan, yours if it's not. Either way, foremost in your supporting plans must be the medical plan."

– MG Rupert Smith

We all like to say, "we'll train as we fight," and for the most part, that's how we train. But one glaring shortfall is casualty evacuation (CASEVAC), where we do not train as we would fight. In fact, it appears that we find it acceptable not to train CASEVAC at all.

Given the myriad training tasks required, coupled with the constraints that training CASEVAC places on training other combat skills, it is not surprising that this area is overlooked; training for CASEVAC is not easy. This article is primer on the training that can be done to improve CASEVAC. It does not have all of the answers or techniques, but does cover some basic tenets often overlooked.

Combat Training Centers

The one bright light of CASEVAC training, or perhaps its darkest hour depending on your perspective, occurs at the three combat training centers (CTCs). If CASEVAC training is not trained at home station, it will be at the CTCs. There will be MILES casualties and they will have to be evacuated from the battlefield, either as casualties or as bodies and, in some cases, could be a personnel loss up to 24 hours. Faced with these options, we should put more effort into CASEVAC and instill confidence in soldiers and their ability to survive the modern battlefield.

For most organizations in today's Army, CASEVAC is probably the least trained, worst executed event. This is reflected during rotations to the CTCs by the historically enormous percentage of soldiers classified as died of wounds (DOW). While these DOW statistics may not tell the entire story due to many variables — the level of training on specific missions for a unit, unexpected enemy actions during a fight, or just bad luck — they are a tool to analyze the ability to plan, prepare, and execute CASEVAC. While we all understand that units on CTC rotations are honing their warfighting skills and are expected to make mistakes, we should all agree that the shortfall in CASEVAC is both unacceptable and reversible.

There are three causes of DOW casualties at the CTCs:

- Improper treatment.
- Improper transportation — moving a litter patient without any type of litter, or overloading the vehicle used.
- Failure to evacuate casualties within the prescribed timelines of the rules of engagement.

At the CMTC, the typical task force DOW rate is between 50 to 80 percent for every battle. The vast majority of DOW casualties fall into the categories of failure to evacuate in time or failure to evacuate at all. While there is no fail-safe way to ensure that no casualty dies of wounds, there are many things that can be done to lower DOW rates. Following the logical movement of casualties within the task force, we will look at common shortfalls and tips to overcome them.

Troop/Company/Team

The critical first steps in the CASEVAC chain begin at the company/team level. If we fail to execute at this level, there is simply no way to prevent a large number of DOWs. The shortfalls at this level are probably the most obvious to identify and the most difficult to fix. You must find the balance between incorporating CASEVAC into training plans and training warfighting skills. We certainly do not want to see you come to the CTCs and perform excellent CASEVAC but be unable to conduct an attack or defend. Herein lies the major problem with CASEVAC at this level; it is not planned, prepared, or trained proficiently.

In keeping with the mantra of "train as you fight" and with our own doctrinal literature, it is clear that we are failing at a key warfighting task. The importance of CASEVAC as a warfighting skill cannot be understated. Clearly, once we have casualties in the medical evacuation channels, the chance of them becoming a DOW significantly decreases. Our primary weakness as an Army seems to be the ability to get casualties from their point of injury to the battalion aid station (BAS).

So, what can be done at the company level to reverse this trend? We can look to the medical platoon leader and say, "fix it," or we can take proactive steps as a team to work through the task of CASEVAC. Let's face it, the one ambulance and crew that is attached to our company during tactical operations is not going to get it done alone. And by doctrine, the ambulance's primary purpose is transportation from the company area to the BAS. The responsibility for CASEVAC in our company area falls squarely on the shoulders of every soldier.

There are several ways that a company/team can work through CASEVAC. A couple of ways to remedy the CASEVAC problem are:

- Make somebody responsible, and hold that person accountable for CASEVAC. Hopefully, all other logistics tasks have been completed prior to the fight, so what task is more important for the 1SG besides CASEVAC? Task-organize a logistics team under the 1SG's control, with the responsibility to clear the battlefield. An effective technique is to install litter chains and litters in the 1SG's M113 and the maintenance team's M113 so that they have the ability to move casualties to a company casualty collection point (CCP). The medical team, who will triage, treat, and evacuate from that point to the BAS, can man the CCP.

- Plan for and rehearse CASEVAC. We have identified who is responsible, now let's plan for it, through the entire operation, just like any other piece of our tactical plan. Where will company CCPs be placed? Where is the BAS? How do we get there? This is certainly not as complex as planning a company defense, but does require some thought about routes, obstacles, and enemy threat. Since we have gone through the

steps to incorporate CASEVAC into our tactical plan, let's go ahead and rehearse it when we rehearse the plan. Ensure our CASEVAC team and medics attend the company rehearsal so that they understand where and when we expect to take casualties. Ensure that our platoon leadership understands how they will contact the 1SG when they need to have casualties evacuated, what routes are proposed, and how they mark vehicles with casualties on board.

"Regardless of the method of evacuation, all scout leaders must have the necessary CSS graphics available, including locations of battalion or troop casualty collection points. Evacuation procedures must be part of the platoon plan and should be rehearsed as part of mission preparation."

– FM 17-98, Scout Platoon & FM 17-15, Tank Platoon

Much of this planning can be accomplished long before going to a CTC and can be published in the company TACSOP. Established CASEVAC standards in the company TACSOP should address, at a minimum, the following: how to identify vehicles with casualties, day and night; what assets are dedicated to CASEVAC; who is responsible for the C2 of CASEVAC; how to place CCPs in offensive and defensive operations; who to notify when there are casualties; and what radio net to use.

The most difficult aspect to manage is training CASEVAC at home station. There are a number of reasons for this, but the bottom line is, we just do not do it. Yes, it takes some time away from other training, but is it worth it? Soldiers should be confident that if they become a casualty every effort will be made to ensure their survival.

When we do train CASEVAC, we must avoid the bad habit of: "Jones, Smith, Johnson… you are all casualties. Go stand by that tree and wait for the ambulance to pick you up." This method robs soldiers of the opportunity to train on their specific area of CASEVAC. The crew missed an opportunity to train on extricating a casualty from a vehicle. The combat lifesaver missed the opportunity to train on medical skills. And, the CASEVAC team missed the opportunity to train on locating, treating, and moving casualties off the battlefield in a timely manner. Train it as a part of the operation.

Finally, get soldiers to combat lifesaver training and ensure they attend annual recertification training. At the CTCs, they may add time for the casualty to arrive at the BAS; in real life, they may save a life.

Task Force

The next step for the casualty is the BAS and into the task force medical evacuation system. Here we see some similarities in shortfalls, as at the company level. Typically, the staff does the planning for evacuation haphazardly, and the preparations and training completed by the task force medical platoon are inadequate. The medical platoon leader does not receive the necessary training to be a productive member of the task force planning staff and lacks the tactical knowledge to fully understand the implications of different types of maneuver operations.

In looking at ways to overcome CASEVAC shortfalls at the task force, examine what the task force commander and staff can do, and what the task force medical platoon leader can do.

TF Commander and Staff

The TF commander and staff have to train the medical platoon leader in the basic fundamentals of tactical operations as a part of his professional development. Knowing how the task force will execute an attack, defense, movement to contact (MTC), or breach will make him a better medical planner for the task force. He will not arrive from the officer basic course with the tactical knowledge required to do his job completely; he has to learn much of his job at home station, just like any other officer in the unit.

"To support task force operations, the medical platoon leader or battalion surgeon and medical operations officer must understand the scheme of maneuver as well as the support plan of the FSB medical company."

FM 71-2, The Tank and Mechanized Infantry Task Force

At the task force, we need to train medical platoon leaders in the military decisionmaking process. They bring some level of expertise of medical operations to the table and he can be very useful in assisting the S4 with other logistics planning. Medical platoon leaders must become experts. There are plenty of publications and people that can assist. Rehearse CASEVAC thoroughly at the CSS rehearsal and, if practical, it will pay big dividends to also rehearse it during the maneuver rehearsal. Rehearsing CASEVAC with maneuver will pay bigger dividends, as there are more key players involved and CASEVAC should be a logistics function, which occurs in concert with the actual fight. Regardless of how we do it, CASEVAC must be thoroughly rehearsed through all phases of the operation to ensure a clear understanding of how to plan for its accomplishment.

"Integrating the medical support plan with the tactical scheme of maneuver increases the total plan's effectiveness by synchronizing critical elements of combat power, to include medical assets."

CALL Newsletter 89-5, Commander's CASEVAC System

Maximize the number of nonstandard CASEVAC vehicles available for use during tactical operations. Think of nonstandard vehicles in terms of medical combat power, such as one M113 ambulance equals four litter patients, but one 5-ton truck equals 12 litter patients. That is three times the combat power! Every nonstandard vehicle that is not dedicated to a more critical task should be made available to CASEVAC. These vehicles can be used from company CCPs to the BAS or

from the BAS to the ambulance exchange point. This will lessen the load on tracked ambulances, leaving them available for missions farther forward, where an armored vehicle has more survivability.

The medical platoon leader has a big part to play in the success or failure of the task force. He must be the staff expert on medical operations, developing and executing quality medical plans. Meanwhile, he must also be the platoon leader, ensuring that the platoon is trained and prepared to execute its wartime mission. He has the responsibility to make himself proficient and will develop his skills further by becoming intimately familiar with the tactical operations of the task force and the medical doctrine that supports it. If he reads no other doctrinal publication, he cannot be caught without a copy of *FM 4-02.4*, *Medical Platoon Leader's Handbook, Tactics, Techniques, and Procedures*. This publication offers a lot of very useful information and will provide the basic fundamentals of supporting different tactical operations.

"The key to understanding the medical platoon CHS [combat health support] mission, as part of the battalion team, lies in two elements of the plan — the commander's intent and the purpose he envisions for the battalion and each company. The medical platoon leader's knowledge of the intent and purpose allows him to use his initiative and to be proactive and exploit battlefield opportunities to accomplish the CHS mission."

FM 4-02.4, Medical Platoon Leader's Handbook

Ensure a medical plan is published with the task force OPORD. An execution matrix and a sketch works very effectively. With these two documents, everybody in the task force will know all medical assets on the battlefield. The documents will place all assets sequentially, through the use of the matrix, and spatially, through the use of a sketch. The platoon leader needs to ensure the sketch includes all critical information, including grid coordinates, frequencies and call signs, and the assets available at different medical nodes. It should also include both adjacent and supporting medical nodes. If the fight goes to pot, somebody may need to contact and coordinate movement directly to them.

