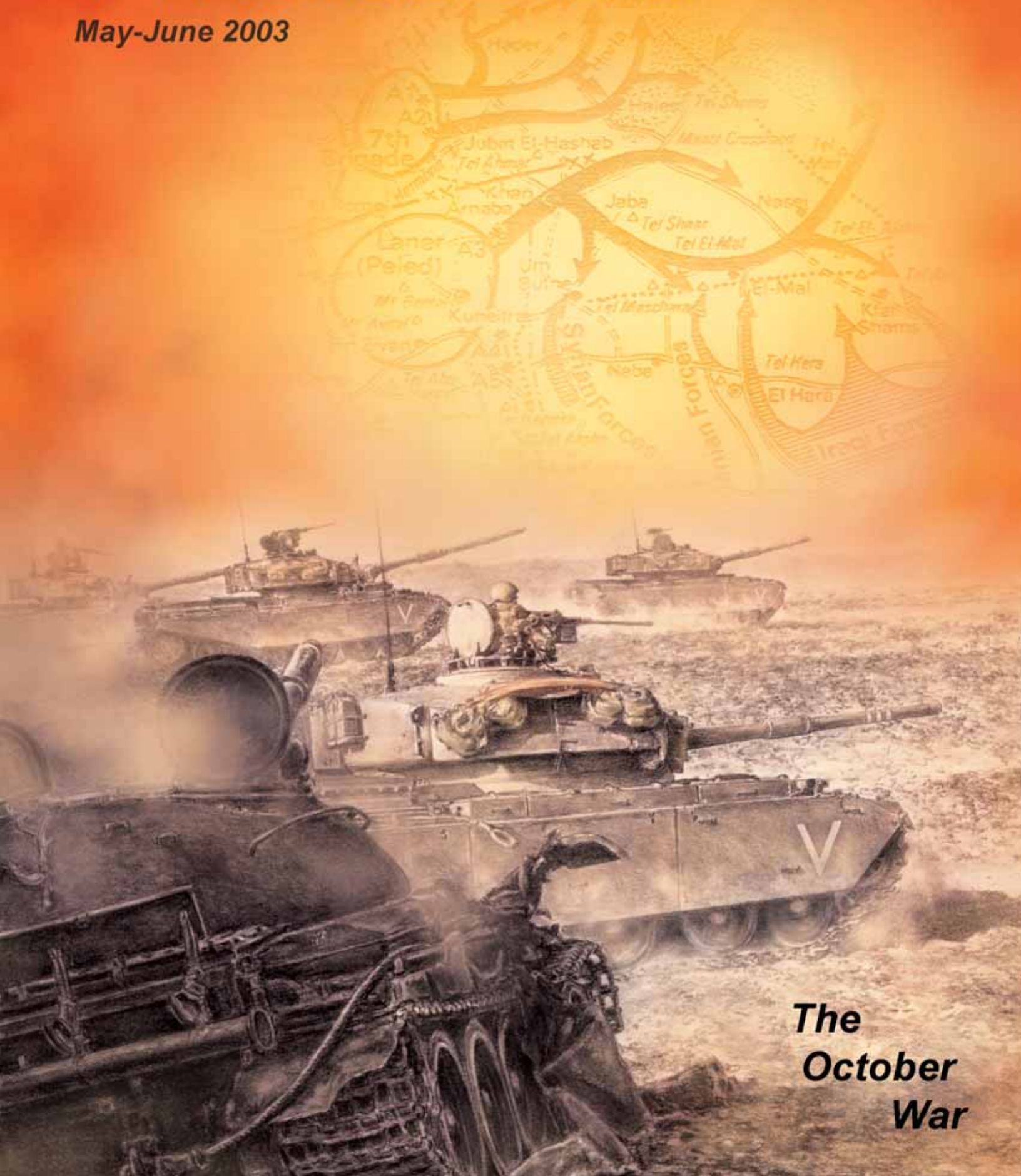


ARMOR

May-June 2003



**The
October
War**

ARMOR

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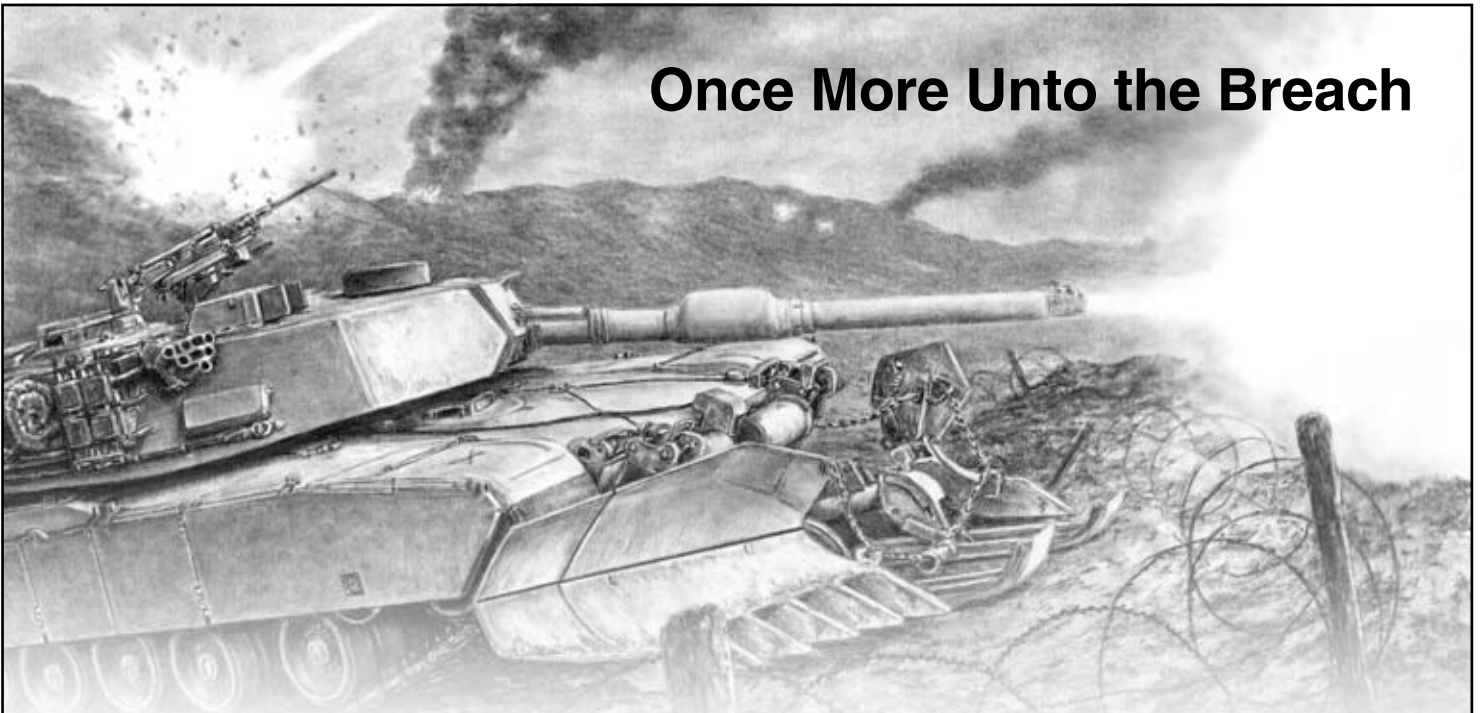


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Once More Unto the Breach



America couldn't be prouder of its military and how the United States and coalition forces have waged this campaign against Iraq and Saddam Hussein. I have watched with awe and am amazed how our soldiers, airmen, and Marines have fought with bravery, tenacity, and courage under extremely harsh conditions and against an enemy who disregards rules of war. Despite early criticism by the media pundits and so-called experts, our forces have put forth a superlative effort resulting in minimal casualties. The years of honing our skills at home station, the National Training Center, and the Combat Maneuver Training Center have validated our training philosophy and provided our leaders with the ability to adapt our warfighting capability to any situation. The men and women of our fighting divisions should be proud of what they have accomplished.

The M1A1 Abrams tank has once again proven itself in battle. Our armor and cavalry units have inflicted horrendous destruction on the Iraqi Republican Guard, regular Iraqi army units, and paramilitary fighters. It is obvious that the need for the heavy force remains. I am certain that once hostilities end, the debate will return to justifying the elimination of the M1A1 and A2 tanks and replacing them with a lighter and more mobile force. Perhaps improving the Abrams fleet is a better idea, and until a weapons system can be produced that will match the lethality, mobility, and survivability of the M1 Abrams tank, heavy divisions equipped with the Abrams must remain part of our fighting force.

Commanders continue to be challenged to conduct peace operations ever more effectively. In their article, "The Visible Hand: An Armor Unit Looks at the Changing Face of Peacekeeping in the Balkans," CPT Eric Guenther, 1LT David Thayer, and 1LT Tyler Hathaway discuss one of the latest developments in peacekeeping — how commanders can develop effective measures to encourage a level of economic development sufficient for host nations to run their own affairs without international intervention.

According to 7th Army Training Command's Commanding General, BG Robert M. Williams, "The Two-Minute Drill is analogous to what a great football team does. Right before the end of the game, when the game is up in two more minutes, they go full press on offensive plays to get themselves to the goal line. So our two-minute drill is designed to get the great 1st Armored Division sharpened, as much as we can sharpen it, before it moves out." In her article, "The Two-Minute Drill," Karen Parrish explains how this new training capability came about.

Weapons are becoming increasingly lethal while the technologies used to control these weapons are becoming more accurate through applying digital technology. However, soldiers who operate the digital controls still possess the strengths and weaknesses of the analog human being. LTC John Drebus explains in his article, "Analog Leaders on the Digital Battlefield," that combat leaders must learn to employ digital technology and reap its advantages while still retaining the analog tools that provide reliable backup and the analog skills that are ultimately the only means of successfully leading human soldiers.

The October War of 1973 changed how modern armies would fight future battles with new technologies and tactics associated with technology. In his article, "The October War," CPT William Brown demonstrates that a lucky and clever enemy could outfight a technologically advanced force as the Egyptians had done with the Israelis.

In addition to these focused sections, *ARMOR* presents several other articles. In "Air-Ground Integration in the Heavy Division," CPT Henry Perry, CPT Murphy Caine, and 1LT Joseph Bruhl describe how the integration of direct fires, tied to decisive events of the ground maneuver scheme, and accurate and timely integration of indirect fires, are the ultimate goals of air-ground integration. In "Mortar Training and Integration," CPT Michael Porcelli explains how to effectively train mortar platoons in an armor battalion. CPT Scott Mace provides an excellent overview of the "Army's First ADAM Cell." In "Course-of-Action Development for the Maneuverist Approach," LTC Kevin Poling outlines a methodology that will allow battalion-sized units to develop a sound and simple tactical plan using task and meaningful purpose, and to communicate that plan effectively to subordinates.

I want to thank our subscribers for helping the Armor Association reach nearly historic membership numbers. We now have 5,200 members — a number we haven't seen since the 1980s when the Army had 18 divisions. These numbers are a testament to the loyalty, dedication, and professionalism of our members. Thank you.


I hope to see many familiar faces at the Armor Conference. Please stop by the Armor Association booth at Skidgel Hall and attend the annual Association Banquet. We will have a great guest speaker, as well as a good time reacquainting and socializing with old friends. God Bless the U.S.A.

— DRM

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LETTERS

The "Recce Stryker" — Making a Good Vehicle Great

Dear Sir:

I have been reading *ARMOR* since becoming a cavalry scout years ago. Your coverage of the Stryker Brigade Combat Team (SBCT) from its inception has been exceptional. Most of the press thus far has focused on the base vehicle, the infantry carrier, and the mobile gun system (MGS). What about the scout version? What is the news coming from 1-14th Cavalry, the reconnaissance, surveillance, and target acquisition (RSTA) squadron? The MGS is the domain of 19Ks and armor officers, what are the 19Ds and cavalry officers doing?

I've read the new Reconnaissance Handbook (ST 3-20.983), and its description of the new "recce platoon." Having served in HMMWV-equipped scout platoons of mechanized and armor units and now in a brigade reconnaissance troop (BRT), I can appreciate some fixes the recce platoon has made to the way non-Bradley-equipped scouts do business:

- Having a dedicated dismount force. The ability to maneuver vehicles *and* have scouts on the ground is priceless. This "fix" undoubtedly comes from many frustrated former scout platoon leaders and platoon sergeants who have had to juggle crews and duties just to send out patrols.
- Having a vehicle with better cross-country mobility and sprinting ability than a HMMWV. While the Stryker cannot maneuver like a Bradley off road, its eight-wheeled mobility and high-speed sprinting ability are significant upgrades over the often-mired M1114 and easily high-centered or broke M1025/1026 HMMWVs that struggle with terrain at anything more than low speed. For the nonbelievers, try negotiating through the rock fields of the National Training Center without breaking a half-shaft or blowing a tire.
- Having the primary weapon tied into the sight system. With a controlled system, precise long-range fire is now more of a reality. Having a thermal sight like the long-range advanced scout surveillance system (LRAS3) is great, but laying direct fires is difficult because the sight and weapon are not integrated. Yes, I know scouts, particularly HMMWV-equipped scouts, should not be engaging targets at anything but point-blank range, but there is confidence in knowing you can reliably kill what you see. A confident scout is a better scout, because it's his skin on the line, not the doctrine writer's.

These fixes are terrific. I hope they will be made possible for the rest of the cavalry community. I do, however, recommend the following changes/additions:

- Give the recce Stryker an erectable mast-mounted thermal sight similar to the Dutch/German Fennek recon vehicle. Whether in Kuwait peeking over IV-lines or in the Bavarian forests scanning from a vehicle defilade, the idea has merit. Performing recon-

naissance and/or surveillance without exposing the vehicle is an ability not enjoyed since the M901 improved TOW vehicle-equipped platoons of the late 1980s. This should be re-introduced to the force.

- Ensure the ranking scout on the vehicle is in charge of the vehicle. Student Text (ST) 20.983 leads me to believe platoon leaders, platoon sergeants, and section leaders are dismounts and the vehicle's tactical placement and route selection is left to a sergeant. While many sergeants are up to the task, the platoon leaders are more experienced and should be deciding such things when it comes to maneuver. I'm sure this is already the case, but it is something that needs to be changed in the manual.
- Give the recce Stryker and the infantry carrier an antitank guided missile (ATGM) capability such as a Javelin or tube-launched, optically tracked wire-guided (TOW) missile. The infantry company that went to the National Training Center last year as part of the Millennium Challenge exercise had their dismounts in the hatches with their Javelins. This proves a mounted ATGM requirement exists. Such a system should run off of vehicle power to avoid any additional logistics strain. Also, such a system should be controlled from within the vehicle by the gunner for the same reason the primary weapons system is — to protect the crew.

In closing, these recommendations by a mere staff sergeant are cost-effective and doable. None require a vehicle overhaul or reexamining unit SOPs. They are simple ways to make a good vehicle and a good unit even better. I hope the generals and colonels, the ones who really make the decisions on such things, agree. I also hope they apply some of the "fixes" discussed to the non-Bradley scouts as well; we could certainly use the help, especially in the form of dismounts. Finally, I hope this letter stimulates some discussion and responses by those in the RSTA squadrons who are making thoughts and theories into reality. It is their words that are valued most.

SSG DWAYNE C. THACKER
E Troop, 9th Cavalry (BRT)
Kuwait

A Son's Tribute

Dear Sir:

I was recently speaking with my father, Richard W. Drebus, the evening before he faced serious cancer surgery at the Mayo Clinic. Of all the things we could have discussed, he chose to express indignation about an article published in his local Oshkosh, Wisconsin, newspaper. The article related how a member of the Wisconsin National Guard had participated in local war protests and had publicly spoken disparagingly about his commander in chief and his government. It was beyond my father's comprehension how a "soldier" could take an oath to serve his country and in the same breath mock that oath.

You should know that my father is a veteran. Not the type of veteran whose image the press conjures up — disheveled, unbalanced, and bitter about wounds received and sacrifices unappreciated. No, he is the type of veteran of whom the public is often unaware — those who did their service willingly and used that service to make a better life for themselves and their families.

Enlisting in the Army in 1943 at the age of 19, my father was sent to Europe with the 11th Armored Division in time to be thrown into combat against Hitler's last major offensive, today known as the Battle of the Bulge. A Private First Class infantryman, he encountered German Tiger tanks in the bitter Belgian winter. His rifle was no contest for their armor and machine guns and although seriously wounded, he survived and received the Bronze Star and Purple Heart.

Following the war, my father took advantage of veteran's educational benefits and went on to earn a PhD, followed by a long successful career in international business, and retired as a senior executive for one of the nation's largest pharmaceutical firms. Despite all of his civilian accomplishments, however, he has always been proudest of his service as a soldier. He passed this pride on to his children who he encouraged to serve in the Armed Forces.

My older brother served as an enlisted soldier with a tour in Vietnam, followed by duty in Germany. One year my parents traveled to Landstuhl, Germany to join his unit for Thanksgiving dinner. They also visited my family when we were stationed at Baumholder, Germany, and they were thrilled at the opportunity to observe my battalion's tank gunnery training at Grafenwoehr training center. My father never missed an opportunity to visit open houses at nearby military bases and he paid us frequent visits when we were living at Fort Knox. A long time member of the Armor Association, he enjoys reading *ARMOR* Magazine and even attended an Armor Conference with me, including a visit to the Patton Museum. As can be expected, he prefers looking at tanks from the friendly end of the barrel!

Understanding a soldier's sense of duty, my father has shared war stories and wounds with former German enemies, now his friends and associates. He has continued to serve his country, allowing his name to be used in an Army television recruiting advertisement that scrolled the titles of prominent Americans who used GI bill benefits. During his travels around the world, he would often meet U.S. soldiers and would buy them a drink or dinner to show his appreciation for their service.

The ultimate irony is that the cancer my father is now battling will eventually achieve what the Tiger tanks could not. His illness is a result of Hepatitis C, a virus that was not identified by medical science until 1989, 48 years after the entry of the United States in World War II. The Department of Veterans Affairs has estimated that Hepatitis C affects perhaps hundreds of thousands of veterans and is

making major efforts to diagnose, research, and treat the illness. Since my father's periodic physical examinations showed evidence of an unidentified liver problem for more than 30 years, his doctors believe that he contracted the disease from the blood transfusions that saved his life on the battlefield so many years ago. He asked me recently to obtain information about the possibility of a final resting place at Arlington National Cemetery, an honor for which he qualifies.

No, not all veterans fit the stereotype that the press and films would lead the public to believe. My father's story of service is not unlike those of countless World War II veterans who not only served selflessly in uniform but continue to support our Armed Forces as private citizens. It is shameful that our nation is only now recognizing with a monument those who served and sacrificed during the defense of our freedom in the greatest conflict of human history. This is especially true for those who did not come home but who now rest in peaceful foreign fields or beneath silent ocean waves. On the other hand, perhaps their legacy of service and devotion to their country is their greatest monument.

JOHN R. DREBUS
LTC, U.S. Army, Retired

Modifying Existing Hardware to Create a Maneuver Simulation

Dear Sir:

One major challenge facing our combat leaders today is lack of "repetitions." In other words, they do not get enough practice to be proficient in combat tasks. A platoon leader may serve in his job for only 10 to 18 months, and a company commander may serve for only 18 months. During these short periods of troop leadership, these individuals will be lucky to maneuver their units in a tactical environment a handful of times. The battalion commander enjoys a longer tenure, but his opportunities for tactical employment are even slimmer. Practice or repetitions are needed to improve the odds of success in any venture. As we frequently chant but seldom practice, "rehearse, rehearse, and rehearse." With limited opportunities to maneuver, our leaders often learn their lessons in the field as opposed to before the training event. The end result is that the knowledge needed to succeed is obtained near the end of command tenure, when it is too late to use. One approach to remedying this problem is to increase the use of simulations in our training. This can be at the unit level, or as the new model of the captains' career course suggests, during required military education levels training.

The lack of training dollars and low operating tempo miles force us to look for other ways to train for combat. In an attempt to remedy this problem, the military has created simulations for tactical use, which provide leaders with the ability to gain repetitions, but are cost effective. Certainly simulators such as simulation network (SIMNET), Janus, brigade/battalion simulation (BBS), and others are effective train-

ing tools. These simulators are constantly improving in quality to allow us to approach real-life conditions. Despite the effectiveness of these trainers, the combat leaders at battalion and below still do not receive enough combat training and the training they do receive is often in high stress situations with officer evaluation reports on the line.

As previously mentioned, the Army's existing simulators are fantastic training tools. I have always left a simulation with more experience and a new lesson in tactics to digest. However, these simulators have some limitations. The biggest problem is the simulator's location. Often, to use one of the facilities, either the unit or the personnel who operate the facility must go TDY. One example of this is SIMNET. It is a superb tool but unless you are at Fort Knox or Vilsack, it is not readily available to you. To use this trainer requires months of planning and preparation, not to mention transportation costs. Another example is the BBS at Fort Polk. The facility is ready for use by local units, but it is unstaffed. Civilian operators must be flown in to allow its use. Again, this takes an enormous amount of planning and coordination. The overhead planning cost and the monetary cost of the training is certainly worth the experience, but a less painful solution is needed. Another drawback to current simulations is the design cycle. Given the legendary slowness of the procurement system, it is not possible to develop simulations that keep pace with modern PC capabilities. Sure, we occasionally replace simulations with things like the close combat tactical trainer (CCTT), but it has been a long and slow process. The civilian software community is better able to keep pace with technology in this regard. In units, it is well known that small blocks of time are often available in training schedules. These blocks of time could easily be turned into repetitions if a new simulator is developed. Imagine using the four hours during sergeants' time to run your platoon leaders through several iterations of battle drills or fight a company defense. What an opportunity!

So, where do we get this new simulator? The answer is that it must be developed. The first response to this may be that the development and fielding costs are prohibitive. However, we can combine existing commercial-off-the-shelf (COTS) items with new software. The COTS items are the numerous computers that exist in all units. The Army has done a wonderful job of equipping its units with PCs of all types. Very often these PCs are connected to a local area network (LAN). These PCs are capable of producing much more than briefing slides and memorandums. As existing PC games demonstrate, multiple PCs can be connected over a LAN to allow multiple-player access. This ability is exactly like the abilities of existing simulators and we already have it at battalion and below with no additional cost to the Army. Should a unit not possess a LAN connecting its units, then an Ethernet Hub and its connections can be obtained for less than \$100.

The PCs for the new simulator in a unit could be configured in one building or across the

unit's footprint. Even more, units connected to the Internet can train together despite geographical distance. Imagine a light infantry company at Fort Drum, New York, training with a cavalry unit at Fort Polk, Louisiana, with this simulator. Not only does this technology exist, it is readily available at little cost. Another advantage of this new system is that the PC's are still available to perform their normal functions yet also allow a unit to access the simulator at any time. The only coordination needed is dedicated access to as many PCs as necessary for your unit level. Now imagine the platoon leader who has an hour of downtime and can gain access to the company's two or three PCs to run platoon action on contact drills with his tank commanders.

The most challenging part of this proposal is the development of the software. In the past, some have suggested adopting existing battle simulation games like *Steel Panthers III* for military use. While these "games" have some merit, no existing game has all of the features desired in a combat trainer. Some features of a new simulator may include, real time and faster simultaneous execution (as opposed to turn based), grid-like battle maps or location translation to allow the use of military maps, realistic equipment and units, head-to-head or human-versus-artificial intelligence capability, and using obstacles and fires. Many of these features currently exist in tactical games. For example, *Steel Panthers III* uses existing pieces of Army and Marine equipment in realistic unit structures. Games like *Red Alert* use real-time execution. Therefore, the idea is to define the desired features and create a new simulation/game that incorporates them all.

An example of software already being modified for military needs and currently in use is the game *Steel Beasts 2* by eSim Games. This software is a very realistic M1A1 simulator for both gunnery and maneuver and it incorporates items like obstacles and fire support. The United States Military Academy (USMA) has worked with the manufacturer to incorporate custom scenarios into its game for military science classes, which are used in class during "Ground Maneuver Warfare II." The cadets begin by practicing missions in the classroom to learn the system and gain appreciation for the battlefield operating systems. Next, the cadets develop operations orders in class and then meet in a simulation room consisting of 10 PCs connected via Ethernet and six single channel and ground airborne radio systems to execute their plan. The cadets maneuver as a unit in a realistic scenario incorporating all of the battlefield operating systems without the cost of using real vehicles or traveling to a special simulations center. Once the mission is completed, the cadets use the game's playback feature to create an after-action review. This entire process is done twice during the 2-week course — once with a defensive operation, and once with an offensive operation. The value of this simulation in reinforcing the text-based learning of the classroom is immeasurable.

Continued on Page 47

Major General Terry L. Tucker
Commanding General
U.S. Army Armor Center



2003 Armor Conference:

The Cutting Edge to Victory — On the Ground for America

The 2003 Armor Conference is appropriately titled, “The Cutting Edge to Victory — On the Ground for America.” This great event is rapidly approaching and the Fort Knox team is in its final planning stages of this annual gathering. For the past several years, the Armor Center has been the focal point for Tankers and Troopers Army-wide to conduct open and frank discussions on issues affecting mounted warriors. In keeping with tradition, we have put together an amazing and packed program. This year, we have an all-star group of speakers addressing the current and the future mounted force, Armor and Cavalry’s role in the Global War on Terrorism and Combat Operations in Iraq, Army Transformation, and other critical issues. I promise you this will be a dynamic event!

The 2003 Armor Conference will have the usual mix of business and pleasure venues that make it *THE CONFERENCE* to attend. The Armor Trainer Update will begin the Armor Conference and is scheduled for 18 and 19 May. Armor and Cavalry leaders and trainers from Army National Guard and Army Reserve components attend this event and share current information on programs, priorities, and initiatives effecting the Armor and Cavalry Force. Along with the Armor Train-

er Update, the Fort Knox G3, Directorate of Plans, Training, and Mobilization, will launch the Annual External Unit Scheduling Conference on 19 May. Scheduled at the Armor Inn, this program affords Reserve, National Guard, External Active Army units, and other service branches the opportunity to register to use some of the best training facilities the Army offers. In addition to the golf outing and banquets, this year we have added a Command Sergeant Major/Sergeant Major social. Defense industry companies will showcase the latest military technology, and static displays will be up from 19 May through 21 May. I will also present the 9th Annual General Frederick Franks Jr. award on 21 May.

The Armor Conference has proven to be a dynamic environment to field thoughts, questions, and solutions to everyday challenges that soldiers and units face across the operational spectrum. This year’s conference is especially important, as the Armor Center refocuses on accomplishing CORE missions to standard. USAARMC prioritizes missions and allocates resources to our highest priority missions in accordance with the clear guidance given by the Training and Doctrine Commander that we must “live within our

means.” As we define what we can continue to do to standard, we are also defining what we can no longer afford to do. It is critical that we communicate these changes to the force to develop and refine an Armor and Cavalry plan that holistically ensures the Mounted Force will remain viable as the decisive maneuver force today and in the future. My primary venue for this effort will be the brigade and regimental commander’s meeting on 19 May. I am eager to hear your spot reports from the field on effective areas of our training and support and also where we need to do better.

Throughout the world, Tankers and Troopers are hard at work protecting our nation. They deserve our best training, well trained leaders, and battle-proven equipment to provide them the best opportunity to fight decisively and win our nation’s wars.

I encourage you to attend this event. Visit our site at www.knox.army.mil/arconf/. I guarantee that attending the 2003 Armor Conference at Fort Knox will give you a better understanding of the challenges we face, and a shared vision of where the Mounted Force should focus its efforts.

Forge the Thunderbolt!

Thunderbolt 7 Signing Out

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

Hello from the Home of Cavalry and Armor, good ole' Fort Knox, Kentucky. Our soldiers and noncommissioned officers are training hard and doing great things.

This will be my last article from the "Driver's Seat," as the United States Army Armor Center and Fort Knox Command Sergeant Major. I am honored to have been selected by Lieutenant General Thomas Metz to be the next III Corps and Fort Hood Command Sergeant Major, and look forward to working with LTG Metz and serving the great soldiers, families, and civilians of Fort Hood.

For my last article, I would like to take a little time to reflect on what we as a force have accomplished together during the past year. As a team, we have improved our ability to communicate with each of the 10 divisions and two regiments of the Active Army, and have created a great relationship with our National Guard and Army Reserve Armor Components. We have worked closely with each division command sergeant major to ensure that input from the field was getting directly to the Chief of Armor. The input received has allowed us to make decisions that we think (thanks to you) will guide the Armor Force in the right direction.

When I first became the Armor Center Command Sergeant Major (CSM), I had a list of five things I wanted my team to do during the first year. I would like to share them with you and report on the status of each mission:

- First: Visit the 10 divisions, two regiments, and as many National Guard and Army Reserve armor units as possible. We get a "C" on this task. While we did visit most of the divisions and one of the regiments, we did not get to visit our Germany-based units and a couple in the states. They were on our radar screen but with the world situation and their very fast training cycle, we were unable to visit them. We did develop a force-wide positive working relationship with all the division command sergeants major.

- Second: Develop a proactive relationship with all of the good folks at the Army Personnel Command (PERSCOM),

mainly those working in the Hoffman Building. We get an "A" on this task. To help these great folks fully understand how important they are to armor soldiers, we invited their team to Fort Knox to visit and take part in some of our training. Our goal was to give them a greater appreciation not only for what our young soldiers go through, but to make them understand how important they are to us. I would encourage you to call your branch representative and just thank them for what they do for you and not just call when you have a complaint.

- Third: Get more command sergeants major involved in the Armor Conference and make it more user-friendly. They now play a big role in the topics discussed during the Armor Center Sergeant Major's Update. We also now invite all battalion command sergeants major and above by personal invitation to the Armor Conference. This includes all Armor Active, National Guard, and Army Reservists. We get a "B" on this task because I know in my heart that we missed a few. I would encourage anyone that did not get an invitation to e-mail me and we will put you on the list.

- Fourth: Improve promotion board guidance packets for soldiers we send from Fort Knox to promotion boards. While it has been outstanding in the past, I wanted my team to look for ways to better communicate exactly what type of leader the Armor Force is looking for when it comes to promotions to sergeant first class, master sergeant, and sergeant major. I am very proud of the work done by SGM Rollie Russell and his crew. We now have a simple, very understandable guidance packet for the board members to review. Our team gets an "A" on this task.

- Fifth: Improve the standards at Fort Knox. As the Armor Center and Fort Knox CSM, I realized that I wear two hats, one as the Regimental CSM for the Armor Force and the other as the Post CSM for Fort Knox. I believe that before you can say a word about the standards of another installation, you better have your own house in order. We started reviewing the post policies and realized that a few were not enforced, so we start-



ed holding leaders, soldiers, families, and civilians responsible for their actions. Our goal is to make Fort Knox a safe, healthy, secure, and enjoyable community in which to live. Since this is a never-ending task, we get a "B" in this area.

As you can see, Fort Knox has indeed been a busy place over the past year. We have accomplished a lot of good things, but we could not have done any of these things without the leaders, soldiers, families, and civilians that work and play at Fort Knox. You all make this old soldier enjoy coming to work each day.

As we all know, our military is deeply involved with trying to make this world a better place in which to live. The young men and women of our Armed Forces are doing an outstanding job in this task. Please be sure to thank a soldier for what they are doing on a daily basis because our enlisted soldiers are the end connectors that hold our track together.