The platoon leader is responsible for ensuring that his medics are trained to perform their mission, and that they have a sense of pride that deservingly goes with their mission. In my mind, they have the second-most critical mission on any battlefield, the first being the tactical mission. Typically, medics are proficient in their medical-specific skills, but lack adequate common soldier's skills. Land navigation, day and night, is critical to performing their mission. It is important for them to understand tactical graphics to avoid battlefield dangers, like minefields. They must perform adequate maintenance on their assigned vehicles. They must ensure route recons are conducted from as far forward as the tactical situation permits, both during daylight and hours of limited visibility, back to the ambulance exchange point. Do not limit this reconnaissance to proposed main supply routes; also include any other potential avenues they may need to use.

The platoon leader must plan, prepare, and train for chemical casualty decontamination. This is more than the medical platoon can do alone; we owe it to the soldiers we support to propose this training need with our chain of command. The medical platoon cannot accomplish patient decontamination without assistance from other members of the task force.

The platoon leader must maintain a good working relationship with the supporting forward support medical company and not be afraid to ask the commander for help; most of them have been in the same position. Their job is to support you, but often, if unaware of your situation, they will be late providing help, if at all. The medical platoon leader must keep them current with his platoon's situation and the task force situation. If we approach it with the attitude of "those rear echelon folks can't do anything for me," that is exactly what you are likely to receive from them. The medical evacuation system relies on very good communications and the ability to work toward a common goal. Without this, we are destined for failure.

Conclusion

While the concepts proposed in no way guarantee success, they will lead to a more successful execution of CASEVAC. At the CTCs, we all know that PFC Jones is going to be all right; after all, he is only a MILES casualty. He will probably be back for the next mission, so we do not focus efforts on CASEVAC until long after the battle is complete. In real life, PFC Jones may have died while we were celebrating a marvelous victory on the objective.

We may choose, or be forced by circumstances, to forgo CASEVAC training at home station, but then our level of effort will be directly proportional to our success at a CTC. I can only guarantee that, whether or not we choose to train at home station, we will execute CASEVAC during our two-week war at the CTCs just as we will in the real battle.

CPT Dan Brant is currently the forward support medical company observer/controller at the Combat Maneuver Training Center. He previously served as an enlisted soldier in HHT, 11th ACR, Fulda, Germany; medical platoon leader, 2/3 ACR, Fort Bliss, Texas; and as the forward support medical company commander, 172d IN Bde (Sep), Fort Wainwright, Alaska. He is a graduate of the AMEDD OBC, Combined Logistics OAC, and CAS3.

Combat Identification

Proven technology to be transferred To the Future Combat Systems

by Major Gregory B. Gonzalez

Despite improvements in situational awareness made possible through digital technology, today's modern, mounted warrior is as likely to accidentally injure or kill his fellow warfighter during combat as were his World War II or Operation Desert Storm predecessors.

How is this possible? The short answer is that the advantages of increased situational awareness are often offset by the pace and difficulty of modern warfare. The risks and opportunities for fratricide continue to rise as military operations increasingly are conducted with distributed forces at a high operational tempo, during limited visibility, and over an expanded battlespace. This fact is validated by insights from the Division Capstone Exercise, Phase I (DCX I), conducted at Fort Irwin, California, in April 2001.

DCX I demonstrated the combat capabilities of the 2d Brigade Combat Team and the 4th Aviation Brigade, 4th Infantry Division (M), given advanced digital technologies and warfighting concepts.

During DCX I, 4th ID warfighters had the advantage of increased situational awareness made possible through use of the Force XXI Battlefield Command Brigade and Below (FBCB2) system and the advantage of higher visual resolution in their weapon sights by using 2d generation forward-looking infrared radar (SGF), yet these systems alone were insufficient to significantly reduce ground-to-ground fratricide.

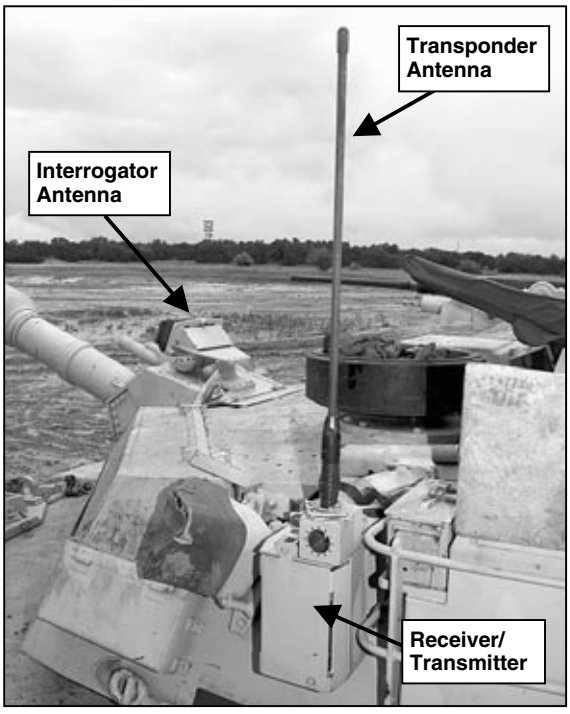
The FBCB2 data latency, or the lag time between updates in the friendly situational database, is at best 10 seconds. This is the most frequent refresh rate possible using the system filter. Additional delays are caused by limited throughput of the tactical internet. In all, average FBCB2 data latency can be close to a minute or more. One additional problem is that gunners cannot see the FBCB2 screen while looking through their weapon sights. For these reasons, a system designed to increase situational awareness will not adequately meet a requirement to identify friendly targets in real time at the point of engagement.

The SGF optics, while a great improvement over previous optics, still leave room for human error in target identification. Something more is needed to positively identify targets.

The DCX I Initial Insights Memorandum states that situational awareness gained by the Army Battle Command System (ABCS), which includes FBCB2, helped to avoid some potential fratricide incidents; however, fratricide still occurred. The types of fratricide that occurred included elements entering friendly minefields, direct fire ground-to-ground, ground-to-air, and air-to-ground incidents, and indirect fire incidents.[1] In all, troops participating in DCX I committed a total of 14 direct fire fratricides against 20 vehicles, resulting in 68 American casualties. In fact, fratricide was a significant enough problem during DCX I that one of the Initial Insights Memorandum's preliminary recommendations was to develop and field a dedicated interrogation friend or foe (IFF) capability for combat platforms."[2]

Because total friendly casualty figures were not collected during DCX I, it is not possible to list the DCX I fratricide casualties as a percentage of the whole, but historically fratricide rates during combat average between 10 and 17 percent. During World War II, 15 percent of American casualties resulted from fratricide. During Grenada the total was 13 percent, and 12 percent in Panama.[3] During Desert Storm, the Army experienced its highest rate of fratricide since World War II — 17 percent.[4]

Although fratricide has been around as long as armed conflict itself, little effort was made to create a materiel solution designed to limit its occurrence until 1991. In the aftermath of Desert Storm, the Army leadership developed a requirement and began research for a through-sight, real-time, positive target identification capability, which when combined with increased situational awareness, more powerful optics, and improved tactics, techniques, and procedures, would reduce the likelihood of combat crews firing on friendly vehicles. The Battlefield



Above, the BCIS installed on an M1A1D for an initial operational test and evaluation.

Combat Identification System (BCIS) was developed in response to that requirement.

BCIS is a question and answer system, which uses millimeter wave technology to identify friendly vehicles in less than a second, out to a range of 5,500 meters. BCIS provides gunners and vehicle commanders critical information at the point of engagement in support of their shoot-or-don't-shoot decision and is enabled when the gunner activates the Bradley or Abrams laser rangefinder. Because BCIS is interlinked with current firing procedures, its use causes no additional steps for gunners and does not increase engagement times.

BCIS sends an encrypted query to the targeted vehicle. If the target is equipped with BCIS, the gunner taking aim will hear the words, "FRIEND, FRIEND, FRIEND" and he will see a flashing red dot in his sight. If the targeted vehicle is not equipped with BCIS, the gunner will receive the response, "UNKNOWN, UNKNOWN, UNKNOWN."

In September 2001, BCIS participated in an initial operational test and evaluation (IOT&E) conducted by the U.S. Army Operational Test Command (OTC) at Fort Hood, Texas. The test was to confirm that the system performs as designed in the hands of soldiers in a live-fire situation before being fielded. One BCIS-equipped M1A1D company from 3-66 Armor, 4th ID, and one BCIS-equipped M2A2 company from 2-7 Cavalry, 1st Cavalry Division, conducted gunnery on a crew reaction course arrayed with hostile, friendly, and coalition targets. Most friendly and select coalition targets were equipped with BCIS receiver/transmitters for positive identification.

Each vehicle and crew that participated in the test conducted a maximum of 10 day and 10 night engagements. Each engagement consisted of two to four targets at distances ranging from 1 to 4 kilometers. Fratricide data collected from the BCIS-equipped units has been compared against data collected on baseline (without BCIS) units from the same two battalions to determine the BCIS's effectiveness in reducing fratricide. In addition, OTC collected reliability, availability, and maintainability data on BCIS for analysis.

Above, an M1A1D Abrams tank, and below, an M2A2 Bradley Fighting Vehicle, each equipped with BCIS, engage targets during initial operational test and evaluation.

At the time this article was submitted for publication, the Army Test and Evaluation Command (ATEC) had not released the final version of the operational test report. However, preliminary results contained in the draft report are quite positive and indicate that BCIS is potentially operationally effective when forces are completely equipped with BCIS, it is suitable for soldier use, and is survivable in an operational environment. The operational test demonstrated that Bradley and Abrams crews are far less likely to shoot friendly combat platforms if those platforms are equipped with BCIS.

In September 2001, the Army zeroed all funding for the BCIS program in Fiscal Year 2003 and beyond. As a result, BCIS will not be fielded on M1A1/A2 Abrams tanks or M2/3A3 Bradley Fighting Vehicle variants. This difficult decision was the result of a reprioritization of Army funding required to pay for such critical programs as the Interim Brigade Combat Teams and development of the Future Combat Systems (FCS).

Despite the funding cut, the Army remains committed to reducing fratricide. To this end, Army leadership has proposed that the BCIS millimeter wave technology be transferred to the Objective Force for possible embedment into the FCS. This technology will be considered as one of the prime candidate technologies to fulfill the combat identification requirement in the new FCS platforms.

Notes

[1]Division Capstone, Exercise Phase I (DCX I) Initial Insights Memorandum (IIM), Department of the Army, April 2001, Appendix E, p. 6-1.

[2]Ibid., p. 6-4.