In closing, I would like to share a quote that was passed on to me approximately 25 years ago. I make a point of sharing this with soldiers at every opportunity:

*You have never lived,
until you have almost died.
For those of us who have had to deploy
or fight for it,
Freedom has a special favor;
The protected will never know.*

Again, it has been an honor to serve as the Regimental CSM for the Armor Force and I want each of you to remember that "PRIDE IS CONTAGIOUS," so get out and infect other soldiers with it.

"Thunderbolt 7, out."



The Visible Hand:

Armor Looks at the Changing Face of Peacekeeping in the Balkans

by Captain Eric E.L. Guenther Jr., First Lieutenant David B. Thayer, and First Lieutenant Tyler C. Hathaway

Despite seven years of peacekeeping in Bosnia and Herzegovina, ethnic tensions still conflict a nation desperate for economic advancement. Given the overwhelming evidence that free-market dynamics improve human relations, it is in the best interest of all forces in Bosnia to help facilitate the development of a locally driven, entrepreneurial economy as a means of promoting a sustainable peace. Indeed, the U.S. Army National Guard and Reserve are well positioned to provide these peacekeeping forces with an inherent combination of military experience and exposure to civilian business practices. Of course, we may have no choice but to deploy these forces in a world where regular Army personnel are needed for the far-flung war against terrorism.

As U.S. Armed Forces increasingly undertake the role of peacemakers and peacekeepers in dealing with atrocities around the world, it is valuable to look at lessons learned — and those still being learned — in the Balkans. This article discusses one of the latest developments in peacekeeping — encouraging a level of economic development sufficient for host nations to run their own affairs without international intervention. This article focuses on Bosnia and Herzegovina (BiH), which are at the forefront of this latest experiment in 21st century international diplomacy, and may be seen as a case study for the

overarching questions: just what is the responsibility of the U.S. and the international community for keeping the peace; and how is this responsibility best met? This article specifically addresses using traditional ground forces in support of legitimately elected local authorities and related institutions, and the ability of such units to assess the potential for economic growth and to uncover likely stumbling blocks at the canton or municipal “opstina” levels.

The situation in Bosnia has changed from that of open combat between Bosniacs (Muslims), Bosnian Croats, and Bosnian Serbs, to that of an enforced peace under the 1995 Dayton peace accord, with gradual progress toward a normalized society. As the situation has changed, so has the role of the international military presence. Prior to Dayton, the United Nations Protection Forces (UNPROFOR) operated in BiH to support humanitarian relief and to monitor designated no-fly zones and safe areas. NATO-led Implementation Forces (IFOR) forcibly carried out the military aspects of the General Framework and Agreement for Peace (GFAP) as outlined in Dayton.

IFOR was followed by Stabilization Forces (SFOR), which provide and support the stability Bosnia and Herzegovina citizens need to freely elect their officials, rebuild destroyed

homes and infrastructure, and begin the return to a normal civil society. The Bosnian experience opens a new chapter in the history of international intervention and policing, and participants have had to learn much as the “experiment” progresses. New opportunities and challenges constantly arise as the country stumbles and claws its way forward toward a sustainable, civilian-enforced peace. As we track the outward attributes of progress from combat to peace enforcement by the international community, then onto the nurturing phase during which the international community begins to hand off the responsibility for peace to the host nation, and finally to the ultimate departure of the international community from a independent and secure nation, we can see the daunting complexity of this new and modern mission. And we can thus better understand the challenges now facing SFOR ground units in Bosnia.



“For most of the 6 years immediately following the war, U.S. ground units were carrying weapons at “high port,” with magazines locked and a full basic load, wearing full battledress, such as Kevlar helmets, load-bearing vests, body armor, and protective masks, and maintaining strict patrolling formations when mounted and dismounted. Tensions were high and SFOR had to be ready for appropriate response to adverse actions, including a readiness to use deadly force.”

Fostering Economic Growth From the Ground Up

One IFOR mandate, and subsequently one of SFOR, was to help restore the prewar ethnic mix, which, in many areas, had gone from a rough balance between Bosnian Serbs, Croats, and Muslims, to a nearly total domination of most areas by one ethnic group or another. To help restore the prewar ethnic mix, other tasks included providing a safe and secure environment by ensuring freedom of movement throughout the country, collecting illegal weapons, ammunition, and unexploded ordnance, monitoring crime and corruption, and working with local police forces to re-establish their role as the primary authority for maintaining civil order.

For most of the 6 years immediately following the war, U.S. ground units were carrying weapons at “high port,” with magazines locked and a full basic load, wearing full battledress, such as Kevlar helmets, load-bearing vests, body armor, and protective masks, and maintaining strict patrolling formations when mounted and dismounted. Tensions were high and SFOR had to be ready for appropriate response to adverse actions, including a readiness to use deadly force. Recently, however, as these tensions have been successfully reduced, this posture has been modified. Successive rotations have learned that carrying weapons at high port and donning full “battle-rattle” is counterproductive; indeed, we find that citizens respond more civilly when we dismount, shoulder arms, and patrol through towns in soft caps rather than in Kevlar helmets. Weapons are still at hand, but slung, and protective masks and body armor remain nearby in vehicles. The civilian population has responded favorably to the “new look” and seems now much more willing to talk, provide information, and generally support the SFOR mission.

Front-line combat troops — armor, armored cavalry, and infantry, with artillery used in specialty roles — have been the units used for peacekeeping. This is natural, since the initial

transition was from open conflict to enforced separation and stability. The fact is, however, we have reached the next stage in Bosnia, in which stability is well established. This has caused outside observers to question the continuing need for actual combat soldiers in the country. “Wouldn’t it be better,” they ask, “for unarmed observers to take a more prominent role, to encourage the development of real peace and prosperity without the tension inherent in the presence of armed foreign soldiers?” It would perhaps be better, if current stability was indeed sustainable through the efforts of local or national (or even international) civilian institutions and laws, but this seems, unfortunately, not to be the case. Take, for example, the elections on 5 October 2002, which brought into

power nationalistic governments in every area of the country. A low 45 to 55 percent turnout was the result of electoral apathy, which, according to our interaction with eligible voters, was due to a feeling that no matter which candidate they elected, corruption would continue unabated. In addition, we have heard a frequently expressed fear, indeed, for some a certainty, that strong ethnic animosities simmer just beneath the surface, kept in check only by the continued presence of SFOR soldiers. These are not indications of a completed peacekeeping mission, nor yet one that might be successfully handed over to non-combatants.

The stability mission remains one for combat-ready soldiers, but in the U.S. sector, not one to be performed by the regular Army. While SFOR 11 consisted of elements from the 25th Infantry Division, units from the Indiana National Guard filled almost half of its ranks. SFOR 12, in Bosnia from August 2002 to March 2003, was even more reliant on Guardsmen. Its soldiers were drawn almost exclusively from Pennsylvania’s 28th Infantry Division (Mechanized), and organic infantry and armor units manned its forward operating bases. Why rely on the National Guard? It can, of course, be partly ascribed to gradual and well-documented force reductions in the full-time regular Army — and now, to active component deployments elsewhere in the world. Just as importantly, however, it is perhaps due to a recognition at the nation’s highest levels that the National Guard can bring an appropriate civilian perspective to the current phase of peacekeeping, one less available within the active component. After all, the National Guard and Reserves are made up primarily of citizen soldiers — comparatively older men and women with careers and experiences outside the military. These soldiers tend to better empathize with other civilians, simply because they are living and working outside the regimented and orderly walls of the military community. Given Bosnia’s need for both social stability and economic growth, the citizen soldier may now be best suited to this battlefield. Guardsmen and Reservists can lend knowledge borne of experience to a theater currently undefined — the stage of peacekeeping in which the host nation looks less for a handout than for a leg up; in which that nation can take

pride and ownership in its own peace, independence, and prosperity.

SFOR was never meant to be permanent. Yes, perhaps it was overly optimistic to think that we could be out of Bosnia in 6 months, a year, or even 5 years, but the focus of peacekeeping must always be methodical, with a view toward the eventual and definite departure of the peacekeepers. Otherwise, peacekeeping becomes almost a diluted form of occupation, with an implicitly very different task and purpose at every level. The endstate for every facet of every operation must be reiterated, focusing especially on those local authorities — organizations or individuals — who can (and will) take “ownership” of activities currently handled by SFOR. This is critical to mission success. If an SFOR unit or soldier conducts a task directly associated with sustainable self-rule and there is no opportunity or intent for hand-off, a flag should immediately be raised. This applies especially to economic sovereignty.

Why would SFOR in general, and ground units in particular, be dealing with market economics? It is because of a basic precept of human nature — if a man is able to work and put food on his own table, he is less likely to raise arms against his neighbor. Over time his preference for trade and prosperity will overcome any desire for war. Conversely, the lack of prosperity can engender or accelerate rebellion; as the 19th-century political economist Frederic Bastiat once said, “When goods cannot cross borders, armies will.” The entrepreneurial spirit of a thriving and competitive marketplace makes ethnicity an all-but-irrelevant consideration. By promoting cross-cultural contact, free and open trade enhances understanding, allays suspicions, encourages tolerance, and builds respect.

It is perhaps significant to note that we, at the troop level, are not given to outwardly wondering why ethnic divisions continue to permeate this country. One reason is that primary intelligence requirements (PIR) at the task force level do not involve solutions to these ethnic tensions, this being more properly addressed by other organizations and units. But another reason is that we choose to deal with theories of basic free-market economics — in which the opportunity for financial gain trumps ethnic considerations. If the president of a Bosnian Serb company is looking for the best employee at the best cost to maximize his profit, then he will not look at

whether the prospect is Croat, Bosniac, or Serb. And, in fact, our experience here bears this out.

Prosperity is of course no panacea. But it does go a long way toward creating pride in an individual’s efforts, his neighborhood, and, ultimately, his nation. If nothing else, it keeps men fully occupied — and prosperity is a notion that a free society will defend against anarchy and terrorism with as much ferocity as one fighting for religious or nationalist ideologies. Indeed, history has shown that free enterprise makes war less palatable since factions are more economically interdependent. Daniel Griswold of the Cato Institute wrote that, “Ancient writers, expounding upon what we now call the Universal Economy Doctrine, understood the link between trade and international harmony. The 4th-century writer Litanies declared in his Orations (III), ‘God did not bestow all products upon all parts of the Earth, but distributed His gifts over different regions, to the end that men might cultivate a social relationship because one would have need of the help of another. And so He called commerce into being, that all men might be able to have common enjoyment of the fruits of the Earth, no matter where produced.’”¹

Put more succinctly by former U.S. President Ronald Reagan, “The freer the flow of trade, the stronger the tides of human progress and peace among nations.”

Very well, but we know that “traditional” soldiers are not meant to shape markets. They have rightly not been trained to inflict or enforce prosperity. In fact, there is no doctrine or manual for the cavalry or armor soldier that shows him how to register a new enterprise, raise capital, or achieve profitability, and there probably never will be. There is no professional military occupational specialty (MOS) for “combat MBA” similar to other advanced degree MOS’s like flight surgeons or judge advocate generals. It is not our role to play...or is it?

If SFOR soldiers are destined to remain in a country until it is independent enough to stand on its own, with reasonable laws and functioning institutions in place to defend it against assaults on its legitimacy, then we must be prepared to carry the necessary tools and weapons to support the transition to such independence. A country, a city, or an opstina may not be truly independent until it stops extending a needy hand, but this is

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All photos: SGT Tom Farley, First City Troop



an endstate that requires an indefatigable investment in time and other resources. No matter how hard we try, sustainable peace is a difficult (if not impossible) concept to template. It is not a bunker at a fixed location with a definable defense. So it must be decided, first doctrinally, then strategically and tactically, what ongoing involvement the SFOR soldier will have in the peacekeeping process, and whether and to what extent, this will entail a degree of involvement in reconstructing the local economy.

In the meantime, squadrons and battalions, troops and companies, must continue with their mission as ground soldiers in support of a safe and secure environment (SASE). As members of SFOR perform this mission daily, we are developing a rapport with our Bosnian counterparts, who encompass government employees, police personnel, civil protection agents, and, of course, ordinary citizens. During this daily interaction, conversation inevitably turns to jobs and the economy: people here want to work, they want to earn a living and, in general, they are tired of handouts. As Americans, we respond to this; as citizen soldiers, we understand the challenge; as military leaders, we recognize a target of opportunity.

How it was Done: A Business Area Recon

As a result of the immediate need to address the relationship between our SASE mission and the effect that a weak economy has on its success, we have endeavored, at troop level, to work with our higher command, the international community, and other “enablers,” to develop a plan to assess the status of the

economy on local opstina levels, while providing a forum for local government, business, and financial institutions to come together and talk, with the understanding that economic growth benefits everyone involved. This is a simple concept that receives unilateral and energetic endorsement but finds little adherence in actual practice. Generally, the entities that are critical to the economic equation currently function — or rather fail to function — on their own, thereby hindering the entrepreneurial drive that would otherwise sow the seeds of economic success.

As commanding officer, my troop-level planning process used the tools available to the military leader such as troop leading procedures and the operations order. The intent from higher headquarters was to provide reconnaissance and surveillance of the objective, not implement change. There are other organizations within SFOR, the international community, and the Bosnian entities themselves, which are better qualified to implement changes than ground troops. However, given that our traditional cavalry mission is to observe and inform, our simplified mission became: “Task Force Apache supports a safe and secure environment in our area of responsibility by providing critical information to higher on the development and sustainability of local economies.” This mission was appropriately nested with the general information operations campaign to ensure a consistent message was sent to all civilian entities involved and the environment effectively shaped to ensure success.

As commander it was my intent to focus on the assessment process: troop and platoon leaders will interact with local government, business, and financial leaders, to gather key data on the strength of local economies. We will observe the relationships among these to determine if there is mutual support and a shared vision for coordinated progress toward economic growth.

During the process, we collected information on crime, corruption, and other barriers to economic growth. In addition, we observed how basic and implied freedoms, such as freedom of movement and freedom of speech, along with ethnic and religious tolerance, were enhanced or hindered by support for the economy. TF Apache introduced a forum that brought together the critical entities that support a strong economy, and that facilitated and encouraged discussion on obstacles to growth and potential solutions. The desired endstate was that TF Apache contributed to visible improvements in the safe and secure environment by providing meaningful data on local economic strength and the forces that ensure its viability, and by facilitating the assembly of these forces to debate opportunities and



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work together, with an objective focus on the shared benefits of growth.

In continuing with the planning process, we thought it best to initiate contacts and begin gathering data by meeting with the mayor of a local opstina or municipality. He is the one who most often has a keen understanding of what businesses are in his area, or he may have an economics minister who can provide contact information.

When we met with each mayor, we first introduced the concept of SFOR's transition, acknowledging the laudable reduction of ethnic tensions in his opstina. We then explained that this enabled us to shift some resources toward helping the local economy. We simply stated that we were collecting data on the strength of the local economy and, to that end, would very much like to visit a number of businesses to meet the owners, perhaps take a tour, and gauge the general level of optimism about the future. We also asked the mayor for thoughts on the future and how he would grade the local, regional, and national governments in terms of support for small-business growth. In addition, we queried him on what programs and incentives are in place to ease the registration process for new businesses or to reduce the tax and government paperwork burden for start-ups. We inquired if there might be an office or individual in his government that is dedicated to business, helping new companies get on their feet or break into new domestic or international markets. Our experience has been that the answers to our questions cast the government in a highly positive light (blaming bureaucracy at higher levels for any failures). This is to be expected, but by merely asking questions, we built rapport by engaging each official in intelligent conversation, and husbanded credibility by discussing our own business backgrounds. We provided incentives for the mayor's future involvement by discussing how important it is for SFOR to know how well the opstina is doing economically; perhaps we ask him to chair the first business forum because of his influence. Most importantly, the mayor introduced us to local business owners. This, along with some discussion about the logistics for the business forum, was the endstate for on-site meetings with the mayor.