[3]Kenneth K. Steinweg, "Dealing Realistically with Fratricide," *Parameters,* Spring 1995, pp. 4-29. Available at: *http://carlisle-www.army.mil/usawc/Parameters/1995/steinweg.htm*

[4]"Fratricide: Reducing Self-Inflicted Losses," *CALL Newsletter No. 92-4,* April 1992. *Available at: http://www.adtdl.army.mil/cgi-bin/atdl.dll/call/92-4/a_call92-4.htm*

MAJ Gregory B. Gonzalez is currently assigned to the Product Management Office for Target Identification and Meteorological Sensors as the assistant product manager. He is a 1985 graduate of Brigham Young University and earned a Master of Science degree in Materiel Acquisition Management from the Florida Institute of Technology.

Recognition of Combat Vehicles (ROC-V) Thermal Signature Identification Training

ROC-V is a Windows-based thermal sight training program developed by the U.S. Army Communications-Electronics Command, Night Vision and Electronic Sensors Directorate (CECOM NVESD) and sponsored by PM FLIR, Fort Belvoir, Va.

ROC-V helps soldiers learn to identify the thermal signatures of combat vehicles by using an interactive curriculum that teaches unique patterns and shapes of vehicle hotspots, and overall vehicle shapes. ROC-V also teaches soldiers thermal sensor image controls. Using virtual sight controls, soldiers learn to effectively adjust their thermal image to find targets and bring out their thermal ID cues.

ROC-V 9.0 includes higher resolution imagery; a larger vehicle set, including helicopters; expanded tactical vehicle descriptions; occluded target views; samples of vehicle sounds; and a completely separate "iron sight" day view version. The day view version will teach visible target ID using ROC-V teaching principles. Both these trainers will include on-board training/testing for the TRADOC Soldiers Manual Common Task (SMCT), Skill Level 1, for visual vehicle identification, currently being developed by TRADOC and the U.S. Joint Forces Command, Joint Combat Identification Evaluation Team (USJFCOM JCIET). JCIET POC is Mr. William Rierson, (850)882-6700 ext. 7515.

Motivational, fast-paced exercises teach combat vehicle thermal identification.

Virtual sensor panels provide practice using sensor controls.

Simulation, Training, and Instrumentation Command Product Manager, Ground Combat Tactical Trainers (STRICOM PM GCTT) has distribution authority for the program. PM GCTT POC is MAJ Scott Pulford, (407)384-5265 (DSN prefix 970). The Target Management Office (TMO) has configured ROC-V 8.0 as a downloadable product. It is available to institutional U.S. government users. For user name and password to access the website, contact TMO POC Mike Day at *mxregistrar@redstone.army.mil.*

The web address is: *https://rocv.army.mil/ROCV/*

LETTERS continued from Page 4

PERSCOM (Personnel Command) uses to manage records "better," they will never fix these problems. When senior leaders, and entrenched civilian bureaucrats at PERSCOM, do not study history, psychology, sociology, or anthropology, the Army will continue to descend in an ever-tightening personal death spiral.

I apologize for my counterattack. LTC Eden, you are right; we have to stick to attrition warfare. In April 2001, a report written by a blue ribbon panel on leadership and training, chartered by Army Chief of Staff General Eric Shinseki, states that, "Micromanagement has become part of the Army Culture." Furthermore, the report goes on to state, "Army Culture is out of balance. There is friction between Army beliefs and practices. Over time, that friction threatens readiness. Training is not done to standard, leader development in operational assignments is limited and does not meet officer expectations, and officers and their families elect to leave the service early." With this evidence and blunt statement from the Army itself, there is no way we can practice maneuver warfare.

DONALD E. VANDERGRIFF
MAJ, Armor
Georgetown University

Right Argument, Wrong Journal

Dear Sir:

Having read LTC Steve Eden's article, "Three Cheers for Attrition Warfare," in the March-April issue, I feel compelled to write in admiration of his pluck. LTC Eden argues persuasively, if bitingly, against over-reliance on our notions of asymmetric maneuver warfare being the wave of the future. For those of us who know him personally, his words carry extra weight because we know that he knows whereof he speaks; he is not only technically and tactically proficient, in the words of OER-speak, but he is also a superb military historian.

I regret to say that I think that there is one major problem with his argument — it is published in the wrong journal. Making this argument in *ARMOR* is akin to preaching to the converted. I enjoy reading affirmation of my own views in our branch journal. However, I have the sneaking suspicion that

many senior leaders, both military and civilian, who need to have their views challenged, don't read *ARMOR*, at least not with the regularity that Neanderthaloid tankers and cavalrymen do.

This seems evident to me in the Department of Defense's recent cancellation of the Crusader program, in favor of redirecting that money, in the words of Deputy Secretary Wolfowitz, "to accelerate other Army Transformation technology research programs which promise early returns" (*ArmyLINK News*, May 2002). The Army's news release ends with Secretary Rumsfeld's statement that the Crusader was seven years into development and yet no prototype exists. Meanwhile, Comanche, which has been in development much longer than Crusader, will not achieve initial operational capability until 2006. The Future Combat System, on which so much of the Objective Force depends, is just now entering development with only the vaguest notion of what it will be, yet the Army is making plans that this system will be in the hands of soldiers by the end of this decade.

Many will read into Eden's argument that he is arguing against transformation of the Army. I think not. Eden is challenging the notion that conventional warfare is dead forever or, even if it is not, that there are silver bullets out there just over the technological horizon that will obviate the need for heavy, conventional forces. The point is that we don't know what the future holds, we don't know that technologies will or will not pan out — we don't know what we don't know — and history, contrary to popular opinion, doesn't reliably teach us anything except, perhaps, that we should expect the unexpected.

This article deserves the wider audience of *Army*, and I hope that the staff of *ARMOR* will inquire about a possible reprinting there. I expect that LTC Eden's views will generate quite a response and nothing but good can come from that. The asymmetric/RMA warriors have had the battlefield to themselves long enough — if they are right in the prognostications about the future of war, a healthy and open debate will only strengthen their arguments, not weaken them.

STEVEN C. GRAVLIN
LTC, Armor (Ret.)

Eden Inaccurately Dismisses Maneuver Warfare

Dear Sir:

I would like to discuss several aspects of LTC Eden's article that I disagree with. LTC Eden has a lot of common sense and a good inoculation against RMA political correctness. However, his article is a bit excessive in its treatment of history and its dismissal of maneuver warfare.

The great maneuver commanders he cites were not losers. Their side lost, their strategy failed, or their operations fell short, for reasons mostly beyond their control.

Grant knew the virtue of maneuver warfare, as we all agree. But he abandoned it because: he faced Lee, an enemy commander who was as good at it as he was; he realized his subordinates in the east (Meade and his corps commanders) were not Sherman, Thomas, and Sheridan, and for all their considerable virtues had neither schooling in the method nor a history of offensive success; he had the resources to win through simple numerical attrition; and he appreciated the threat to Washington and to Lincoln's reelection prospects if he ever let Lee's attention wander from the grind toward Richmond.

Napoleon, as any commander, depended on his subordinates for the execution of his operational method. As his best marshals were lost, or dispatched to the Peninsula to be bested by Wellington (another great maneuver commander), and as a consequence of poor strategic decisions, his fortunes waned. His 1814 campaign was indeed brilliant, and he certainly could not have fought half as well or half as long by any other method.

Rommel lost his campaign in North Africa for lack of resources, not because of any flaw in his operational method. Montgomery, like Grant, understood that his advantages were in materiel and manpower and exploited them intelligently. Does anyone believe that Rommel could have fought so successfully for so long by means of attrition warfare? Or that he could not have driven all the way to Suez or beyond if he had been better supported with fuel, air support and materiel replacements during his pursuit of the British toward Alexandria in June-July 1942?

Correct me if I need it here, but it is my impression that the German solution to the trench deadlock in 1918 (infiltration or "stormtrooper" tactics, an expression of manuever warfare principles) was quite effective at the tactical level, and only failed to gain a significant victory for reasons unrelated to its tactical virtues: the lack of mechanization prevented deep exploitation of the breakthroughs they achieved; and the infusion of American manpower and materiel on the Western front decisively altered the correlation of forces.

It is only true, as LTC Eden says, that "maneuver warfare doesn't work against competent foes," if you say that every foe defeated by it was, evidently, incompetent. What shall we say of attrition warfare against competent foes, particularly if the practitioner lacks overwhelming numerical superiority and the willingness to accept massive casualties? Americans should think hard about that last condition particularly. Fredericksburg, Gettysburg, Gallipoli, the Somme, and Goodwood all come to mind. That several of these combatants eventually won their war is irrelevant to the argument that their methods, in these and other examples, were often stupid, wasteful, and doomed to failure.

The initial battles of encirclement in the Soviet Union in 1941 are excellent examples of maneuver warfare in practice, and these operations were hardly the result of desperation. Had their leader appreciated the concept more fully, and Moscow been maintained as the center of gravity for that campaign, the outcome might have been very different.

LTC Eden is wary of future Alamos, but it is difficult to imagine that our forces will not, someday, fight outnumbered and outclassed. When that time comes, they should know how to fight like Rommel in 1942, Manstein in 1943, or Napoleon in 1814. Had the Gulf War really started when our troops on the ground consisted of one brigade from the 82d Airborne, LTC Eden's definition of asymmetric warfare ("I have tanks and you don't") would have been proven out in American blood. If we can imagine such a circumstance arising again, we better have other forms of asymmetry to apply.

I agree that we need to keep enough tanks, attack helicopters, mechanized infantry, artillery, and the heavy lift to move them, to fight a stand up fight and win — and as an extension of LTC Eden's own argument, as long as we do so, our fights will mostly be of a different nature. We had better prepare for these as well, unless we want to wait for the fight to reach the Rio Grande.

Hyperbole is somewhat forgivable in the context of the current debates, but if we see the sense of Bellamy's quote, "How can we say that maneuver and attrition are anything other than indistinguishable?" Can't we avoid exaggeration and straw-man arguments, and learn to get along?

BILL TALLEN
U.S. Department of Energy
Fort Chaffee, Ark.

Eden's Article Hits the Mark

Dear Sir:

I read LTC Eden's article and thought it was right on the mark. In my current job, I deal a lot with computers and administer a wide area network. I know pretty well what computers can and cannot do, and being an AH-64A Gunpilot, I know what is needed to fight the enemy. I am always reading editorials or articles and end up thinking just the same as he does. I think that many people regard computers as the magical box and think that it will do anything. This probably happens because technology is a mystery and leaders get away with relying on the experts to sort through it. My experience has been that the experts are computer geeks who have never ridden in a tank or flown in a combat aircraft, hence they do not know anything about what is really needed in combat. Computers are useful and have a place, but we will get rid of the bayonet and tank at our own expense.

I do wish that he would have mentioned how everyone was talking about the tank being obsolete after Just Cause. With Vietnam, Grenada, and Panama, everyone was talking about what a waste of money it was

and how all the future wars were going to be light intensity conflicts. Same thing with the A-10. Desert Storm showed otherwise. When I look at the Axis of Evil, I see large mechanized forces that will need to be destroyed. That does not even include China!

LTC Eden deserves praise for his article and it should be taken to heart by those at the Pentagon who are planning and shaping the Army of the future.

CW3 WILLIAM R. CLEMONS
6th US Cavalry Brigade
Tactical Operations Officer

Eden's "Three Cheers..." Is Flawed; Renders Itself Unnecessary

Dear Sir:

It was saddening to read LTC Eden's explicit defense of attrition warfare in the March-April issue of *ARMOR*. Not only does attrition warfare usually leave a substantial butcher's bill on both sides (remember Verdun), but it negates what armor is all about. What tanks brought to warfare was not big guns or invulnerability (fortresses can have both), but operational mobility. In attrition warfare, operational art does not exist, so operational mobility becomes meaningless. We might as well replace our tanks with super-heavy *Sturmgeschuetze* (perhaps with the Abrams we have).

Space permits me just to touch on some of LTC Eden's errors:

- Many winners with force superiority have also used maneuver warfare. The Red Army at the operational level in 1944-45 and Mao in main force operations after 1945 are two examples.
- If maneuver warfare against an equal opponent has its risks, attrition warfare against an equal opponent means you must be able to accept attrition better than he can. The United States might have a small problem with that.
- The quote from Rommel — "The day goes to the side that is first able to plaster its opponents with fire" — refers to the use of fire for suppression, not mere attrition. Suppression with fire is often necessary to permit maneuver.

The most important error in LTC Eden's article occurs at the outset, when he equates maneuver warfare with the so-called "revolution in military affairs" and suggests that SAMS is teaching maneuver warfare. In fact, the RMA is pure attrition warfare, the ultimate dream of the French army of the 1930s: war reduced to nothing but acquiring and bringing fire on targets. Its spectacular failure in Kosovo was recently repeated in Afghanistan during Operation Anaconda. The last time I visited SAMS (more than ten years ago), it was a virtual recreation of the *Ecole Superieur de Guerre:* war had been reduced to nothing more than rote processes. As the students put it to me when I tried to talk about war, "This is very interesting, but we have paperwork to process."

In the end, LTC Eden's article is superfluous: the U.S. Army's practice, if not always its formal doctrine, is attrition warfare. And no one teaches it better than SAMS.

WILLIAM S. LIND
Author, *Maneuver Warfare Handbook*

"We Must Fight to Win, Not to Not Lose"

Dear Sir:

I hope the comments made by LTC Eden in the March-April *ARMOR* were simply to stir up debate. I think it is clear to any who study warfare that maneuver-style warfare is not simply the tool of an underdog. Germany used high tempo maneuver warfare-type tactics when the *Wehrmacht* was at its height of strength, 1940 to 1942. In fact, Germany began losing the war when they went away from that philosophy, Stalingrad and Kursk being the most notable examples.

High tempo, exploitation-type tactics, and when possible going where the enemy is not, have been used in many instances besides Germany. The Pacific war against Japan, the 1973 war between Israel and Egypt, and the Persian Gulf War are again notable examples. Maneuver warfare is anything but the desperate gamble of a dying army. These battles all lasted between three days and two weeks. This is not the exception, but the norm in today's world of fully mechanized and motorized armies. These rapid, short-duration conflicts will continue to be the norm in the foreseeable future. Do the risks increase against a more capable foe? Of course, but do they not with any tactic? Indeed, using an outdated, slow style of warfare against a competent foe only increases the risk of defeat against a thoughtful, well-prepared enemy. We must fight to win, not to not lose.

The U.S. military today has taken great strides in developing and disseminating maneuver warfare doctrine. The importance placed on tempo, commander's intent, and operating in a chaotic environment are discussed regularly. Despite this, we still see reliance on the linear battlefield in the preponderance of wargames, studies, and exercises. If we truly want to shape the battlefield and thrive in a chaotic environment, why not create the fluid battlefield ourselves? Why not eliminate thinking and acting along the lines of the FEBA, FLOT, and always having an adjacent unit? LTC Eden reinforces this outdated concept when he describes the need for secure land routes to handle logistics. Only heavy forces need that type of large logistics train. Particularly in the Marines where maneuver from the sea, and the logistic capability that goes with it, is becoming more and more a reality, the U.S. military should be working to create a totally fluid environment where interdiction of enemy supply and communications, operations at night, and rapid, mobile resupply is the norm. Rather than spend time and energy thinking of ways to supply high-demand units, we need to think of ways to reduce that demand.

The equipment and doctrine needed for this leap are in place. The LAV is particularly suited for this role. The combination of strategic transportability, long tactical range, and ease of resupply (low fuel consumption and relatively light ammunition, making helicopter resupply simple, effective, and feasible) enable it to bridge the gaps between strategic, operational, and tactical mobility. The Army is pursuing this same concept with the LAV, and soon the pieces will be in place for both ground services to pursue this type of rapid, exploitative warfare. Only one major obstacle remains: the lack of an equally mobile and sustainable fire support asset. Towed artillery is no longer the answer, however light it may be. The Paladin is a superb weapon, but clearly too heavy for this type of operation. The answer is ready for production; the LAV-120 turreted mortar. Imagine the possible tempo increases with a heavy fire support asset equally as mobile as your fastest platform, in fact on the same platform, with common fuel consumption, parts, and mobility.

The role of aircraft may slightly change. Reliance on airpower as the main supporting arm is not new to units such as LAR. The deep mission still exists, but the vast majority of sorties should be directed to ground-controlled CAS to reduce friendly fire in this environment.

Attrition warfare is not the key to the future; in fact, it has been obsolete for at least 100 years. The key now is to take warfare to the next step. The equipment and training is mostly there, all we need now is a slight shift in thinking away from established battle lines into the creation of a fluid, chaotic battle area that transcends the division between forward and rear areas. Are we up to the task?

CAPT. CHRIS SHIMP
School of Infantry
Camp Pendleton, Calif.

The Author Replies

My first editor warned me never to respond to letters. Thus, without directly replying to the many, pro and con, who took the time to read my article, I will take this opportunity to clarify my thoughts in light of their comments.

I got my history wrong. Several avid readers wrote in to point out that Grant beat Pemberton at Vicksburg, not Price. My only defense for this is that, in the white heat of creation, I neglected to check my facts. However, I'll stand behind my other historical illustrations — obviously oversimplified due to the constraints of space — and would be happy to debate our differences of opinion over a beer anytime. Parenthetically, the officer corps as a whole is sadly ignorant of military history in general. Many are buffs, with

a wealth of trivial knowledge about things like the differences between the Panzer IIIg and the Panzer IIIh, but few can carry on an intelligent conversation about military history or historiography. Frankly, I've had more serious talks on the military art with NCOs than I have had with officers, my fellow history instructors at West Point excepted.

I clearly don't understand maneuver warfare, or I have deviously created a maneuverist strawman. True, on both counts. To cut to the chase, I wrote my article because I was tired of waiting for someone else to pick up the gauntlet. I felt that some superannuated tanker with no particular skills needed to state the obvious to all the purveyors of maneuverism: we don't know what the hell you are talking about. We grew up preparing to fight an enemy who was superior to us in many ways and practicing against an OPFOR that regularly slobberknocked us. We didn't know there was a difference between maneuver and fire; you used one to employ the other, and vice-versa. Now that enemy has disappeared, and we are being told that the battlefield has moved on. No need to prepare for a mirror-image enemy. Hell, soon they'll be building refugee camps at the NTC.

The problem is twofold. First, those who believe that a revolution in military affairs has arrived have failed to convince those of us who don't that the paradigm of modern warfare is indeed broken. In fact, they rarely try — their arguments proceed from the assumption that mechanized warfare between rough equals is a thing of the past, or strictly for third worlders. Thus, the two camps have no common ground to argue from. Secondly, the vocabulary we all use is so imprecise, transitory, and vague as to be useless for intelligent discussion. This is not because our manuals are failing us — they seem more concerned with taxonomy than with tactics nowadays — but because the discipline imposed by having a 'contrarian' viewpoint in opposition just does not exist. Hence, I hope to spark a little healthy debate, one that will show that the dichotomy between maneuver and attrition warfare is a false one.

The armor community is the fulcrum on which we will raise tomorrow's army. Why? Because, alone of all the branches, we possess the bridge between maneuver and attrition. Only the tank, whatever it may look like in the coming century, is capable of both. And, in my opinion, only armies that can employ both, at need, can win wars.

LTC STEVE EDEN

ACCC Transformation Requires Modifications

Dear Sir:

Let me first say that I wholeheartedly agree with much of what MG Whitcomb expressed in his "Commander's Hatch" column in the March-April 2002 issue of *ARMOR*. In particular, his emphasis on "intent-based training" and extending institutional training beyond the walls of the school house to allow for life-long learning and professional development were, in my opinion, right on target.

That being said, however, I find it odd and somewhat antithetical to advocate experienced-based training where resident schools such as the Armor Captains Career Course become more "leadership- and battle-command centric" (a good thing), and yet simultaneously support the transformation of this important course into a mere four-week resident course supplemented by two weeks as an observer at a training center (read: excessive and unavoidable 'downtime' between activity 'spikes' in observed rotations), all prefaced by home station distance learning (DL) where the future student will be forced to juggle the daily rigors of his line unit (which will NOT go away) and this new, pre-AC3 DL requirement. MG Whitcomb wrote that, "We must develop leaders in a battle school and allow them to gain experience in the execution of battle command." I unequivocally agree. However, I am at an honest loss to see how much experience, much less *mastery*, of battle command a student can expect to achieve in less than a month in a new course where SGI mentorship has been ruthlessly pruned to the trunk of the educational tree.

In my opinion, this appears to be yet another paradox where a couple of very sound educational ideas (experience-based training and extended/career martial study) are espoused and yet the requisite research and analysis have not been invested to preclude a hastily-contrived, even damaging product from resulting. While I do not know if this proposal to change ACCC is official, I *do* know that the collective body of SGIs at Fort Knox has been briefed that "this is going to happen," and that a pilot-course of this model will be executed in November of this year. The idea of its immanency is so widespread that Colonel (Retired) Hackworth has published his views about it in the media (they are not favorable). I'm not sure how much more official it needs to be before we go so far down this road we can't turn back.