It is worth noting some tactical concepts. First, given that this is in fact a manifestation of diplomacy nested with the general information operations campaign, we always acknowledge how pleased we are that the mayor accepted our invitation for a discussion. We have found that such courtesies go a long way toward inspiring confidence and building camaraderie with any local official. Second, nearly every conversation is conducted through an interpreter, so subtleties, word play, and sarcasm are not only likely to be lost in translation, they may be dangerously misunderstood. Finally, we must never make outward promises to any officials, as they, quite naturally, will hold us to them. Americans seem to have an innate desire to help others, but oftentimes, with the best of intentions, we say that we



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will do something when what really we mean is that we will *try* to do something. Bosnians and others in need remember what we say and, perhaps out of desperation, take it as a promise to deliver. Making promises to an average civilian on the street is not good practice; promises are an abysmal tactic in the office of a mayor or business owner.

The next item on the agenda is business tours. Ideally, someone from the mayor's office accompanied us on the tour to provide introductions and a common connection. We entered each business with a standard list of "talking points" designed to gather information on the company, the owner's optimism, and government support (if any), while also engaging in simple conversation and building a commitment for future participation in a business leaders' forum.

During our rotation, we conducted various business tours that included a furniture factory, a wholesale bakery, a plastics factory, a refurbished hotel, and a large restaurant/rest stop complex. Generally, owners are cordial and open to answering questions, and have even offered unsolicited financial information. They tend to be highly candid about deficiencies in government support (most often at levels above the opstina, particularly when a representative of local government was present). This is a great opportunity to gather real information and to see local businesses operate. Sometimes we hear that a company is a genuine success story only to find that, on our arrival, the facilities are barely operating or are in significant

disrepair. For example, this recently occurred when the local equivalent of a chamber of commerce extolled the virtues of a nearby glass factory, which in reality is an almost derelict facility that manufactures only untempered glass for car windshields — a market which is, of course, nearly nonexistent. On-site visits uncover such deceptions and discrepancies, but also provide an opportunity to find allies for the forum, which, for anyone who has brought together groups of people with a shared need or grievance, is a highly valuable commodity!

Indeed, many of the problems identified at these meetings were not easily resolved by anyone in the short-term, let alone by SFOR soldiers here on a 6-month rotation. These identified problems include:

- Lack of domestic demand, given the high prevailing rates of unemployment.
- Lack of clearly documented post-war land ownership, giving rise to collateral problems when looking for seed funding. Incredibly, many people pay property taxes on land that their families have owned for generations, but for lack of documentation, much of which was destroyed during the war, they cannot obtain loans for starting or expanding a business.
- Political corruption, since free-market success is predicated on the rule of law. This has several adverse consequences: organized crime is not properly combated, and it siphons off profits and interest that business owners and investors would otherwise make, thereby sapping initiative and stifling the economy; travel visas are essentially unavailable, making pursuit of foreign investment and trading partners difficult; high interest rates are demanded by foreign lenders — to the extent that they are willing to provide capital at all, which deprives Bosnians of the one sustainable source of funding that would allow the country to develop self-sufficiency — no matter how cheap or valuable labor and other native resources are, foreign investors will not invest money if they have doubt on their return; and process inefficiencies often create insurmountable obstacles to new business creation and ongoing business survival.
- Lack of a fluid market for widespread stock ownership. Both government and businesses seek to privatize former government-owned enterprises, which is made difficult by fragmented and illiquid markets for public stock ownership. Thus, further expansion and modernization are possible only through high-interest debt financing or, failing that, slow internal growth.

- Legacy burdens from the war and privatization efforts from prior to the war (benefits to previous employees).
- Lack of taxation enforcement and lower costs (wages) in Arizona Market.
- Demining of commercial properties.
- Upgrades in technology, facilities, training, and machinery.

The initial business forum was a critical event for a number of reasons. It brought the forces underpinning the economy together in one room with the SFOR and international community enablers. The importance of these force multipliers cannot be underestimated. For example, under the current model, civil affairs is a critical element in bringing the economic piece to the SFOR mission, and psychological operations has the capabilities to spread the word. To ignore these and other assets is similar to a cavalry commander ignoring his mortar section.

By packaging the concept properly, business forum attendees understood the opportunities inherent in their participation, and therefore actively participated because they felt a certain responsibility associated with their selection as members of this elite group. Most importantly, though, the first meeting offered an opportunity for local citizens to take ownership of the business forum as an ongoing event focusing on economic growth as a springboard for sustainable success. If the civilians fail to take ownership, the process will die. In addition, if the concept of the business forum can be grafted onto the ethnic conundrum, what better way to flank or overwhelm nationalistic paranoia than to cast these local events as precursors to regional forums, which would include key leaders from Croat, Serb, and Bosniac entities. If polarized government representatives are unwilling to cross self-imposed nationalistic barriers, then they can stay home — but probably they will not, if the real and perceived importance of these conferences can be demonstrated.

A key to the success of these meetings was follow-through. Suffice it to say that we must not stop on the objective but assault through it. We have developed definitive next steps, which we have shared with participants, and future meetings are planned around these next steps. These future meetings introduce new local participants and guests — perhaps SFOR enablers or guest speakers. We have had members of the financial community at previous gatherings, including representatives from micro-lending firms, who have discussed op-



"The initial business forum was a critical event for a number of reasons. It brought the forces underpinning the economy together in one room with the SFOR and international community enablers. The importance of these force multipliers cannot be underestimated. For example, under the current model, civil affairs is a critical element in bringing the economic piece to the SFOR mission, and psychological operations have the capabilities to spread the word."

portunities to obtain capital for growth. We had citizen-soldier representatives from the American Small Business Administration, law firms, and international banks, who discussed issues important to entrepreneurs. Again, we continually hammered home the notion that we (as Apache Troop/SFOR) would not be in Bosnia forever; we were happy to attend and facilitate meetings, but host-nation members must assume ownership. This was not an easy concept to embrace for people accustomed to receiving dictates and handouts from the international community and SFOR, especially in light of the communist and imperial regimes of the not-so-distant past. To the inevitable question, "What are you going to do for us next," our response was always that we were willing to act as advocates and that we will certainly share gathered information, but the future lies in sustained ownership of the process by the local community. It must be so. Whether in business forums, election support, weapons collection, or any other activity, the host nation must be able to take the reins, else these vital activities will cease when we leave — or worse, we find that we are unable to depart because we cannot transfer ownership. That said, however, it must be acknowledged that the international community plays a large role in helping Bosnia to grow economically in terms of minimizing trade barriers, reducing crime and corruption through the efforts of the Office of the High Representative (OHR), and providing incentives for international investment. Our meetings with business owners demonstrated a sincere desire to succeed but a growing frustration over what they saw as empty promises and half-hearted attempts to provide support from the international community and SFOR. If the goal of nation building is to create a truly safe and secure environment in developing countries, the economic factor must be energetically and earnestly supported or it will fail.

Although still evolving, changes in the nature of the peacekeeping process currently taking place in Bosnia are vital to the success of our mission there. SFOR soldiers are the most appropriate force to take on this responsibility because without them, the fragility of the current calm might soon become shockingly apparent. There is still a great deal of tension in this country — not simply ethnic tension, but a tension borne of lack of faith in the strength of the national infrastructure and a disbelief that elected officials can maintain social and economic stability. If the endstate of peacekeeping is, in fact, an environment where armed conflict is not an immediate threat because laws and institutions are in place to enforce and encourage peaceful co-existence, then the process cannot end until the roots of stability are deep. This means that governments need to be free of corruption — or at least aware that corruption is not an accepted form of governance, the rule of law must prevail and a foundation for economic prosperity must be in place. The seeds of an entrepreneurial spirit, which we have seen, must be cultivated to the point where it can stand on its own and provide its own contribution to social stability. Proper institutions must be established to ensure private property is respected, contracts are enforced, right is defended, and wrong is punished. These are the foundations of a peaceful and self-sustaining society, but these cannot be brought about by force of arms alone. The process may necessarily have begun at the top with the imposition of international will upon a nation torn asunder by war, but a true and lasting peace takes time to grow, and must be nurtured from the bottom-up, as well as top-down. SFOR can play a valuable role in this next necessary step by working with civilian entities — Bosnian and international — to build the economic foundations for sustainable growth. For example, the international community and local entities

could be responsible for program design and implementation as these activities require continuity, but SFOR could provide the reconnaissance and oversight assets — collection of data and facilitation/compliance — that is, working with local business and government leaders to ensure real progress is made.

However, at some point, the presence of foreign soldiers needs to become transparent, which is why reserve forces, people who know the caprices and pitfalls of living in the civilian world, are so valuable to this transitional effort. In Bosnia, in light of the inability or unwillingness of recent governments to move forward, advances in building a market-driven economy will provide the best impetus for social progress if it can be nudged along through the earliest stages. One must acknowledge that a greater likelihood for success would exist if entity and national governments were to support this effort, but lacking that support, the combination of local initiative and international influence must now take the lead in fostering a truly lasting national peace. Governments will follow where the people lead.



Notes

¹Daniel Griswold, *Peace of Earth, Free Trade for Men*, the Cato Institute, Washington, DC, 31 December 1998.

CPT Eric E. L. Guenther Jr., Pennsylvania Army National Guard, is currently serving as the commander of Troop A, TF 1-104th Cavalry, SFOR 12, Camp Morgan, Bosnia. He has served as troop commander, executive officer, tank platoon leader, scout platoon leader, M60 tank crewmember, M113 scout crewmember and rifleman in Troop A, 1-104th Cavalry, 28th Infantry Division (M), Pennsylvania Army National Guard. As a civilian, CPT Guenther is the chief operating officer for Micro E.D.S., a pharmaceutical software company in Narberth, PA. He is a cum laude and honors graduate from the University of Pennsylvania. CPT Guenther is the current commander of the First Troop Philadelphia City Cavalry, the Army's oldest mounted unit in continuous service, founded in 1774.

1LT David B. Thayer enlisted with the troop in 1985 as an 11C mortar man, becoming mortar section sergeant before attending office candidate school and receiving his commission in 1996. He was placed on the commandant's list on completing the Armor Officer Basic Course in 1997. He has a B.S. from the Wharton School of the University of Pennsylvania, an M.A. from the London School of Economics, and an M.B.A. with Honors from the University of Chicago. Prior to the deployment, he was in charge of strategy and finance for a telecommunications firm outside Washington, DC, and served as a scout platoon leader while deployed to Bosnia with Troop A, 1-104th Cavalry.

1LT Tyler C. Hathaway enlisted in the Pennsylvania Army National Guard in 1992, and served with the troop as a 19D cavalry scout before attending OCS and receiving his commission in 1997. He serves as Cornet of the First Troop Philadelphia City Cavalry, a rank unique to that historic unit. He is a graduate of Hamilton College, and holds an M.B.A. from the Wharton School of the University of Pennsylvania. As a civilian, he is a commodity and equity trader with Renaissance Technologies, a private investments company in New York. While deployed to Bosnia, he served as a scout platoon leader with Troop A, 1-104th Cavalry.



Two-Minute Drill: *USAREUR Rewrites Playbook*

by Karen S. Parrish

When V Corps faced the possibility of the 1st Armored Division (1AD) deploying, one question was how to ensure the division's tank and Bradley crews had current gunnery qualification. They turned to 7th Army Training Command (ATC) for the answer.

What resulted, according to 7th ATC officials, was a new capability in training delivery: a sort of drive-through gunnery, with minimal logistics and support burden to the training units.

The training is called the "two-minute drill," and its goal, according to Lieutenant Colonel Timothy J. Russell, G3 operations officer for 7th ATC, is to push more than 200 1st Armored Division tank and Bradley crews through gunnery qualification as quickly as possible. That means providing the training units with literally everything they would need, from the M1A1 Abrams tanks and Bradley Fighting Vehicles to logistics and maintenance support, range security, and evaluators.

"We got ahead of this thing right away. When we knew this deployment was a possibility, we came up on the net with V Corps and said, 'We are willing to do this if you want our expertise,'" Russell said. He explained the game plan was for the exercise to be "an impromptu gunnery, with us providing all the support." He continued, "The more 7th ATC support we could give, pulling in all our as-

sets and with help from 1st Infantry Division, the more we could reduce the burden on 1st AD."

According to 7th ATC Commanding General, Brigadier General Robert M. Williams, the name of the exercise reflects the sense of urgency behind it. "The Two-Minute Drill is analogous to what a great football team does," Williams said. "Right before the end of the game, when the game's up in two more minutes, they go full press on offensive plays to get themselves to the goal line. So our two-minute drill is designed to get the great 1AD sharpened, as much as we can sharpen it, before it moves out."

The Players

Major Thomas McKevitt, chief of operations for the Combat Maneuver Training Center (CMTC) and head of the exercise operations cell, outlined the crews involved in the two-minute drill.

"The training audience is 1st Armored Division, 2d Brigade, 1-1 Cavalry," he said. "The tanks and the Bradleys, and small-arms qualification within that, are the focus of the two-minute drill. We're doing squad live-fire exercises for the infantry to hone their skills before they progress to the Bradley Table XII, which is the platoon mounted and dismounted qualification. They're doing small-arms qualification while the Bradleys are qualifying Table VII and Table VIII... then

we bring them back together for Bradley Table XII, which is the platoon qualification table."

McKevitt continued, "We have 77 tank crews that will actually qualify, and 138 Bradley crews — 20 of those crews are air defense artillerymen, fighting on the older version of the Bradley, the Bradley Stinger Fighting Vehicle, but they still have to shoot the same tables as the infantry guys."

"For the cavalrymen who are shooting the M3 Bradley, they don't have the dismounted infantry, so they're shooting Table VII, Table VIII and then a Bradley Table X, or a scout Table X if you will," McKevitt explained. "That's not a platoon qualification table, it's a section. For this gunnery, they're shooting three-vehicle sections. The Bradley infantry are shooting Table VII, Table VIII, and Table XII. The tanks are shooting Tank Tables VII, VIII, and XII."

"Because units would normally work their way through Tables I through VI before shooting the qualification tables," McKevitt continued, "we're experiencing some of the minor problems that you would normally see on your preliminary tables. But by design, the two-minute drill is a condensed gun line. We knew if we had to execute this, we wouldn't have a whole lot of time to prepare these folks for future operations, so a lot of that had to be cut out."

"Normally, crews would use the preliminary tables and unit conduct of fire trainers, or UCFTs, to practice crew skills such as fire commands," McKevitt said. But because of the condensed gun line, they didn't have that opportunity. So we're seeing a lot of the mistakes that are usually made, and corrected, in the earlier tables. But that's okay, they're working through it, and that's the point. Plus, it's a confidence builder for these crews, with these weapons, that they can put steel on target."

McKevitt said some crews were firing their own systems, while some were using borrowed equipment. He explained, "1st Infantry Division has provided 14 M1 tanks and 14 M3 Bradleys in support of the two-minute drill. Those are split, so we've got a seven and seven Bradley split between Tables VII and VIII. And it's the same thing for the tank range, their equipment is split seven and seven between those two tables. Now, the Cavalry deployed with Apache Troop's equipment, and they've been sharing that equipment as they've progressed through the gun line, but 2d Brigade also provided a set, 14 and 14, that will be staged on the Bradley and tank Table XII. Because it's a platoon qualification, you're actually using four vehicles at a time, so they've got the combat systems there to support the qualification."

The Crews

Following an after-action review (AAR) on their Table VII shoot, during which they received all "T" or go ratings, a Bradley crew from 1st Platoon, Bandit Troop, I-1 Cav, which Bradley commander First Lieutenant Mark Sturgeon called "the best damn troop in the Army," talked about their experiences during the two-minute drill.

Sergeant Mathew Hintz, the gunner, said: "It went great. We haven't really got a lot of practice, we came down here with a week's notice. We shot and killed everything; we're doing good."

"Shooting an unfamiliar Bradley added some difficulty," Hintz said. "It takes a little getting used to when it's not your equipment, and you don't know all the deficiencies. But that's part of it — do a [preventive maintenance checks services] PMCS before you go out, know what's wrong with it, and as long as you know your job... you get over the deficiencies and go down range and kill stuff," he said.

Private First Class Garrett Pumphrey was filling in as driver for the gunnery. "Our driver's back in the rear; I'm a dismount, normally. It's good experience,"

he said. Pumphrey took some mild hits during the AAR, and said he had learned, "I need to pull up a little quicker on the berms when maneuvering to a fire position." But for a first outing, he said, he felt it went well.

Specialist Vincent Storer was a dismount for the crew. "When they need somebody to go in a building, or just checking to see what's out there, put HE (25mm high-explosive ammunition) forward, it's our job to do it." Storer said he was prepared to take over any other crew position as needed.

Special Teams: Observer/Controllers

Sergeant First Class Jesus Gonzalez is an observer/controller with the Timberwolves Team at CMTC. "I'm a platoon trainer, and normally I observe and control platoon-sized mechanized elements, either tank or Bradley," he said. On day three of the exercise Gonzalez said, "We've been here in Graf 6 days. We got alerted 7 days out, and we've been reconning all the ranges since January or February." He explained that a number of ranges would be in use throughout the exercise, "Squad live-fire is Range 307, and that's where the dismounted portion is being conducted." Gonzalez elaborated, "Another part of the Timberwolf Team is up there. We're doing Table VII for the Bradleys on Range 206, and Table VIII, qualification, is being conducted on 204."

Gonzalez conducted AARs for the gunnery crews, and said he'd seen mixed results in the early stages of firing. "A fair

assessment would be that each troop has crews that are brand new, and some that are more experienced," he said. "What we're trying to do is use not only the field manual covering Bradley gunnery, FM 23-1, but also a more realistic approach. We want them to get as much steel on target, as many bullets down range, as possible."

Gonzalez said the drill provided valuable training, especially for the crews that had never fired together. "You get thrown into a crew where the Bradley commander, gunner, and driver just met, and you could deploy at any time, then any amount of time spent behind the gun shooting bullets is valuable," he said.

Gonzalez said he thought the two-minute drill was well tailored to get crews ready for deployment. "There was never a question whether 7th ATC could do this," he said. "And I think it does help the units that are here — I would love to be on a Bradley crew, show up on a range, and find everything provided for."

Gonzalez said he would recommend one small change if the exercise were repeated. "The only thing that is a minus is that some of these guys are not shooting off of their own equipment," he said. "Every Bradley is different from every other Bradley — if you have a car, then I lend you mine, you're going to have to get a feel for it. With Bradleys... if nothing's tinkered with, and you boresight the weapon and know your boresight, you can lock it up and shoot a month later, and you'll know exactly what to expect."



Photo by SGT Manuel Torres-Cortes

"...by design, the two-minute drill is a condensed gun line. We knew if we had to execute this, we wouldn't have a whole lot of time to prepare these folks for future operations, so a lot of that had to be cut out."



"You get thrown into a crew where the Bradley commander, gunner, and driver just met, and you could deploy at any time, then any amount of time spent behind the gun shooting bullets is valuable."

Gonzalez suggested that the crews should boresight the equipment before firing. He explained, "2-2 Infantry provided the vehicles, and they boresighted them, but I think 1-1 Cav should have boresighted them, too. Then the crews would be completely confident that it was done right."

As crew-level gunnery went into its third day, Gonzalez said most of the hitches and hiccups had been worked through. "We had to iron out some of the issues: exactly how the flow of the crews coming through was going to work, and then you do have some equipment failures. Everybody talks about 'throughput,' they're trying to get these vehicles through, but first we had to establish how to run them through, what the unit's training objectives are and what we had to provide for the unit. Today is the third troop, or company, coming through, and from the first day its been a big change. The first day it took us four hours to shoot two vehicles, and yesterday and today we've shot 14, 15 vehicles and we still have plenty of time to shoot a couple more."

He said, "It's all syncing it together. We'll be here until we're done — say 130 crews are coming through, it's easy to do the math. If I know I can push 14 vehicles through a day, day and night, that tells me I'm going to be here about 2 weeks if everything goes perfectly. And like I said, the first day, it took four hours for two vehicles. You can't always count on 14 vehicles a day."

He added, "You have to understand that these guys are firing only two of the Bradley tables required for certification... The crews that are new would be doing better on VII if they had started with, maybe, the UCOFT and then Tables IV, V, and VI."

Gonzalez explained that skipping the earlier tables meant the crews were still a little rough as they went into the two-minute drill. He said, "One of the terms we use is 'switchology.' The crews have to learn where all the switches are," he said. "An experienced Bradley crewman can do it blindfolded, where the new guys would be bumping hands and struggling a little. But, they could have been told they were leaving in a week, and had no chance to fire at all. This drill is definitely a good compromise."

Special Teams: Logistics

Deployment orders were announced for 1AD the very week the drill kicked off, which seemed to add to the "big game" mentality of those involved in the exercise. And special teams were an integral part of the 7th ATC strategy, according to Major John Romero, 7th ATC deputy chief of staff for logistics.

"We have a lot of good professionals involved in supporting this," Romero said. He explained that many of them were drawn from Hohenfels' Combat Maneuver Training Center, including not only the observer-controllers to give AAR to the crews in gunnery, but subject-matter

experts in all aspects of training. As an example, he pointed to CMTC's Adler (German for 'eagle') Team, which serves as observer-controllers for support operations, working primarily with forward support battalions for maneuver units, when the team is "at home" in Hohenfels.

Romero said, "They've integrated themselves into the two-minute drill to facilitate logistics operations. They've used their doctrinal background, and by virtue of being OCs, have a lot of it as institutional knowledge. So they are probably the best example of the fact that we have all the tools. They're subject-matter experts in doctrine, they're probably the cream of their particular branch in the Army, and they see a lot of examples to learn from in the box at CMTC. They've used all that as part of their toolbox to do the business we're doing now — and it's made my job ten times easier."

"That's important because the job is not a small one," Romero said, "We're looking at about 1,100 soldiers from 1st Armored Division as the training audience." Exercise support, he said, consisted of more than 300 soldiers from the 1st Battalion, 4th Infantry Regiment (CMTC's OPFOR), and 246 from CMTC operations group in dedicated roles. Additional augmentees included around 160 support personnel, soldiers, and civilians, from 1AD, 11D, CMTC operations group, 1st Battalion, 4th Infantry, 7th ATC headquarters, and the 100th Area Support Group, Romero said.

"Logistically, it's a new experience for 7th ATC because we're replicating a doctrinal forward support battalion, we're replicating a doctrinal support platoon element, and we're replicating company support elements," he said. "That's a big plus for this, because now the training unit can come and concentrate on training. So you can just imagine what these 160 logistics guys are doing to replicate these functions."

One of the key people for logistics, he said, was Captain Frank Gilbertson, a member of the Adler Team, who served as battle captain for the two-minute drill logistics cell. Romero explained that the battle captain "addresses issues, tracks missions, and facilitates combat service support."

"As an example," Romero said, "say someone calls my battle captain and says, 'I need a bus here, to do this.' He'll link up with the trans chief and give him the mission and a task to execute. He's the central focal point for logistics operations."

Gilbertson said one of his main functions was to, “React to any shortfalls — make sure these ranges are hot, or that they don’t fail to go hot for any logistical shortfall. That’s what the whole G4 shop is doing.”

Since tasked to support the gunnery in Grafenwoehr months ago, Gilbertson said he has attended several meetings and video teleconferences devoted to planning the operation. “The first VTC that I attended was in January, but there was talk of it for some time before that,” he said. “Major Livingston, my boss, is the one who was doing more of the continual coordination with Major Romero while we were still in the waiting stage. But overall, through this whole thing, Major Romero has been on point, working this on a 24-hour-a-day basis. Once we got here, we fell right in with him and his shop.”

Issues his cell has been tracking, Gilbertson said, include information flow and accuracy. “The way this staff has reacted to the very short-fused logistical challenges has been outstanding. Every range has got more than enough ammo, fuel — we’re pulling in pieces from several different units that have never worked together, and we’re working with several different headquarters,” Gilbertson said, adding, “I’m very, very pleased with the performance. There are a lot of really smart people, civilians and green-suiters, who have come together to make this very difficult operation work.”

Special Teams: Operations

McKevitt described how the exercise was put together: “In the operations cell, we’re working 24/7, because when we’re firing the night tables... we still have to collect a lot of data that we have to keep track of. We’re not from Grafenwoehr — I’m the chief of operations at the Combat Maneuver Training Center, and we run exercise control down there during rotation. So when we developed the plan to support the two-minute drill, we knew that OC teams would be falling in on different ranges, whether they be small-arms ranges, or tank or Bradley ranges.”

He continued, “During rotations, S3 Operations, that’s who we are, the teams report to us continuously and we provide changes, FRAGOs (fragmentary orders) and guidance, based on training objectives for the rotational units. So when we developed the plan and knew these teams were going to be falling in up here, we thought, what better way to facilitate command and control than deploying us up here, so they would have a familiar voice, familiar SOPs, that sort of thing.”

McKevitt described the exercise headquarters as “a hodgepodge of folks.” He said, “You’ve got us providing the current operations, the battle tracking and command and control, then you’ve got the support cell with the G4 from 7th ATC, we’ve got support from the 100th ASG, we’ve got the ammo folks, we’ve got the G6, and it was challenging at first.”

There wasn’t much time for setup before the ranges went hot, he said. “When we came in here the first day, at T minus seven, there were no phone lines, no computer lines, the maps were bare, we had to readjust furniture — we had to posture the headquarters for success,” he said. “We had already done a reconnaissance, so we knew where we were going, but once everybody ‘closed,’ we did a lot of detail work — move this guy here, that guy there, get a fax machine, let’s get the radios mounted here and that sort of thing. The advance party did a lot of that, because by the time I came up here, we were pretty much set. We just had to fine-tune everything.”

Short of an actual deployment, McKevitt said, he had never seen something so complex, involving so many people from different units, come together so quickly. “Typically, we see it at CMTC when a brigade comes into a rotation, but it is phased. We’ll have a lone task force come in, there’ll be some STX [simulated training exercise] training, they’ll start the rotation, halfway through the rotation they’ll be joined by another task force and they’ll do brigade ops, then one task force will leave, another one will come in — so it’s not all at once.”

But the effort has been worth it, McKevitt said. “It’s been a great opportunity to help prepare the 1st Armored Division for a possible deployment. If they can leave here better than when they came here, and be successful wherever they’re going, I think as an organization it will feel good that we had a positive impact on their success. It’s a team effort,” he said.

“CMTC and 7th ATC work together well on a daily basis,” McKevitt said. “They’re our higher headquarters. But, for instance, I really had never worked with Lieutenant Colonel Russell, the 7th ATC G3, before. And that aspect of bringing us together, working with the 7th ATC staff, I think it’s a benefit. I know a lot more people now, and that’s not going to hurt operations in the future, if we ever have to do something like this again.”

Flexibility and Professionalism

When the commanding general, BG Robert M. Williams, summed up the two-

minute drill, he stressed the “flexibility and agility” of the people involved.

“One of the great virtues of the 7th ATC and CMTC is that they have traditionally been an extremely flexible organization,” Williams said. “Whenever we conduct rotations at CMTC to train the brigades, every one of them is different. That has, over the years, forced us to look at rotations and the way we do business in a different way than, perhaps, the NTC [National Training Center] and JRTC [Joint Readiness Training Center] do. In having to look at ourselves differently, and having to structure ourselves to meet those different types of rotational requirements, we have built in to the institution a kind of flexibility that I don’t think would be there otherwise.”

That flexibility, he said, means 7th ATC can adapt quickly to new training requirements. “I think this has been a hallmark of the 7th ATC for a number of years now,” Williams said. “The two-minute drill, though, brings it into sharp focus, because without that embedded flexibility and agility, forged over a number of years of training the force here in Europe, we would never have been able to pull this off.”

The two-minute drill capped off a challenging “season” for his command, Williams said.

“The last three months have been very challenging months for the 7th ATC, the 100th ASG, and CMTC, as we have conducted a whole host of exercises in support of our soldiers and units who are earmarked against contingency ops,” he said. “The work that has been done by the people who work in these organizations has been magnificent. In the months to come, we very possibly will watch these units we have trained perform momentous acts. It’s important that all the people who work at 7th ATC and CMTC understand that the success of these great organizations began right here. We should be extremely proud of our accomplishments. I’m very proud of our people, and I’m very proud to be part of their team.”



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Analog Leaders on the Digital Battlefield

by Lieutenant Colonel John R. Drebus

Digital vs. Analog

The application of digital technology to the battlefield is promising a revolution in land warfare. In a broad sense, the term “digital” is used to describe the electronic sensors, computers, software, databases, and communications that provide a command and control advantage. A more precise definition of digital, however, is in the characterization of the signal or data representation that these devices use.

An analog system or device operates by using directly measurable quantities such as voltages, rotations, or positions. The result is a continuous and varying signal. Digital devices, on the other hand, represent a signal or waveform as a series of discrete numbers — hence the term digital. While this digital model may only approximate the original input at a point in time, digital information has the advantage of being more accurately transmitted, stored, and reproduced. A phonograph record is analog, a compact disk is digital. The optical range finder used on the older tanks was analog, the laser rangefinder is digital. For the sake of simplicity, this article refers to any control system or measuring tool that does not use discrete numbers as analog, those that do as digital.

Unlike much of the electronic equipment they use, soldiers are analog creatures. Like all humans, they have essentially

two biological methods of control: the nervous system and the endocrine system. The nervous system, the more highly developed and precise, is centered in the brain and accounts for motor control, sensory input, and reason. Although the nervous system is often compared to a digital computer, it is an analog system that transmits minute electrical impulses along the neurons and uses chemicals to cross the synapse between nerve endings. Each brain is unique and exhibits varying results of performance.

The other human control method, the endocrine system, consists of a cruder involuntary form of signaling, using glands to flood the bloodstream with chemicals called hormones. An example is the adrenal glands that secrete epinephrine (adrenaline) when a person experiences anger or fear. This hormone causes a quickening pulse, faster breathing, and increased metabolism, all which are useful responses in fight-or-flight situations. Both of these control methods create useful reactions, but their accuracy and repeatability are neither as precise nor as reliable as those of a digital system.

Considering these limitations, how can a leader use digital technology to perform his job while taking advantage of his own analog characteristics to lead analog soldiers? This article will briefly examine the role of digital and analog systems and their impact on four aspects

of military leadership — training, combat skills, decisiveness, and courage.

Training

Unlike computers and the simulators used to train them, simply inserting a disk of digital instructions cannot quickly program soldiers. The soldier learns via his analog senses — primarily sight, hearing, and touch. Each soldier also has a different mental capacity for understanding and retention. Some will quickly assimilate new skills while others will require more practice.

Digital battlefield simulators have drastically altered military training and can tailor the situation to the individual soldier’s training needs. Computers and sensors are now used to imitate almost any combat scenario imaginable. Soldiers are repeatedly subjected to intense simulated combat, improving their skills with each segment of the training exercise. This is accomplished without large training areas, expending critical resources such as fuel and ammunition, or exposing soldiers to the safety risks inherent with using heavy equipment under adverse conditions.

Unfortunately, the conditions under which this training is applied are often sterile in terms of the physical environment that will actually be encountered in the field. The digital simulations should be supplemented with training situations *out-*

side of the classroom while stressing the analog senses of the soldier through physical exertion, lack of sleep, and exposure to weather. Ideally, simulation systems are integrated with actual weapons sights and combat vehicle data displays to offer the flexibility of digital simulation within a more realistic physical environment. Making decisions in a cramped, noisy armored vehicle with cold rain trickling down your neck is much different than the same exercise sitting in a comfortable chair, in an air-conditioned classroom, with plumbing and a cafeteria available down the hall.