MG Whitcomb's aviation school analogy was appropriate — they do not send aviators out into the force prior to one proving himself as a flyer because they invest nearly two years in initial military instruction and flight school training. I would submit that sending armor captains out into the force to command companies after four weeks of "battle school," fighting computer TACOPS battles with only a very select few students commanding in CCTT, or a live tank gauntlet sounds ludicrous (once again respectfully using the terminology in his analogy).

I'm not sure what is the preeminent force driving this change — money, personnel shortfalls in the force, senior leader memories of a totally different course they attended long ago, or some other impetus. But while I know that the technology exists to train much of the knowledge-based portion of the program of instruction through distance learning, my own opinion is that it equates to training a football team by having the players watch ESPN (to borrow another analogy). Further, anyone who has ever participated in DL courses can attest to the generally accepted fact that the quality of mentorship in such cases hovers close to zero. Perhaps I am not seeing the big picture, but I strongly feel this proposed educational design would be an egregious disservice to the officers we are duty bound to train at this institution.

As the Armor Captains Career Course currently stands, I believe we are within MG Whitcomb's intent of training leaders by "teaching the playbook" through classroom instruction and student dialogue while executing this knowledge in experience-based training. From day one, our captains are required to make rapid decisions and communicate their intent with tactical decision games and company- and task force-level operations in constructive, virtual, and live battle scenarios. There is still work to be done in achieving more resources, greater predictability, and standardized opportunities for every student in the course, but we are making experiential-based training work, and we are doing it in combination with the all-important aspect of SGI-student mentorship. The most vital resource we need to maintain is time.

We already lose the students for three entire weeks of the course by sending them over to be "mentors" for the officer basic course. While this briefs well, personal experience and prolific student feedback forces me to question the benefit of this lost time and its impact on the captains that are here for *their* training. Additionally, much valuable time is also lost in practicing the visualize and describe aspects of battle command because we are now prohibited from taking the students on tactical exercises without troops (TEWTs) to reinforce the missions we plan, prepare, and execute in the classroom, SIMNET, or CCTT. Current organization and resource limitations allow only a small percentage of students to command a company (a two-platoon, seven-tank company at that) during a live tank gauntlet, so these TEWTs are often the *only* opportunity to get captains out of the classroom or virtual environment and into the mud.

The ACCC small group instructors are committed to graduating self-confident, adaptive leaders into the force armed with the tools they need to be successful as company commanders and staff officers in today's unpredictable operational environment. That is our mission and our duty, and that is why I am submitting this letter in response to MG Whitcomb's editorial. I truly cherish the unique American freedom to air my deeply-held views concerning our honorable profession in such a forum of open and free debate without fear of censure or retribution. In most armies of the world, this is not the case. Thank you for your time, consideration, and commitment to the education of our officer corps.

CPT JIM (JD) DUNIVAN
Small Group Instructor
N/3-16 Cav, Fort Knox

The Commanding General Responds

I want to thank CPT Dunivan for his comments on OES Transformation. *ARMOR* is an excellent forum for discussion and thought about all aspects of our profession.

You raise some important points that should be considered as we move forward with OES Transformation. Some of his issues are addressed in "Refocusing the Leader Development Lens," on page 15 in this magazine. In particular, transforming institutional learning must include more hands-on, experientially-based instruction than classroom instruction.

I am very pleased with the work that our small group instructors do to prepare captains for command. Regardless of how the final course is structured, we need prior commanders — preferably with CTC experience — as instructors to coach, teach, and mentor the future leaders of the mounted force. What we have now is not broken — it is successful. One of the important reasons we are looking at ways to improve OES is that our education system must advance at the pace of the U.S. Army's transformation in doctrine, materiel and equipment, and organization. It must also transform with society and technology to some degree, and the capabilities that the computer age brings are enormous. Successful OES Transformation is critical to the Army. We welcome everyone to the fight and discussion.

MG R. STEVEN WHITCOMB

Force-on-Force Training Provides Excellent Opportunity for New LTs

Dear Sir:

LTC Mark Pires' article, "Training Lethal Tank Crews and Sections" (March-April), offers many useful insights and techniques to increase the effectiveness of our tank platoons. As a tank platoon leader, I fully understand the challenges he describes. A new lieutenant arrives at the platoon with an understanding of the doctrine and tactics used in small units armor maneuver, but he possesses very few of the techniques and procedures necessary to command a tank. Specifically, he lacks the experience and "tricks-of-the-trade" possessed by his NCO tank commanders.

The force-on-force training described by LTC Pires would provide an outstanding opportunity for the new lieutenant to learn how to maneuver and survive. An essential element of the force-on-force training event is the purity of the exercise; the tank commanders could focus on tank maneuver without the added complications of the command net, calling for fire support, logistics, and casualty evacuation. These tasks enter the training at the platoon level, after completing individual tank skills. This process is similar to the tank gunnery crew completing Tank Table VIII before adding the additional tasks for Tank Table XII.

As tank platoon leaders, it falls on our shoulders to make such training happen if the schedule does not formally allow it. There is not an armor battalion or cavalry squadron in the U.S. Army that possesses a surplus of training time. As a lieutenant, one is not responsible for scheduling major training events, but if one carefully manages the *Troop Leading Procedures*, this type of training can be used for mission rehearsals. Rehearsals at the platoon level do not involve specific actions on specific terrain, they should focus on battle drills that will result in mission accomplishment regardless of where or when contact occurs. The force-on-force training would be an excellent rehearsal of contact with inferior, superior, or unknown forces.

As a tank platoon leader, my NCOs and I look for MILES training opportunities any time the troop is positioned in an assembly area. If the situation permits removing a platoon from the perimeter, one can use any small piece of terrain to drill one-on-one, three-on-one, and section-on-section. In addition to creating lethal tank sections, this experience was the most fun our platoon had during field training. The bragging rights for the winning tank were worth the extra three hours of training. The AARs were conducted internally, and the best lessons I learned as a tank commander were the result of being zapped by one of the other tank commanders. This type of training also prevents the boredom of the assembly area from setting-in; tankers are happiest when they are tanking. In closing, the tank platoon leader cannot wait for scheduled training time to prepare a platoon. If your unit does not have the time for a formal force-on-force tank exercise, then the challenge is to incorporate it into the only time you own, the mission preparation.

1LT RYAN C. POPPLE
B Trp, 1-10 Cavalry

Current Pistol Qualification Standard Inadequate for Airport Security Duty

Dear Sir:

I want to thank MAJ Pryor for his article, "Conducting Homeland Security: Moving Swiftly into a New Era of Defense" (March-April *ARMOR*), and emphasize one point he made. He stated that during his mission analysis for National Guardsmen to serve as armed security in civilian airports, his staff determined that these soldiers would require handgun skills far beyond the Army's standard combat pistol qualification. I strongly agree and applaud his staff for recognizing this and implementing a more rigorous training standard.

The Army's standard pistol qualification is, in my opinion, inadequate for minimal combat defensive purposes. An active security guard in a crowded, busy civilian environment requires and deserves a much more intensive training and performance requirement. The civilians in these protected facilities also deserve a soldier who can perform this important duty safely and competently.

The Army pistol qualification gives a soldier 40 rounds of ammunition and only requires he hit 16 targets out of 30 presented. This means that the soldier can fire and miss with 24 rounds, over half the rounds issued, and still be "qualified" with the M9 Beretta pistol. Twenty-four missed shots on a firing range do not present a problem. One missed shot in a crowded airport, or any other civilian populated area, is a serious, deadly problem.

Military tactics are full of terms for small arms implementation such as "suppressive fire," for which again, fired rounds that don't actually hit a threat target are acceptable. These security missions among civilians require a much more precise, surgical approach to shooting. The Kentucky National Guard has recognized this and has taken steps to accomplish it. The KYNG has contracted a nationally known instructor/trainer on practical handgun shooting to train its security force on safely and effectively engaging threat targets in a civilian environment — in other words, how to quickly and safely end a gunfight in your favor without endangering bystanders.

Another lesson they have learned is that not only is the standard army pistol training not adequate for such missions, but the standard army holster is inadequate as well. The M12 holster issued to most soldiers with the M9 pistol has a flap covering the grip of the gun, which is secured with a buckle. The instructor demonstrated this problem during the initial training of the KYNG security force. He had the top-shooting soldier in the group face the target with his loaded pistol holstered. Another soldier stood next to him (unarmed), but faced the opposite direction. The instructor directed that when he blew the whistle, signifying that the threshold for deadly force had been reached, the shooter was to draw, aim, and fire, and the soldier facing rearward was to run away from the firing line and stop when he heard the first shot. The first shot was fired in over 5 seconds, at which point the "runner" had covered nearly 40 yards.

Clearly, this put the security guard at a great disadvantage. If he were engaging a deadly threat moving away from him, the threat would be out of range of his weapon before the guard could fire. If the threat were attacking the guard, the soldier would not be able to use his weapon before having the threat upon him, and possibly losing control of his weapon. After this demonstration, the security force was issued holsters that safely secured the weapon, but allowed a much easier and quicker draw of the weapon.

When we place soldiers in armed security positions among civilians, we owe it to them and the public to ensure they are properly trained and equipped. Too often, leaders and planners only see these soldiers as a deter-

rent to possible threat. The presence of a uniformed, armed soldier certainly is a deterrent to most people. But we also must not rule out the possibility that deterrence may fail, and these soldiers may face a deadly threat and need to use their weapon to protect their lives and the lives of others. We do not have to make these soldiers Olympic-caliber marksman or quick-draw gunslingers, but we must ensure that we train and equip them to the best of the Army's ability for this difficult mission.

MAJ ED MONK
Fort Knox, Ky.

Bylaws Clarify St. George Criteria

Dear Sir:

Please allow me to thank the Armor Association for the opportunity to serve on the Executive Council. Individually and collectively, we represent and serve all armor and ground cavalry soldiers with dignity and pride to preserve the integrity of our branch and our Association.

Each year the Executive Council is charged with revising and solidifying the Association's bylaws, reviewing the criteria for awarding the Order of St. George and the Noble Patron of Armor, and discussing how the Association can improve and better support our armor and ground cavalry soldiers. For 3 years, I have had the opportunity to hear astute guidance from some of the most revered graybeards — men who have much experience and are a wealth of knowledge.

I have also had opportunities to share thoughts, concerns, make recommendations, and vote on issues affecting the Association. However, it appears that there is some disagreement over award criteria. This issue is not a blatant disregard or an intentional abuse of the system, but rather a lack of understanding.

During the last Executive Council meeting, the Council addressed qualifications for various awards offered by the Association. Once again, the issue was raised that soldiers who were not of armor or ground cavalry lineage be allowed to receive the Order of St. George. The Executive Council discussed this possibility and voted against including verbiage in the bylaws to allow such submissions. Criteria for the award is available online at *www.usarmor-assn.org*. Please take the time to review the standards!