The fact that machines perform repetitive tasks better than humans is widely recognized. Machines, such as automatic loaders and optical/electronic devices, that perform target acquisition and aiming are replacing many mundane tasks. Some prognosticators have even predicted the demise of humans on the battlefield, replaced by robot counterparts programmed for every known eventuality. The problem is that machines will cope only with *known* or *anticipated* circumstances. Programmed machines do not respond well to surprises, and history demonstrates that the battlefield is filled with surprises.

Fortunately, humans have cognitive skills that computers still do not possess, despite advances in such fields as artificial intelligence, genetic programming, and neural networks. These unique capabilities include creativity, inventiveness, and the ability to adapt to changing and unexpected situations. Every soldier has a favorite story or two about an ingenious field expedient that was devised when the engineered equipment failed or the school solution did not work. In combat, necessity truly is the mother of invention, particularly on those battlefields where a new or superior weapon is first introduced with lethal surprise. At those times, there is no luxury of waiting for research and development to respond with a solution. Soldiers must find solutions using innovative tactics and the tools at hand. Some of the most interesting and useful training documents are those illustrating lessons learned and ingenious field expedients.

Training should therefore include a strong emphasis on encouraging the unique creative analog capabilities of the soldier. Since war will always contain surprise and uncertainty, surprise and uncertainty should be a staple of training exercises. How do you effectively employ your weapons in a night attack when half of them have suddenly lost their night vision capability? How do you react in train-

ing when a key system is “unplugged” by the instructor? What tactics do you use when the enemy suddenly behaves irrationally or does not follow expected doctrinal behavior? The rewards in training should not necessarily go to those who best conform, but rather to those who display innovation and initiative in meeting unexpected challenges.

Combat Skills

Modern technology is truly amazing. The warrior pushes the button of a laser range finder and obtains an instantaneous precise digital readout of range to target — the technical variable that most frequently causes aiming error and prevents accurate fire. A button is pushed on a global positioning satellite (GPS) receiver and it provides another digital readout of exact coordinates — the key parameter in land navigation. Other buttons are used for sending digital spot reports of combat action, and digital screens display digital positions of friendly and enemy forces. Truly amazing and incredibly useful — when it all works.

While the military force that can master and use advanced technology has a tremendous advantage over its enemy, the more advanced the technology becomes, the greater the loss in capability when it fails. Unfortunately, all technology can fail, even if only temporarily. Indeed, the enemy will go to great lengths

to cause it to fail. If a soldier knows how to use only modern digital tools, he becomes vulnerable if those tools malfunction.

If GPS satellites are destroyed, will the leader become hopelessly lost? Or will he pick up an inexpensive magnetic compass and a paper map (both analog devices) to find his way? When the battery on the laser range finder unexpectedly expires, will the leader use that compass, map, and field glasses with reticle (another simple analog device) and adjust artillery fire? When the computer on his combat vehicle fails, will the leader become helpless and ineffective or will he reach into his pocket and use a small notebook of reporting templates to inform his superiors (verbally or by messenger) of the battle’s progress?

The history of warfare has always been part of the intellectual nourishment of successful military leaders. In the future, however, the most successful leaders will be military technology history students. They will retain the analog skills and tools as backups in the event that enemy action or the interruption of repair and supply deprives them of their primary electronic digital tools. If the digital weapons malfunction, it may become necessary to fix more primitive, but reliable, analog “bayonets” and continue the fight.



“Unlike much of the electronic equipment they use, soldiers are analog creatures. Like all humans, they have essentially two biological methods of control: the nervous system and the endocrine system. The nervous system, the more highly developed and precise, is centered in the brain and accounts for motor control, sensory input, and reason.”

Decisiveness

The greatest promise of the digital battlefield is that it will finally clear away the fog of war. Modern sensor technology, combined with digital communications and computer data processing, will provide leaders at all levels with an accurate assessment of enemy positions and movements while also pinpointing friendly forces in the confusion of combat. The force that possesses this capability will make faster and better decisions than their opponents and thus will maintain the initiative. Again, this is a tremendous tool — when it works and if it is used properly.

Unfortunately, massive amounts of digital transmissions could replace the fog of war with a swamp of data. As bandwidth and transmission speeds increase, the temptation is to use the entire capacity. However, just because data are available does not mean that they are useful. Senior leaders (staff and line) may be tempted to deviate from their primary tasks, such as establishing the operations plan, providing logistics and fire support, and directing the overall battle, and instead become involved in micromanaging subordinate units. A division commander and his staff should not usurp the initiative of the platoon leader in the detailed placement of his forces simply because they can observe his symbols on a computer screen. The symbols

are merely digital representations of reality. The platoon leader's analog senses more directly perceive that reality.

Two other cautions about digital data must be made. The first is quantity. Technology now allows massive amounts of data to be quickly assimilated into databases. A leader should not have his focus and concentration distracted with information that is untimely or irrelevant to his situation. The second caution is quality. The enemy will most likely be using his most current technology to create digital deception. It is a fallacy to assume that anything displayed on a computer screen is somehow more accurate than what is viewed on a piece of paper or heard as spoken words. Until raw data are analyzed and converted into information and intelligence, they are more of a detractor than a contributor to the leader's decision process.

Instead of speeding up decisions, the convenient and steady flow of digital information could potentially have the opposite effect. If each transmission brings with it a more complete and accurate picture of a developing situation, the temptation may be to delay a decision until an even better appraisal of the battlefield has been obtained. A commander could experience "data paralysis," afraid to make a decision and take action, fearing that the next transmission will provide information that makes his prior

decision appear unwise or hasty. Or, if the digital network has temporarily failed, a leader may have become so dependent on the steady flow of information that he will delay until the digital capability has been restored, lest he make what is later perceived to be a wrong decision.

Perhaps the best advice to combat leaders regarding decisiveness, even on the digital battlefield, is that of General George S. Patton Jr., who stated in his memoirs, "Don't delay: the best is the enemy of the good. By this I mean that a good plan violently executed now is better than a perfect plan next week."¹ While the leader on the digital battlefield should make effective use of technological tools, he should not abandon his analog characteristics: instinct, intuition, experience, and audacity. These have won many battles in the past and will continue to do so in the future.

Courage

There are circumstances in which no amount of accurate digital information is going to impact the analog functions of the soldier. A paratrooper standing in the open door of a screaming aircraft may have digital sensors that tell him precise airspeed, wind direction, altitude, and speed of descent. Still, his analog nervous and endocrine systems will be working overtime as he fights to control his composure and leap from the door. Fear, fatigue, stress, cold, thirst, and hunger — these are the unwelcome companions of the soldier. A major challenge of any leader is assisting his troops to conquer these enemies so that the mission is accomplished.

Leaders, by definition, lead by example from the front rather than push from a command and control center in the rear. Effective leadership still demands personal contact. In his classic book, *Men Against Fire*, S.L.A. Marshall wrote, "On the field of fire it is the touch of human nature which gives men courage...it is the loss of this touch which freezes men and impairs all action."² Only by looking into his soldiers' eyes and hearing with his own ears the tenor of their voices, can a leader assess the analog signals that reveal to him the physical condition and morale of his troops. To the extent that digital technology provides a commander with portable data communications and increased mobility, these tools will allow personal reconnaissance and face-to-face contact with his soldiers while still maintaining contact with his staff. However, if the technology chains

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"Technology is morally neutral. Advances in command and control digital electronics and software do not absolve the battlefield leader from the toughest decisions — when to kill and whom to kill. Trends in warfare are moving toward an increase in stability operations and combat in urban areas where it is difficult to discern friend from foe, civilian from combatant."





Air Integration in the Heavy Division: First Attack's Lessons Learned from the NTC

by Captain Henry C. Perry Jr., Captain Murphy A. Caine, and First Lieutenant Joseph G. Bruhl

The process of air-ground integration is the most complex and important step to an attack aviation unit's ability to dominate the enemy on the battlefield. Done well, it allows aviation assets to be the combat multiplier that facilitates the ground unit's mission accomplishment with minimal casualties. Done poorly, it can easily lead to confusion, fratricide, and mission failure.

The 1st Battalion, 227th Aviation Regiment (First Attack), 1st Cavalry Division, Fort Hood, Texas, deployed in support of 1st Brigade Combat Team (1BCT) to the National Training Center (NTC) for rotation 03-03. This article explains the fundamentals learned that allowed First Attack to evolve from a unit struggling to support the ground battalion, into a dominant force on the battlefields of the NTC. This article is written in three parts to highlight the three key phases of air-ground integration: the liaison process with the brigade combat team; the integration with the ground battalion during the mission planning cycle; and the mission execution phase.

Liaison Mission Planning With the Maneuver Brigade

*"Effective liaison between Army aviation units and supported elements is imperative."*¹

To be an effective aviation LNO to a mechanized or armor brigade, the officer must know the supported maneuver brigade's planning standard operation procedures (PSOP), the military decision-

making process (MDMP) and U.S. Army Field Manual (FM) 101-5, *Staff Organization and Operations*, and lessons learned/trends from sources such as the Center for Army Lessons Learned (CALL), and the NTC.²

National Training Center 03-03 rotation served as the 1st Cavalry Division's first "digital" rotation. The division deployed 1st Brigade as the maneuver headquarters and the division tactical command post (DTAC), and 4th Brigade tactical air command (TAC) to serve as white cell. Among the deployed battalion sized task forces, TF Attack, lead by 1-227th Aviation Battalion supported the division deep fight as well as 1BCT's close fight. The TF Attack liaison officer (LNO) to the 1BCT had a magnitude of responsibilities that equally affected the aviation liaison officer's responsibilities regarding the integration of air and ground during brigade level planning and mission execution. This article serves as lessons learned for junior officers serving as aviation LNOs for the first time. Reading and understanding tactics, techniques, and procedures (TTP) from someone who has served as an aviation LNO can only enhance another officer's experiences and make our military more effective in defeating the enemy.

Experience. Habitual training with the supported ground unit is extremely valuable and critical to not only understanding how the maneuver brigade fights and integrates aviation, but it also enables the LNO to develop a relationship with the

planning staff. Familiarization with the brigade PSOP ensures the LNO is adequately prepared to participate in the MDMP. The PSOP establishes the timeline and unique method in which the planners execute the mission-development process. My experience with 1BCT included external evaluations (EXEVALs) and NTC 03-03. The 1BCT S3 and XO progressively improved their MDMP TTPs as the training progressed. Beginning during the EXEVALs, 1BCT received the mission and conducted a mission analysis brief. Their MDMP was fast paced and left little time to break contact and receive guidance from the commander before planning began. Time permitting, the aviation battalion commander provided guidance before going into the course of action (COA) development and wargaming. It is critical to note that without the means to communicate with the aviation commander, the LNO must know the tactical SOP (TACSOP) — or know how the commander employs his aircraft. The 227th commander fought by his TACSOP and when all else failed, his "standard play" was to maneuver companies with economy of force forward to exploit the capabilities of the Longbow and its fire control radar.

COA development TTP. During the COA development and into wargaming, the LNO shoulders the responsibility of including attack and lift aviation assets in accordance with the aviation commander's intent, and in such a manner that facilitates the ground scheme of maneuver. One important TTP is depicting "pro-

posed” graphics for all COAs during the MDMP. The proposed graphics allow for deconfliction of routes and attack-by-fire positions (ABFs), as well as assist in fires coordination. Each COA maintains separate graphics, and with proposed aviation graphics, once a COA is selected and wargamed in a time constrained environment, the graphics can be published as is. The aviation task force can then develop their plan knowing the air coordination measures are guides for planning within the ground scheme of maneuver. With the operation order (OPORD) in hand, TF Attack refined the initial plan and pushed changes to the LNO for integration at the brigade level. The aviation LNO then ensured the subordinate graphical changes were incorporated, deconflicted, and present on all rehearsal boards and digital equipment in the 1BCT TOC.

Fires deconfliction. As the aviation LNO at 1BCT, the most difficult Army airspace command and control coordination piece to deconflict was indirect fires and location of “known” positioned artillery areas (PAAs). The aviation LNO depicted the “proposed” flight routes and ABFs during COA development and wargaming, but once the battalion had their two-thirds time to plan and submit graphics, it was extremely difficult to ensure the fires were clear. I attended the fire support rehearsal with the aviation fire support officer (FSO) before each mission. At the rehearsal, I briefed task and purpose along with scheme of maneuver, while the FSO discussed planned targets, as well as templated suppression of enemy air defense (SEAD), if available. Together, we attempted to synchronize our plan with the brigade fire support plan to ensure deconfliction and timing. During this process, we experienced several conflicts when routes established at battalion level needed to be altered to facilitate the fire support plan. In addition to ensuring the fires plan was synchronized, we also discussed fire support coordination measures to mitigate risk and reduce fratricide. Fires deconfliction is continuous through mission completion or change of mission at the NTC.

Task and purpose. FM 1-111, *Aviation Brigade*, states, “The LNO recommends methods of employing aviation forces into the scheme of maneuver to maximize the capabilities of the aviation force.”³ During the COA development, the aviation LNO recommended possible missions, as well as task and purpose for attack and lift aviation assets in support of the ground commander’s mission. The most effective way to communicate

the recommended aviation COA is by task and purpose. This communication serves two purposes — the planning staff at the brigade receives a clearly defined aviation concept and, as with all COA developments and wargaming, the Battlefield Operating System (BOS) cards assist in writing the order. A clearly stated task and purpose allows the armor or infantry captain writing the final OPORD to express the aviation mission in aviation language. Make time during orders production to ensure the aviation piece is written correctly and addresses everything the aviation task force is to accomplish in support of the ground scheme of maneuver. Conducting quality control during orders production resulted in the aviation LNO spending less time at the battalion planner level sending requests for information (RFI) to brigade, and more time shaping and refining the aviation commander’s concept into a succinct and lethal mission.

Tools/information. Ensuring that the LNO has the proper tools/information to be effective while planning at the higher headquarters is a must. At a minimum, the LNO must provide the ground commander with accurate combat power, to include status of forward area rearm/refuel points (FARPs) and resupply concerns. According to FM 1-111, the LNO must be armed with at least an SOP addressing:

- Unit organization, capabilities, limitations, and status, such as aircraft, vehicles, and personnel.
- Aviation operation employment roles, employment principles, and missions.
- Aircraft capabilities and limitations by type.
- Aviation staff estimate.
- Specific checklists, such as air assault, deep attack, and air movement tables.
- Common equipment weights.
- Safety briefing checklist.
- Class III/V (FARP) operations, capabilities, and limitations.
- Class V configurations.
- Maintenance considerations.
- Crew endurance/fighter management.
- LNO equipment list.⁴

Any ground commander will be especially concerned with capabilities, employment roles, FARP status, and crew endurance/fighter management. Typically, the brigade gives battlefield update briefs (BUB) to the brigade commander

and these items are generally of great interest, whether briefing him prior to a mission or going into mission development.

Ground scheme of maneuver. The aviation LNO must understand the ground scheme of maneuver. Without an understanding of the ground maneuver task and purpose, the aviation LNO cannot properly plan to support the ground scheme of maneuver. The LNO can identify what missions the aviation commander can conduct to not only shape but also support the ground fight. In addition to understanding the ground maneuver for planning purposes, it is likely that the aviation commander or S3 may require an update. A large part of the liaison process revolves around effectively communicating the ground maneuver to the aviation battalion.

Staff estimates. A thorough knowledge of the ground scheme of maneuver and the aviation battalion commander’s intent also enables the LNO to contribute meaningful running staff updates during the conduct of a mission. Often the enemy or friendly situation was not developed as the brigade planned and in the TOC, the brigade XO huddled the BOS representatives for staff estimates. Only by constantly monitoring battalion nets and voice communications with the battalion S3 or battle captain, was the aviation LNO able to make informed analysis and estimates. In one particular instance, the brigade XO directed a new course of action for the staff to estimate and derive alternative task and purpose for each BOS. The brigade commander expected a recommended COA from the XO and he in turn relied on the individual experts to say how to best use their assets. Running staff estimates and situational awareness is the only way to make informed analysis and estimates.

The liaison officer is critical to the aviation unit’s success. Nothing replaces the direct coordination between the ground commander and the aviation commander, but the LNO’s involvement in mission planning and execution is critical. Successful integration between air and ground derives from knowing how the aviation commander intends to fight his unit, and applying that intent allows the ground commander to achieve his objective. If the aviation mission remains flexible and allows the aviation commander to place attack and lift assets at the critical point in the fight while maintaining the ability to deconflict direct and indirect fires, then the LNO properly communicated, coordinated, and synchronized the aviation commander’s intent into



“During EXEVALs, we learned that without an aviation liaison, the ground commander would develop a plan without attack helicopter support then attempt to work aviation assets into the plan afterwards. This type of planning resulted in the ground commander preventing the aviation unit from helping him accomplish his mission with fewer casualties.”

the ground plan. Being an LNO to any unit is a tough learning experience — go into it armed with the proper tools and information to be the most effective liaison officer you can be.

Mission Planning With the Ground Battalion

Of the six force-on-force missions flown by Bravo Company, 1-227th Aviation Regiment (The Reapers) during the NTC 03-03 rotation, five directly supported 2d Squadron, 5th Cavalry (Mech) and 2d Squadron, 8th Cavalry (Armor). For an attack battalion organic to a heavy division, there is no reason to think that our wartime mission would be any different. Hence, it is critical that we understand and master the complexities surrounding air-ground integration. Lessons learned and applied during EXEVALs and previous NTC missions, allowed B Company, 1-227 to evolve from being unable to receive a single clearance to engage during EXEVALs, to being one of 1BCT’s most deadly forces on the battlefield — credited for 28 percent of OPFOR vehicles destroyed in their area of operation. The Reapers discovered that the key to success (and increased success) lies not in the pilots’ flying or targeting abilities, but rather in the ability of the ground commander to understand how to best employ weapons systems to accomplish the mission.

This process begins at home station by using officer professional development (OPD). The Reapers used a hands-on approach, which began by scheduling a day for a sister ground unit to visit The Reap-

ers’ hanger to see the aircraft. Aviators gave the ground unit leaders instruction on the AH-64’s capabilities and limitations, fostering discussion on the development of future air-ground TTPs. A week later, the ground unit returned the favor and the aviators went to their motor pool to receive an OPD on their mission and equipment. Working ground commanders and platoon leaders into the front seat of simulator periods will also pay big dividends during mission execution. Follow up that training with platoon-level battle drills during the ground unit’s force-on-force field training exercise, refined TTPs, and share knowledge with battalion and brigade staffs through formal after-action reviews and an OPD prior to deploying.

During home station training, we learned the strengths and weaknesses of the Apache when applied in the close fight. The AH-64’s strengths included speed of maneuver across the depth of the battlefield; the ability to detect and observe targets well forward of a ground unit’s scouts; and the ability to employ direct fire well forward of direct (and sometimes indirect) fire systems. The AH-64’s weaknesses included limited ability to positively identify targets under the first generation of forward-looking infrared (FLIR); vulnerability to man-portable air defense systems (MANPADS) and small-arms fire; limited station time and power limitations in high temperature and high pressure altitude environments.

During EXEVALs, we learned that without an aviation liaison, the ground com-

mander would develop a plan without attack helicopter support then attempt to work aviation assets into the plan afterwards. This type of planning resulted in the ground commander preventing the aviation unit from helping him accomplish his mission with fewer casualties. In contrast, a well-developed, well-rehearsed air-integration plan will maximize the strengths and ameliorate the weaknesses of the Apache in the close fight. Below is a brief discussion on each of the five fundamentals of air-ground integration planning. This discussion summarizes each fundamental and highlights how applying — or failing to apply — air-ground integration can make the difference between mission success and mission failure. The fundamentals of air-ground integration include:

Liaison with the ground unit. The Attack helicopter company must provide a liaison to the ground unit who understands the brigade plan and will remain with the ground battalion from MDMP through rehearsal. If done correctly, the liaison becomes the most important person to the success of the Apache unit’s mission, even though it is likely that the liaison will be out of duty day to fly the mission himself. The purpose of the liaison is to help the ground commander realize how to best use Apaches to accomplish the mission. This may include convincing the ground commander to change his key tasks to allow the Apaches to operate safely in their attack-by-fire positions, enabling them to facilitate mission accomplishment. For example, a heavy



"Once the groundwork has been laid, the plans integrated and the liaison work completed, the final step is integration in real time on the battlefield. For the air-ground integration plan to succeed, leaders must adapt on a fluid, and often nonlinear, battlefield. The keys to success once the fight begins are communication, intelligence, maneuver, clearance of direct fires, and integration of indirect fires."

unit ground commander will most likely bypass air defense artillery (ADA) and MANPADS during an attack, unless antitank systems are attached. However, if he understands that by focusing his scouts or artillery on destroying those systems, he will allow the Apaches to safely destroy the enemy, and protecting his final objective, he may make the destruction of ADA a key task. The liaison is like Tom Cruise talking to Cuba Gooding Jr. in the movie *Jerry McGuire*, "Ground Commander, help me help you!"

To have the respect and attention of the ground battalion staff during MDMP, the liaison needs to be a platoon leader, or very senior warrant officer. Sending a junior warrant officer often results in the ground unit ignoring his advise. It is the responsibility of the aviation liaison to ensure that the following four fundamentals are considered and applied to the plan during MDMP:

Plan to employ Apaches decisively at a selected few decisive moments in the battle. Due to Apache's vulnerability to MANPADS and small-arms fire, performing "over-the-shoulder" operations above a moving heavy unit, which may bypass enemy ADA and dismounts, will inevitably end in failure. Instead, force the ground unit to identify the key moments in the battle and focus using Apaches on deciding the battle through dominating the enemy during those moments.

In essence, use Apaches to shape the battle so the ground unit can retain the initiative, rather than using Apaches in a reactionary manner through "911 calls." Destroying an enemy unit protecting an obstacle, stopping a counterattacking force, destroying enemy vehicles in defilade, or pulling flank security as a friendly unit maneuvers through an open valley, are all example of how Apaches can shape the battle at decisive moments. For the remainder of the time, Apaches should not hover above potentially bypassed enemy locations, but instead wait in a holding or assembly area on the friendly side of the enemy front-line trace.

Ensure the Apache commander platoon leader talks directly to the ground company commander in contact during mission execution. During the mission window, nothing is more essential to mission accomplishment than situational awareness. Those who fly Apaches understand that FLIR's limitations can make situational awareness extremely difficult, and the Longbow's Fire Control Radar cannot tell friend from foe. Once the ground battalion commander has determined that a decisive moment of the battle has arrived, he must trust the person who has the best situational awareness to use Apache support decisively. Usually, that person can be a ground company commander, a platoon leader, S3, or scout platoon leader. The battalion

commander can always reach the Apache air mission commander or platoon leader on the company net if he needs them.

Establish direct communication between Apache leaders and the ground battalion's fire support officer (FSO), both during the planning and execution phase. During the mission, the brigade FSO will not allow artillery to be called into a moving ground unit's battlespace unless it comes from that ground unit's own fire direction center (FDC). Therefore, the Aviation unit's FSO is useless in processing calls for fire from line of departure time forward. The Apache unit liaison must establish a connection during MDMP so that Apache leaders can call artillery directly through the ground unit's FSO. Due to the ability of the fire control radar and the target acquisition data system to pick up targets well beyond the ground unit's standoff range, this link has the potential of being the key to mission accomplishment with minimal casualties.

Establish progressive control measures to deconflict fires and prevent fratricide. Once Apaches are asked to positively identify targets under FLIR in a battle where friendly and enemy vehicles are intermixed, their effectiveness is about 25 percent of the control measure beyond which Apaches know they are cleared to fire. In the Longbow, where such control measures can be built in the automated mission planning system and

visually depicted on the tactical situation display page, the importance of using planned and briefed control measures is magnified. Most importantly, the control measures need to be progressive, meaning as the battle develops and the friendly ground forces advance, the control measures must move forward as well. We found the most successful control measures were restricted fire lines or phase lines. As the lead company commander advances through zone, he changes the active control measure to keep it just ahead of the friendly front-line trace, allowing his Apache support to interdict and destroy enemy units prior to them making contact with friendly forces.

These fundamentals cannot be successfully discussed or applied for the first time during mission execution. They need to be applied during the mission's planning, briefings, and rehearsals. If the mission timeline does not allow for a liaison to participate in the ground unit planning process, every effort needs to be made to establish some sort of communication with the ground commander using radios or Force XXI battle command brigade and below (FBCB2). Apaches, even the Longbow, can be rendered useless to the ground commander if they are asked to save, rather than shape, the battle. In the world of air-ground integration, the battle can be won or lost before it even begins.

Battle Execution: Real Time Integration

Once the groundwork has been laid, the plans integrated and the liaison work completed, the final step is integration in real time on the battlefield. For the air-ground integration plan to succeed, leaders must adapt on a fluid, and often nonlinear, battlefield. The keys to success once the fight begins are communication, intelligence, maneuver, clearance of direct fires, and integration of indirect fires.

Communication. It is imperative that communication is established between the ground maneuver and Apache elements at the lowest level. An Apache team or platoon leader should be talking directly with the ground commander or the forward-most company in contact. This focuses the Apache's efforts in the most timely and accurate manner. During simultaneous operations, such as close combat attacks, screens, and deliberate attacks, the Apaches must be able to communicate directly with the ground fire support element (FSE) and the ground S2. Without direct communication, the other elements required for success are impossible.

Ideal communication would involve the Apache team/platoon leader speaking directly to the forward company commander in contact. During the most successful fights during NTC Rotation 03-03, company commanders of engaging elements passed targets directly to the Apaches for destruction. This method of direct target handover proved to be very effective. Once the grid was passed, the Apaches could store the new target, slave to the vicinity, and engage. The need for any further identification was unnecessary. While they did this over the battalion net, it would have worked to "declutter" the communication, if the Apaches could be pushed down to the company net.

Perhaps the greatest challenge in communicating comes in adding yet another voice to an already crowded ground maneuver net. However, it is not recommended to have a separate FM frequency for the Apaches to communicate with the ground commander. Monitoring the ground maneuver's battalion frequency greatly enhances situational awareness for the Apaches.

Intelligence. On arrival in the battlespace, the Apaches need to establish direct coordination with the ground maneuver element for an intelligence update. Due to the time this consumes, if radio communication is possible, it should be accomplished prior to departing the holding area. Doing this on a separate frequency allows for a more thorough handover than could be done on the command net.

Critical information is required from the ground maneuver S2 and includes front-line trace, location of scout platoons, bypassed enemy, combat observation lasting team (COLT) locations, and the progress of the ground unit in the fight. This information enables the Apaches to make initial adjustments to their original plan and react accordingly. Also, the location of scout platoons and the COLT platoon provides initial controls for direct and indirect fires.

Providing the progress of the ground unit during their maneuver can be accomplished very succinctly by using key words from a common event/time matrix. This is a quick method of providing critical situational awareness. Armed with this information, and based on the liaison work, the Apaches can adjust the restricted fire line and coordinated fire line and additional control measures without further coordination.

Maneuver. To control movement and maneuver in zone, Apaches use many

control measures similar to ground maneuver units. These must be the same for the ground and air assets. This negates confusion and clutter on maps, and facilitates a common maneuver language.

When selecting air availability balance fires (ABFs), the liaison should ensure that they directly support decisive points in the ground scheme of maneuver. When occupying hasty ABFs, it is important for the Apache to consider the location and activity of friendly maneuver elements. Avoid occupying preplanned or hasty ABFs that have ground forces collocated with them. The dust and wind effects of a hovering Apache degrade the effectiveness of the friendly forces to observe and engage the enemy. The Apache is a high pay-off target for the enemy commander, and therefore, naturally attracts indirect fire. To avoid drawing indirect fire on friendly positions, do not collocate Apaches in ABFs with friendly forces present.

Clearance of direct fire. Clearance of direct fires is the most critical element of air-ground integration once the fight has begun. To prevent fratricide, there must be a standard and well-rehearsed method of clearance for direct fires. The front-line trace cannot be as simple as a north-south grid line, if friendly and enemy forces are not clearly separated by that grid line. It is better to use an event matrix that corresponds with progressive control measures that incorporate the expectation of a nonlinear front-line trace. Otherwise, situational awareness can become blurred, and each target will have to be cleared one by one, slowing down the fight tremendously, and threatening the security of the Apache's waiting for clearance to fire. In different portions of the zone, the front-line trace will be different. Therefore, the front-line trace needs to be given in north-south grids, with an accompanying east-west line to provide breadth of control.

For example, instead of calling front-line trace positions, the ground commander can call event "EMILY," which means 15 minutes from breach, front-line trace as depicted, Apaches clear to destroy enemy platoon overwatching the obstacle from K51, preparatory fires on K51 complete.

The most significant challenge in clearing direct fires comes in dealing with the intermixing of friendly and enemy forces. For this reason, it is important to reiterate how critical bypassed enemy locations are in the battle handover. If the

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The October War

by Captain William C. Brown

Prelude to the Assault

The October War of 1973 is known by many names. The Arab nations call it the Ramadan War and the Israelis call it the Yom Kippur War. This conflict was fought on Muslim and Jewish Holy days — an advantage to the Muslims and a hindrance to the Israelis.

The October War of 1973 actually began when the Six Day War of 1967 ended. The results of this conflict could be compared to the Arab nation's "Versailles Treaty of 1918," as it had with the post-World War I nation of Germany. The Jordanians lost control of the city of Jerusalem and were dealt a severe blow in the loss of the West Bank of the Jordan River. As a result of the Six Day War, the Egyptians lost the entire Sinai Peninsula and strategic use of the Suez Canal. The Syrians lost two-thirds of its air force by the second day of the conflict, and at the end of the Six Day War, the Golan Heights was in Israeli hands. The Six Day War would not be the end of Arab hostilities toward the Israelis, but a continuation of past hostilities.

During March 1969, former Egyptian President, Gamal Abd al Nasser of Egypt, would publicly renounce the June 1967 Cease-Fire Agreement between Egypt and Israel. This would begin the War of Attrition (1967-1971). President Nasser knew that the Israeli Defense Forces were primarily made up of reservists and could not sustain a long conflict or afford a large loss of manpower and materials. During the War of Attrition, the Egyptians would launch large artillery attacks against the Israeli fortifications along the eastern bank of the Suez Canal, the Bar-Lev Line. These attacks would be followed by commando raids against the same fortifications and deep penetration of Israeli territory at crucial road junctions and communi-

cations nodes. In turn, the Israelis would retaliate with deep air strikes into the interior of Egypt and daring cross-canal raids into the Egyptian western bank of the Suez Canal. In one such Israeli commando raid, the Israelis, with the support of CH-53 "Jolly Green Giant" helicopters, stole an Egyptian P-12 radar system's acquisition and command trailer. The trailers were sling-loaded beneath a CH-53 and flown to Israeli territory across the canal. During the 3-year war, both sides would be affected by day-in and day-out attacks. Finally, in August 1970, another cease-fire agreement would be brokered by the United States with the support of the Soviet Union, to put an end to the War of Attrition.

Overall, the Israelis would come out ahead, as far as internal security, by isolating and destroying terrorist cells in their newly liberated territory from the 1967 Six Day War. The Bar-Lev Line would be reduced from 31 hardened positions to 26, but a second line of hardened defenses was established five to seven miles behind the first. The Egyptians received added Soviet aid in the form of additional air defense equipment manned by Soviet technicians. Additionally, Soviet fighter pilots were taking an even bigger part in aerial duels with the Israeli air force over the Sinai Peninsula. The Egyptians were also able to replenish the losses of arms and munitions from the 1967 Six Day War and the War of Attrition through the support of the Soviet Union.