Armor and ground cavalry leaders can show their support for our branch and the Association. Each time a name is submitted for the St. George, ask yourself if all the members, current, past, and future of the Order of St. George would embrace this individual as a member of their honored society. We need to protect our heritage, keep it sacred, renew it to be something that young soldiers and officer's ascribe to and desire to achieve. In my opinion, we have not done a very good job in the past of protecting our lineage or supporting the Association.

For those of you who think the requirement to send a fee is a way of supporting the Association because it creates a profit for the Association — you are wrong. The fee covers the cost of the medallion, printing the certificate, and shipping and handling. For those of you who have pushed through a St. George for an unqualified individual — shame on you. For those of you who have submitted individuals to receive the award and signed the recommendation without being a member of the Association — shame on you. More importantly, for those of you in the routing chain who approve packets that do not qualify — shame, shame on you because not only do you allow the St. George or Joan-de-Arc to be cheapened, you are failing your supervisor who may or may not be aware of the violation. Finally, and this happens more than most of us realize, the recipient should not pay for his own medallion. Whoever submitted or endorsed the packet should be responsible for the associated fee.

The new bylaws remove any gray area, clearly defining who can be honored with the St. George. I encourage each of you to adhere to the bylaws when submitting a recommendation for the award. For commanders who want to recognize individuals who have served the armor and mounted cavalry above and beyond — the Noble Patron of Armor is just as prestigious. Therefore, care and judgment must be used when submitting those nominations as well.

We are a proud branch, we have an amazing history and lineage, we are at the leading edge of all future combat developments and operations, and we are by far the most technically and tactically competent branch in the Army today. I encourage each of us to continue supporting the Armor Association, become a member, renew your memberships, and encourage soldiers and peers to do the same. We have an inherent duty as tankers and ground cavalrymen to protect and perpetuate the embodiment of the St. George. I want to know that when I earn the right to wear the Order of St. George bronze medallion that I am among the finest tankers and ground cavalrymen.

JON B. TIPTON
CPT, Armor
Texas Army National Guard

"Master Gunner" Responsibility Should Belong to Armor Leaders

Dear Sir:

I would like to comment on the master gunner letter by SFC McIntosh in the March-April 2002 issue. I agree with the general thrust of his proposal to change who has responsibility in this regard; however, I submit there should be a far different outcome.

When I was with troop units, there was no such thing as a master gunner. As a platoon leader, troop commander, company commander, and squadron commander, I was the master gunner of my unit (and I have the ears to prove it).

When I was a tank gunnery instructor at the Armor School (1958-61), the master gunner program was not even a remote consideration. I was truly amazed when I learned some years later that such a position had come into existence. I considered it a misguided attempt to solve a glaring problem, such as, a general lack of gunnery experience and knowledge by the majority of armor officers (coupled with a deficit of properly trained turret mechanics).

In my dealings with artillery units, I can honestly say I never worked with any of their company-grade officers who was not a master gunner. I cannot say the same for armor officers (and, ironically, direct fire is far less involved than the artillery's indirect approach).

Because there is still such a position as master gunner, I assume the same shortcoming exists today and that is an abomination. We should emulate the artillery in this respect and make all armor leaders gunnery experts.

The way to do this is to give more than lip service to the fact a tank is a weapons system and not a vehicle. The gunnery aspect should be touted as paramount and not coequal to automotive and communications. The only reason we move and communicate is to effectively employ our firepower.

Every armor officer should be made to understand he is expected to be masterful when it comes to the gunnery art and science (but don't get the turret mechanic's duties involved in this qualification). After all, gunnery is the raison d'être of a tank.

For their part, the Armor School should weight their course curriculums and priorities accordingly. It follows that there needs to be more unit firing. In these ways, there will be created a revelation and revolution in capability within the Combat Arm of Decision.

This new standard and expectation would also obviate the need for a master gunner and place the responsibility where it clearly belongs — on all armor leaders.

THOMAS G. QUINN
COL, USA, Ret.
Radcliff, Ky.

P.S. I must confess that I have long had a sneaking suspicion that artillery officers have a bit more gray matter than their armor brethren. I say this not only because of their gunnery prowess, but also for their superior powers of persuasion. As an example of the latter, they have somehow convinced the powers-that-be to give them a whopping eight men to operate and maintain a self-propelled howitzer, while the best armor can do is to try and scrape by with a four-man tank crew (which often ends up to be three or less), but that's a story for another day.

Air-Ground Integration

Continued from Page 25

Avenger 6: This is Avenger 6, send it, over.

Blue 1: Eagle 13 reports one stationary BMP oriented north on Route Lucy at grid 058612, time 1010 hours…they still have observation and request mortar fire.

Avenger 6: Roger…have them drop to Hammer's net and execute the call for fire, over.

Eagle 13: Eagle 13 monitored…dropping to mortar net."

Net planning for AWTs is critical to success. With two FM radios per aircraft, the AMC or team lead should monitor squadron/task force command and troop/company command. His wingman should monitor troop/company command also, and drop to platoon net on his second radio. This ensures redundancy at the troop/company level, and allows AWTs to operate across the full spectrum. Eavesdropping allows AWTs to assist in situational awareness between troop/company commanders, the squadron/task force commander, and sometimes, between platoon leaders. The remaining UHF and VHF frequencies are used to talk team and troop/company internal.

Conclusion: Like all mission essential task list related tasks, air-ground integration must be constantly assessed and embedded into every training opportunity. Training opportunities are plentiful in cavalry squadrons and regiments, and should include joint terrain board exercises, the "ride and fly program" (where tankers and scouts are given orientation flights and aviators load or gun on an M1 or M3) and, most importantly, troop- and squadron-level officer professional development program (OPD). These OPDs should begin the process and focus on building a common understanding of both air and ground missions, capabilities, limitations, and "how you fight."

In battalion-size task forces, the ability to train air-ground integration is more challenging. However CTC rotations, gunnery densities, or any maneuver opportunity is also an air-ground training opportunity. Seize every possible occasion to train and build your combined arms team. A simple convoy could easily become an integrated air-ground training event with minimal effort or planning.

While no single training event alone builds these lethal and cohesive teams, the combination of events yields a powerful combined arms relationship that capitalizes on mutual understanding and clear mission execution. The end result of effective air-ground integration provides leaders at all levels unparalleled flexibility and the ability to rapidly develop any situation in all environments.

CPT Thomas Feltey graduated in 1993 from Rutgers University as an ROTC Distinguished Military Graduate. He served as a tank platoon leader and battalion scout platoon leader, 1-66 AR, 2AD/4ID; as a scout platoon leader, 1st Bde, 4ID, BRT; and as A Troop and HHT commander, 1-4 Cav. Currently, he is assigned to O Troop, 16th Cav as a small group instructor.

MAJ Brian Serota graduated from Iowa State University and was commissioned as a Distinguished Military Graduate into the Aviation Branch in 1991. He graduated Flight School from the Scout Track and the OH-58D(I) AQC. His assignments include 2-2 AVN Bde as the TARP platoon leader; 4/2d ACR as an aeroscout platoon leader; D/1-4 Cav as troop commander; and as a SGL for the Aviation Captain's Career Course. Currently, he serves as the SGS for the U.S. Army Aviation Center, Fort Rucker, Ala.

CPT Erick (Zeke) Sweet graduated in 1994 from Boston University as a Distinguished Military Graduate. Following Aviation OBC, Flight School Scout Track and the OH-58D(I) Kiowa Warrior AQC, he was assigned to 4-7 Cav in Korea. Following the Aviation Officer Advance Course and CAS3, he served as the squadron S1 and F Troop (AVUM) commander with 1-4 Cav, 1ID, Germany. Currently, he is the commander, E Troop, 1-4 Cav.

Gauntlet from Page 18

[4]COL John M. House, "The Enemy After Next," *Military Review*, March-April 1998, p. 22-27.

[5]Fred P. Stein, "Army Digitization Operational Impacts," *www.dodccrp.org/1999CCRTS/pdf_files/track_6/025stein.pdf*

[6]16th Cavalry Regiment Training SOP, dated 21 November 2001.

[7]BG Huba Wass de Czege and MAJ Jacob Biever, "Optimizing Future Battle Command Technologies," *Military Review*, March-April 1998, p. 17.

[8]A detailed description of the Gauntlet Training Exercise is outlined in the 16th Cavalry Regiment Training SOP, dated 21 November 2001, p. 4-5.

[9]2LT Humayun S. Khan, "Enter the Gauntlet," *ARMOR,* March-April 2001, p. 38; available online at *www.knox.army.mil/armormag* under the "Back Issues" link.

[10]For a good description of FBCB2 capabilities, see *Force XXI Battle Command, Brigade and Below (FBCB2) and the Information Dominance of the Battlefield.* This paper was written by CPT Lopez during Phase II of the Combined Logistics Captains Career Course, and can be found under "Professional Development Articles" at *www quartermaster.army.mil/ltd/index.html*.

[11]An outline of the CABCC course can be found on the Fort Knox website by going to the "search" function and typing in "CABCC" and downloading the CABCC PowerPoint presentation.

CPT Jason C. Slider is a 1992 graduate of the Officer's Candidate School, Fort Benning, Ga. He served as a scout platoon leader, assistant squadron operations officer, and HHT XO in the 1st Squadron, 7th Cavalry Regiment; as a troop commander in the 1st ATB; and as the project officer for Mounted Warrior Soldier Systems, as a combat developments staff officer in the Directorate of Force Developments, Fort Knox. Currently, he is the commander of HHT, 3d Squadron, 16th Cavalry Regiment, and the senior instructor for the 16th Cavalry Regiment's digital training and initiatives.

CPT William H. Goin IV is a 1998 graduate of the U.S. Military Academy. He served as a tank platoon leader, battalion support platoon leader, and battalion S4 with 2-8 Cavalry, Fort Hood, Texas. He is currently waiting to attend the Armor Captains Career Course at Fort Knox, Ky.

REVIEWS

Another River, Another Town: A Teenage Tank Gunner Comes of Age in Combat – 1945 by John P. Irwin, Random House, New York, 2002, 172 pages, $21.95.

John P. Irwin tells his story. He was the typical 18-year-old American kid. He thought he knew everything about the world. Enlisting to free himself from the confines of high school and to avoid being drafted, he found himself being called to serve as a medium tank gunner. Fort Knox would shape this young man to become an unassuming hero.

Irwin uses creative and image-oriented wording to paint a vivid picture of life as a clean-shaven, green G.I., ready to take on the Germans. He rolled into "the box," as many of us do dreaming of being the hero and leaving with medals, bragging rights, and the sense that he and his crew were the best they could be.

During his combat duty as a Sherman tanker, his thoughts of heroism shift. He is forced to do a lot with very little. It didn't seem to be a glorious place or a time for heroism after all. Corporal Irwin would still get feelings of doing such things, but the task at hand came first. There was no known off time, just lags in combat. This was a place where simply talking to his crew, receiving mail, and getting some hot chow were the things to look forward to. This came all too infrequently for him.

The newest corporal assigned to the 33d Armor Regiment, 3d Armored Division, learns a great deal very quickly. Rumors can be poisonous to a man and his unit. Overestimating an enemy is a lot better than underestimating him. There was no bedtime in his area of operations. It would take a little more time to learn the lessons not so obvious.

As the reader turns the pages, there is a solid story. The young man and his crew develop into a no-nonsense, technically and tactically proficient part of the American war effort. This is one man's experience, one man of many. "The Greatest Generation" of Americans shined here in a tank in the 33d Armor, as they did in so many other units during World War II.

This book is a real page-turner. I recommend it to all my Armor and Cavalry brothers. It is a bit pricey for 172 pages, but not a word is wasted. The story has you leaning forward in the saddle, wanting to know what's next. This is a book that encompasses a search for one's rite of passage and self-discovery. It expresses American pride in a job well done and despairs for the atrocities brought upon others. This was a fine book and a fine account of what happened to John P. Irwin as a World War II tanker.

SFC DAVID A. MILLER
Cavalry Scout
TAC NCO
West Point, N.Y.

Falcon Brigade: Combat and Command in Somalia and Haiti by Colonel Lawrence E. Casper, (USA, Ret.), Lynne Rienner Publishers, Inc., Boulder, Colo., 2001, 277 pages, $35.

This small book should be required study — not just reading — for commanders at all levels who may become involved in U.S. Army present and future operations. Service schools could well use it as a text book.

Colonel Casper presents, in a straight forward language, the problems and frustrations, as well as solutions he developed, of two widely differing military operations (first in Africa, then in the Caribbean in less than 2 years, with a hectic 6 months in the United States between the operations). His story concerns one operation in which a military command is denied the force it requires, and one in which the force provided is overwhelming. In the story of Somalia can be seen the sad case of United States forces having to borrow armored vehicles from the forces of other nations to fight and rescue U.S. units isolated by enemy forces.

Against the background of the military operations, the book reflects the vital need for political support and planning if there is any chance for a military solution. The difficulties and sometimes weaknesses of multinational force operations are well demonstrated. After military successes in both cases, as portrayed in the book, control was passed to multinational forces. The situations in both Somalia and Haiti today indicate that both countries have largely returned to the same conditions that existed before the military operations described were carried out.

The descriptions of the tactical operations are superb, as are the details of the planning and preparations for the operations. However, the great highlight of the book is the chapter called "observations." Herein are the jewels for an operational manual on how to plan for and conduct such operations in the future. Light forces, although mobile, cannot fight a successful campaign against such military forces as those in Somalia and Haiti with their limited numbers of modern weapons. An overwhelming heavy force is required unless large and unnecessary casualties are acceptable.

Studying this book and investigating its bibliography is highly recommended.

LEO D. JOHNS
COL, USA, Ret.

Allegiance, Fort Sumter, Charleston, and the Beginning of the Civil War by David Detzer, Harcourt, Inc., New York, 2001, 367 pages, with notes, bibliography, and index, $27.00 (hardcover).

As an adjutant and executive officer, I had the happy duty of reading many promotion orders. The announcement that "the President of the United States had reposed special trust and confidence in the patriotism, valor, fidelity, and abilities" of a fellow soldier never failed to stir my emotions. Words do have meaning, and patriotism, valor, and fidelity are good, old-fashioned sounding words, which encompass what is expected of soldiers.

Allegiance is another such word. A synonym of fidelity, it means loyalty to one's country, one's leaders, and one's ideals. It is also a fitting title for David Detzer's recently published book about the coming of the Civil War and the firing on Fort Sumter because his book is about the allegiance or fidelity of soldiers to their country and flag in the face of overwhelming odds.

Detzer relates the events leading up to the bombardment of Fort Sumter and the beginning of the Civil War through the eyes of people who were there as witnesses and participants. Detzer's book is primarily about one man in particular, Major Robert Anderson, who took command of the federal garrison at Fort Moultrie, outside of Charleston, South Carolina, only a few short weeks before that state declared its secession from the Union. Sent into a volatile situation by his mentor, General Winfield Scott, Anderson found himself thrust to the forefront of the greatest crisis in American history by circumstances beyond his control.

Anderson was known in the army of his times, but hardly a prominent figure. He made a reputation in the service by his study of and writings on the science and use of artillery. Anderson taught artillery for a time to cadets at West Point, his alma mater, and his students there included William Sherman, Braxton Bragg, and P.G.T. Beauregard. (In one of the first ironies of this tragic war, General Beauregard would command the Confederate troops at Charleston who fired the war's first shots against Fort Sumter.) A Southerner by birth and a one-time slave owner through his marriage into a slave-owning family, many people at the time might have expected Anderson to throw his lot in with the South, like so many of his contemporaries. Anderson, although a professional soldier and a veteran of the Black Hawk and Mexican Wars and campaigns against the Seminoles, abhorred war and tried mightily to avoid provoking it in Charleston. In the days and weeks after South Carolinian secession, Anderson asked for instructions and reinforcements from the government in Washington and received little of either from the Buchanan and Lincoln administrations.

Other interesting people populate Detzer's narrative as well. The reader gets glimpses of Abraham Lincoln and Jefferson Davis, both newly elected and feeling their way along as the nation moves toward civil war. Edmund Ruffin and Mary Chestnut, familiar to many Civil War historians, played roles in the events unfolding in Charleston harbor. Several of Anderson's subordinates went on

to significant military careers, including Abner Doubleday, Truman Seymour, Jefferson C. Davis (not to be confused with Confederacy President Davis), and Samuel Crawford (who started the war as Anderson's surgeon), who all became general officers in the Union Army. Beauregard was not only Anderson's student, but his protégé.

Yet, in the end, this book is really about Anderson, who remained steadfast in his allegiance to his country. His experience provides an interesting study in command and a source of inspiration from which today's professionals might profit. Mostly cut off from support or even guidance from his higher headquarters, Anderson adroitly mixed diplomacy, ingenuity, threat, and feats of legerdemain to protect his men, carry out his mission, strengthen his position and prevent a bad situation from getting worse. He made the decision to leave indefensible Fort Moultrie and move his garrison secretly at night to Fort Sumter in Charleston harbor. Anderson balanced the requirements to defend the honor of his country and to preserve his fighting strength. He placed the welfare of his troops and their families before his own. In retrospect, we see now that this war was perhaps inevitable, but Anderson was determined to not allow his actions to be the cause of what he thought would be a ruinous conflict. Finally, when the attack came, Anderson acted coolly under fire and acquitted himself with valor. In short, Anderson repaid the special trust and confidence reposed in him many times over through his patriotism, valor, fidelity, and abilities.

Detzer is an academic (Professor Emeritus of History at Connecticut State University), so readers should expect a well-researched effort and Detzer does not disappoint them. He has also written an engaging book that examines a little-studied part of the Civil War, that most historians previously noted only in passing, in their rush to get to the good stuff. However, the story of Robert Anderson and his command at Fort Sumter is worth our notice. I heartily recommend *Allegiance* to those interested in studying our Civil War, and looking for a fresh and interesting story. More importantly, I recommend it to fellow professional soldiers as an illustration of what those old-fashioned words — patriotism, valor, and fidelity — mean.

STEVEN C. GRAVLIN
LTC, Armor, Ret.

Armoured Guardsman: A War Diary, June 1944-April 1945 by Robert Boscawen, Leo Cooper/Pen & Sword Books, Barnsley, S. Yorkshire, UK, 2001, 232 pages, $36.95.

British army Lieutenant Robert Boscawen kept a diary while in combat during World War II. Generally written when out of the line and shortly after the events described took place, Boscawen's diary was admittedly "none other than a mere personal record of my experiences, hopes and fears, and of those with me, done to occupy my mind and of interest only to myself." While never intended for publication, Boscawen's fascinating diary details armored combat in the hedgerows of Normandy, in the race to Arnhem during Operation Market Garden, in defensive operations during the Battle of the Bulge, and while fighting through the Reichswald, over the Rhine River, and into Germany.

As a newly commissioned officer, Boscawen joined the 1st Coldstream Guards Armoured Battalion in England in 1942. After almost 2 years of rigorous training, Boscawen's battalion, part of the Guards Armoured Division, sailed for France on 30 June 1944. Boscawen served as a troop (platoon) leader, responsible for four tanks (three M4 Shermans with 75mm guns, and one hybrid tank, called a "Firefly," with a 17-pounder in a new turret fitted to a Sherman tank) and 19 soldiers.

Shortly after arriving in France, Boscawen's unit was involved in operations to break out from Normandy. Fighting in the labyrinthine hedgerows against a determined and frequently unseen defender armed with lethal 88mm antiaircraft/antitank guns, Tiger and Panther tanks, numerous artillery pieces, and effective snipers, was exceedingly challenging. This combat required dynamic leadership, disciplined soldiers, well-trained crews, frequent maintenance, accurate gunnery, and close coordination with the indispensable infantry. "Armour without infantry," Boscawen recognized, "may be all very well in the desert, but it was not the drill for Normandy."

A charismatic and courageous leader, Boscawen, who was decorated for his gallantry in action, fought in many hard battles. One such engagement was at Sourdavelle, France, on 11 August 1944. Boscawen's unit attacked with little artillery support and while a nearby dominating hill continued to be held by the enemy. The British armor suffered heavily, and the lead infantry battalion sustained over two-thirds casualties. Boscawen continued to lead his tank platoon and fight until only a few weeks before the German surrender, when his own tank was hit by an enemy 105mm gun and he was burned and disfigured severely.

Boscawen, as revealed in his diary, was also a keen yet sensitive observer of events and of the human condition. Having been written shortly after the events described, Boscawen's vivid narrative conveys a sense of immediacy and realism. Fortunately, Boscawen did not taint his entries by subsequent editing or embellishment, although he does add clarifying and clearly marked "later comments" when appropriate. Over 30 interesting photographs and 10 maps or sketches supplement the fast-paced text superbly, as does a glossary of abbreviations and British military terms.

Armoured Guardsman is an honest and candid saga of leadership, courage, selfless sacrifice, and teamwork in combat at the small-unit level during World War II. It is also a story of sudden death, horrible wounds, destruction, and waste. This engrossing and wholeheartedly recommended book is a reminder of the horror of war while serving as an excellent tribute to Boscawen and his stalwart soldiers.

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

Jackson's Way – Andrew Jackson and the People of the Western Waters by John Buchanan, John Wiley & Sons, Inc., New York, 2001, 448 pages, $30.00 (cloth).

John Buchanan, the author of *The Road to Guilford Courthouse*, writes a truly remarkable account of the settlement and conflicts of the old southwest: Georgia, Alabama, Tennessee, Mississippi, Florida, and Louisiana. The narrative follows the early life of Andrew Jackson and the frontiersmen of the old southwest and tells a truly gripping tale of the battles and skirmishes against Native American warriors, as well as British, Spanish, and French agents and soldiers.

Jackson's Way begins by telling the reader about the adventurous men who first crossed the Appalachian Mountains and their contact and conflicts with the Native Americans who inhabited that land. With special emphasis on the leadership style and tenacity of General Jackson, Buchanan then gives a great account of the Creek War, which is remarkably similar to current operations in Afghanistan. Finally, the story moves on to the U.S. campaigns in Spanish Florida and the destruction of the British army at the Battle of New Orleans.

All Army leaders will enjoy reading this book for the superb leadership example that Jackson sets for our Army today. With limited rations, faulty supply systems, and mutinous troops, General Jackson kept his ad hoc army in the theater of operations and actively campaigning, when three other commanders had called it quits because they felt the circumstances were too severe. Jackson's ability to sustain combat operations and win during the Creek War is a little known miracle of military history that demonstrates what a dedicated commander can accomplish.

The easy-to-read, storytelling format in *Jackson's Way* will enthrall all readers, in addition to teaching the amateur historian about a little known piece of the War of 1812. I would recommend this book to all combat arms leaders as a case study in determined leadership and a historical example of raiding operations deep in enemy territory. I would also recommend this book to anyone planning a staff ride to the New Orleans or Horseshoe Bend battlefields.

CPT DALE MURRAY
Fort Benning, Ga.

Leading By Example Prevents Accidents

by A. Ann Worrell, USAARMC System Safety Engineer

Why are experienced soldiers needlessly dying in accidents? Why are leaders violating standards and killing themselves and others? Why are serious accident rates increasing while the overall number of accidents decreased by almost 50 percent?

These are the questions we need to answer as we look at armor branch accident statistics over the past five years. The armor branch has done a great job of reducing the number of Class A through C on-duty, non-POV related accidents (Fig. 1). However, the number of Class A accidents as a percentage of total accidents is on the rise (Fig. 2). Accidents are classified as follows:

- **Class A Accident**
  - $1,000,000 or more property damage
  - Fatality or permanent disabling injury/illness
- **Class B Accident**
  - $200,000 to $1,000,000 property damage
  - Permanent partial disabling injury/illness
  - 3 persons or more hospitalized
- **Class C Accident**
  - $20,000 to $200,000 property damage
  - Lost work day injury

There are some good reasons for the decrease in overall accident rates: better education, command emphasis on safety, good leaders, and individual responsibility. But, there doesn't appear to be any reason for the increase in the number of serious accidents as a percentage of accidents.

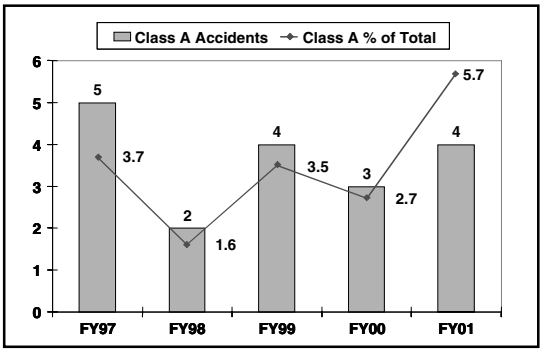


Figure 2. Armor branch Class A accidents as percentage of total A-C accidents, on-duty, non-POV

In FY01, we lost four armor soldiers to needless on-duty accidents. For example, an Abrams tank commander didn't use available mechanical interlocks and was crushed between the breech and the turret. In another, a Bradley commander ordered his driver to move into a rain-swollen creek without adequately assessing the hazard. The water was above the limitations of the Bradley; the driver drowned. Both of these were clear violations of accepted standards and, as a result, lives were lost.

After reviewing all of the armor accidents over the past five years, the only common thread in a large number of accidents is that soldiers are violating standards and people are getting hurt. It is estimated that as many as 80 percent of Army accidents, both in peacetime and combat, involve human error. These accidents cause more losses in soldiers and equipment than the enemy does. Yet, no matter what we do, we will never eliminate all accidents. But the majority of accidents are preventable if you follow the standards and procedures in the manuals.

It is the leader's responsibility to set the example for his troops. Most leaders are doing a good job of this because the accident rates are decreasing. However, there is a rise in the number of leaders breaking rules or violating standards, causing harm to themselves and others.

If a leader sets the example by violating standards, his troops will do the same and accidents will occur. It may only be a bruise or a bump, but eventually someone will be seriously injured. You must never become so confident that you take your equipment for granted or so busy that you can't take time to use the safety interlocks on the equipment. As MG Whitcomb states in his January-February 2002 Commander's Hatch article, these safety precautions are "written in blood."

It is the leader's responsibility to be a role model and ensure soldiers meet the standards and prevent accidents. We must focus on doing the job correctly, safely, and by the book. We must use safety devices and pay attention to warnings. We must provide leadership that focuses on a safe environment and train our subordinates to do the same. We must lead by example.

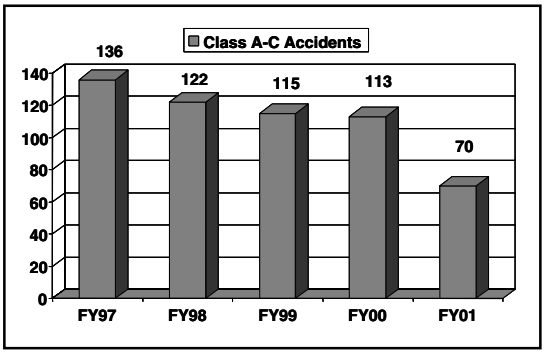
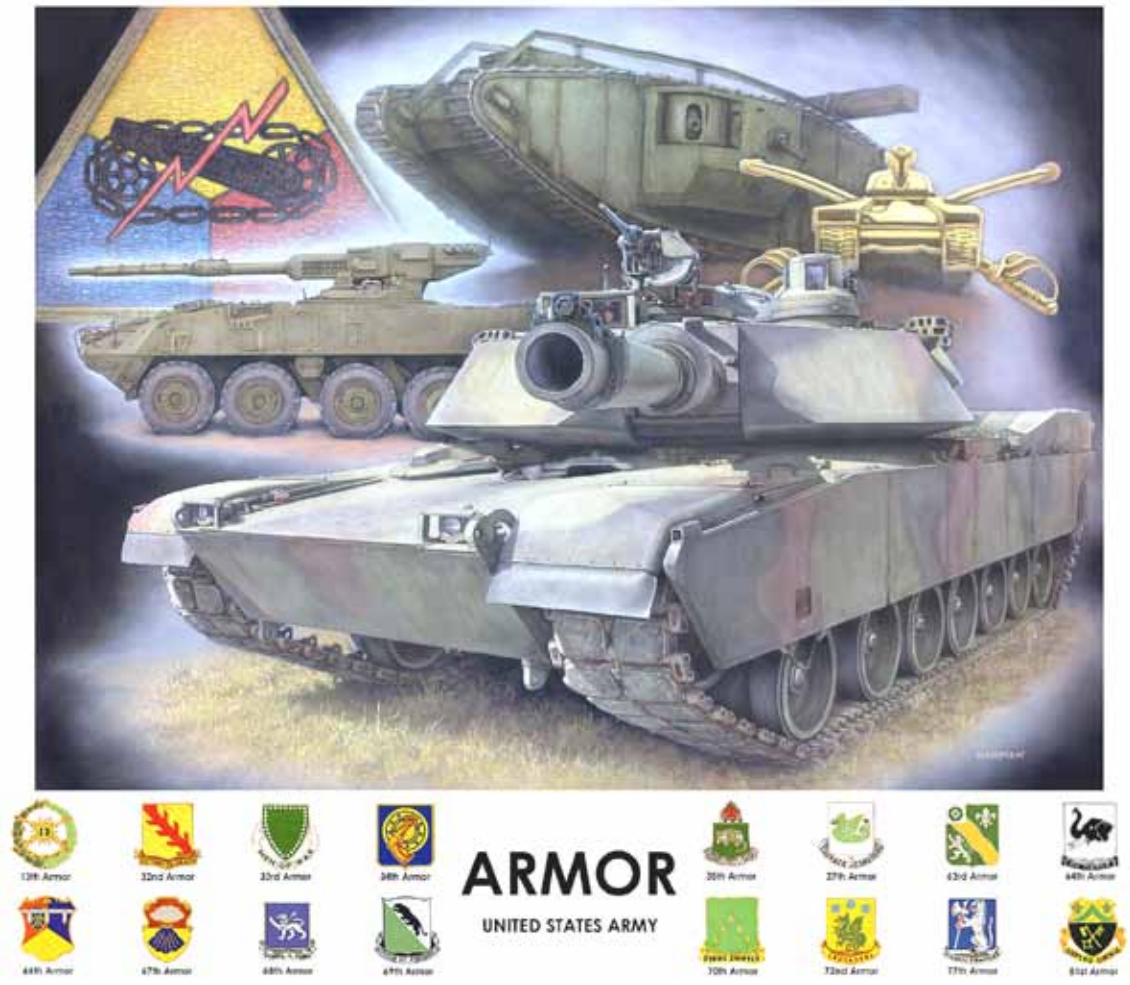


Figure 1. Armor branch Class A-C accidents, on-duty, non-POV

A. Ann Worrell is a systems safety engineer with the Armor Branch Safety Office at Fort Knox, Ky. Data for this article came from the U.S. Army Safety Center database and is current as of 1 October 2001. Mrs. Worrell can be reached at (502) 624-4726 (DSN prefix 464) or by email at Aurelie.Worrell@knox.army.mil.



This Armor Regimental Print is a tribute to the past, present, and future of the U.S. Army Armor branch. It features the M1A2 Abrams main battle tank and the new Stryker armored gun system. In the background are the Armor branch insignias, and the grandfather of all armored vehicles, the Mark IV tank of World War I. It is available from the U.S. Armor Association.

ARMOR
The Professional Development Bulletin of the Armor Branch
U.S. Army Armor Center
ATTN: ATZK-ARM
Fort Knox, KY 40121-5210

Periodicals Postage Paid at Louisville, KY

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