On 28 September 1970, President Nasser died from natural causes and his predecessor would take the reign of Egypt and the Arab League. Anwar Sadat succeeded Nasser as president of Egypt and assumed responsibilities of leading the Arab nations once more to war with Israel in October 1973.



The Deception

Prior to the assault launched on 6 October 1973, the Egyptians and their allies had to deny Israeli intelligence information on the coming attack. A series of deception programs were emplaced in the Arab media, especially the newspapers. Egyptian newspapers reported that prior to the attack, the Romanian Defense Minister would be visiting Cairo on 8 October. One of Egypt's top-ranking admirals would be participating in sailboat races on the Nile River the same day. On 7 October, a Royal Air Force Comet commercial airliner was to test airfields near Cairo and Luxor in anticipation of Her Royal Highness, Princess Margaret's arrival in Egypt. To mask the Egyptian and Syrian forces massing near Israeli borders, two Syrian terrorists hijacked a train with Jewish refugees in Austria.

When the Israelis noted the Egyptian and Syrian forces moving toward the respected parts of the Israeli borders, the Israelis dismissed it as a precaution toward possible Israeli retaliation for the hijacking. Egyptian public radio was quoted as saying it was part of a mobilization drill and that engineer forces would refurbish the Egyptian portion of the Suez Canal. Egyptian commanders made certain their soldiers were seen along the bank swimming or fishing, especially on the Egyptian portion of the Suez Canal bank. Also, 4 days prior to the attack, the Egyptian commander responsible for Syrian and Egyptians forces, General Ahmad Ismail Ali, war minister and commander in chief, flew to Damascus, Syria, to discuss the attack timeline. Egyptian and Syrian commanders both wanted the sun behind them and in front of the enemy, but timing would be impossible. A compromise was reached and the H-hour was changed from 1800 hours to 1405 hours on 6 October. The Israelis would

soon learn the actual time when Egyptian and Syrian jets screamed over the Suez Canal and Golan Heights, dropping bombs and attacking positions.

The Attack

At 1405 hours on 6 October 1973, a combined and coordinated aerial assault by the air forces of Egypt and Syria struck at crucial points of the Israeli defenses. The Egyptians attacked the future bridgehead points on the Suez Canal, to include overwatching defensive positions of the Bar-Lev fortifications. The Egyptians also carried out air strikes on communications nodes and electronic warfare sites behind the Israeli defenses positioned deep in the Sinai. The Syrian air force was conducting strikes all along the Golan Heights, to include Mount Hermon, which had an important observation post at the 7,000-foot mark, which was equipped with sensitive electronic sensor devices to monitor against possible Syrian attacks toward the Golan Plateau.

Simultaneously, Egyptian and Syrian ground forces stormed toward the Israeli borders. Eight thousand Egyptian commandos and raft-borne infantry assaulted across the canal while the Syrians crashed over the purple line of demarcation with United Nation observers watching as the Syrian juggernaut pushed toward Golan Heights and the heartland of Judea.

Thirty minutes after the initial assault across the Suez Canal, the Egyptian flag was flying on the Israeli eastern bank. Within an hour, Egyptian engineers using pontoon rafts, industrial water pumps, and hoses would tear huge gaps into the massive sand ramparts in mere hours, unlike the Israeli estimation of more than 12 hours to breach the high sand walls on their side



“At H+2, Egyptian engineers were constructing pontoons, Bailey-type bridges, and ferries across the Suez to push mechanized forces over to the eastern bank to support the already established commandos and regular infantry. By 7 October 1973, the Egyptians would span the canal with 10 heavy bridges. Two bridges would be built for each of the five attacking Egyptian divisions.”

of the canal. The Egyptians used the same technique of removing large quantities of sand during their construction of the Aswan Dam on the Nile in the mid-60s. The Egyptians kept the assault across the canal moving toward establishing crucial bridgeheads.

At H+2, Egyptian engineers were constructing pontoons, Bailey-type bridges, and ferries across the Suez to push mechanized forces over to the eastern bank to support the already established commandos and regular infantry. By 7 October 1973, the Egyptians would span the canal with 10 heavy bridges. Two bridges would be built for each of the five attacking Egyptian divisions. By 8 October, the Egyptians would have well over 400 tanks on the eastern portion of the Suez Canal, preparing for the attack forward to the crucial passes of the Sinai. The Israelis would not allow the bridgeheads to exist. Israeli General Albert Mandler’s division immediately counterattacked against the Egyptian penetration of the canal only to be met by a steel storm of antitank guided missiles and Egyptian infantry antiarmor ambushes firing rocket propelled grenades (RPGs). Israeli Major General Avraham Adan’s armor division suffered heavy losses answering calls for help, and was repulsed by the Egyptian’s use of antiarmor weapons, especially those known as the “suitcase SAGGER.” The calls for help from the now isolated Bar-Lev Line not only added to the decimation of the Israeli forward divisions, but also of the Israeli air force. The Egyptians established an air defense barrier consisting of the surface-to-air missile-2 (SA-2) for higher altitudes and longer ranges over the Suez Canal. They also incorporated the SA-3, an intermediate missile system to protect the bridgeheads from the Israeli air force, which had been dubbed the “flying artillery” in the Six Day War. With the combined air defense barrier and the 1-kilometer buffer zone forward of the Bar-Lev Line established by RPG- and SAGGER-wielding Egyptian infantry, the Israeli air and ground forces were slowly bleeding themselves white in the Sinai. Unknown to the Israelis, they were inadvertently fulfilling one of President Sadat’s key tasks for this attack — decimate the Israeli Defense Force to its breaking point. The Israeli counterattacks may have been costly but proved

fruitful because they stalled the Egyptian momentum, and with that, the cadence of battle was about to turn in favor of Israeli forces. However, Israel had to face the threat from the Syrians and the Arab forces under their command.

The Syrian Front

Syrian’s armored forces moved on the Golan Plateau to be met by Israeli armor and mechanized infantry brigades. These brigades were made up of reservists that were activated at the beginning of the war and were first to be sent forward. Israeli’s chief of staff, General David Elazar, and its defense minister, Moshe Dayan, both agreed that Syrian forces posed a great threat to Israel because of their close proximity. All manpower and materiel were diverted to the Syrian front to halt the Syrian drive, and all other forces were sent to the west to delay the Egyptian advance into the Sinai. The Syrian forces were able to drive deep into Israeli territory and make their way toward the Jordan River bridges, which would have allowed them free access into the heartland of Israel had it not been for the heroic actions of two Israeli brigades — the 7th Armor Brigade and the 188th Armor Brigade.

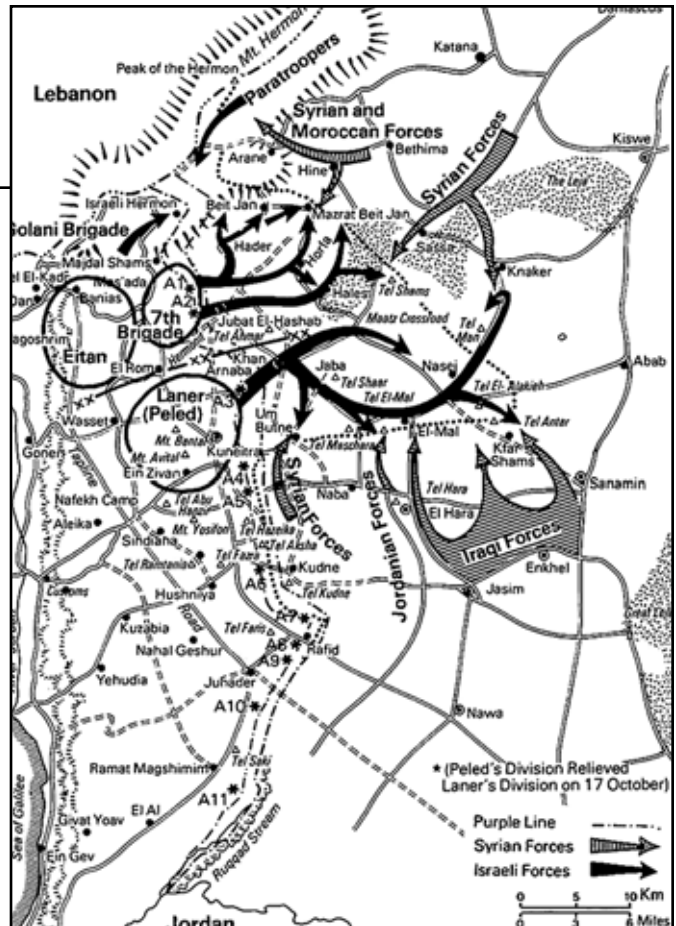
The 188th would be virtually destroyed while repelling attacks toward the two crucial bridges over the Jordan River in the southern part of the plateau. Essentially, two Israeli armored brigades fought and delayed three Syrian elements in division strength. The Israelis were fighting between 3 to 1 and 6 to 1 against Syria in tank-on-tank battles. The tenacious defense of the 188th Armor Brigade — totaling 57 tanks in strength — along the TransArabian Pipeline (Tapline) Road, allowed additional Israeli forces to move up to the front. Major General Dan Laner, commander of the front, literally stood on the Arik Bridge directing arriving units into battle.

By midnight on 7 October, Syrian forces closed within 5 kilometers of the northern bridge of Bnot Ya’akov just west of Tapline Road, a maintenance road for a major oil pipe running north to south through the region. The Israelis were able to hold the Syrian drive for 3 days until they could counterattack

with five mechanized brigades and one elite light infantry brigade (Golani Brigade). By 10 October, the Israelis had pushed the Syrian forces back to the original demarcation line, known as the purple line, and continued the attack through the purple line and into the interior of Syria.

Syrian President Assad asked Egyptian President Sadat to cease-fire, but President Sadat only promised support, but no cease-fire. The Soviets stepped in to conduct some saber rattling with the United Nations, the United States, and Israel. This also stepped up resupply of much needed war materials to Syrian airfields that had not yet been destroyed by the Israeli air force.

On 11 October, the Israelis attacked across the purple line and pushed into the Syrian interior battling Jordanian, Iraqi, Saudi, and Moroccan forces under the control of Syrian field commanders. The Israelis keeping the tempo of the attack in their favor, pushed within 30 kilometers of Damascus. The Israelis held onto this area well until the final cease-fire that ended the conflict. By the time the Israeli counterattack against the Syrians occurred, the tactical situation was set to turn the tide in favor of the Israelis, who faced Egyptian forces poised to make their drive through the Sinai.



The Israeli breakthrough, 11 October 1973



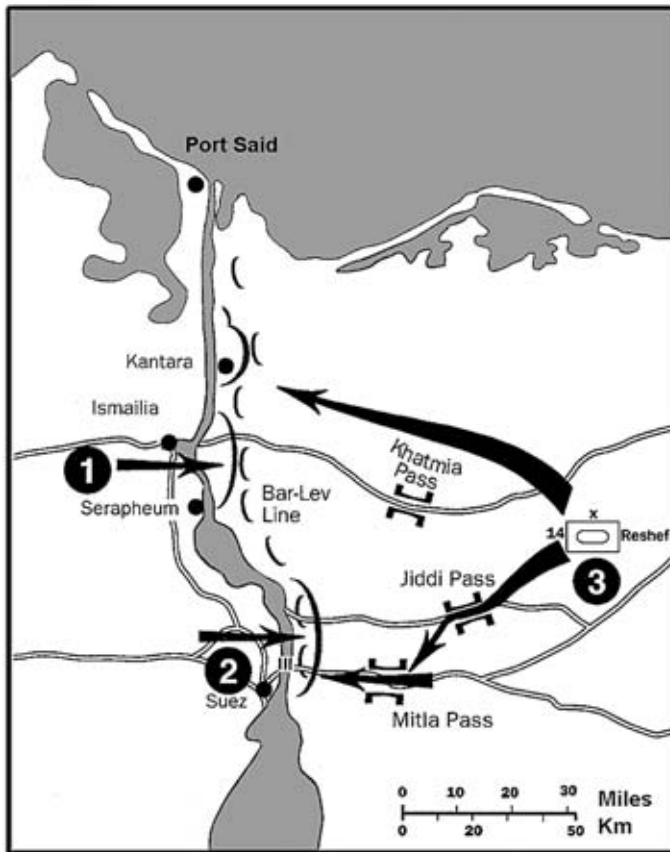
Maximum Syrian penetration, midnight Sunday, 7 October 1973

The Turning Point in the West

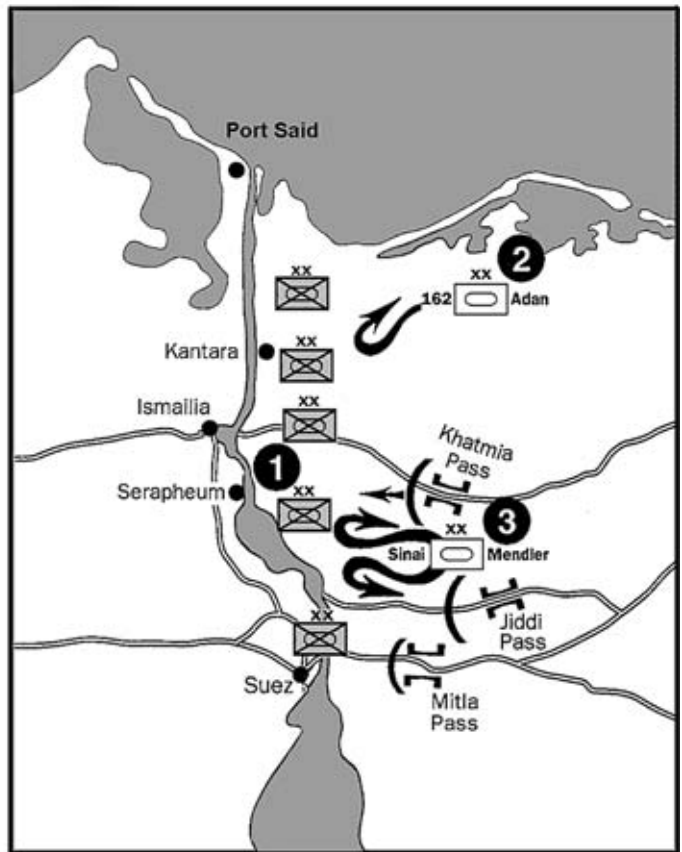
Due to aggressive Israeli counterattacks against the Egyptian forces on the eastern portion of the Suez Canal, the Egyptians continued to mass their armored forces so they could make an adequate drive toward the coastal road near the town of Romani. The Egyptian 2d Corps was tasked to take the coastal road and Tasa Road, and seize the town of Bir Gifgafa, while the Egyptian 3d Corps in the south would drive on toward the two southern passes. The Tasa Road moves through the central part of the Sinai toward the key town of Bir Gifgafa, and finally the two southern passes of Giddi and Mitla. This attack would take place on 15 October. Three Israeli divisions waited for the attack — and for the Egyptians to begin open desert warfare.

Once Egyptian forces had left their protective air defense umbrella over the Suez Canal, the Israeli flying artillery started to wreck havoc among the Egyptian armored formations and supply columns moving eastward. The Israeli tank forces also waited to exploit the Sinai's open expanses to take advantage of their gunners' long-range accuracy and of unhampered maneuver through the open terrain. The Sinai was tank country forward of the passes and Bir Gifgafa.

The Egyptian 2d Corps took the brunt of Israeli punishment, but reached the outskirts of Bir Gifgafa. In essence, the Egyptians controlled the western end of the Khatmia Pass. The Egyptian 3d Corps seized the southern pass of Mitla, but was unable to secure the Giddi pass from Israeli Major General Ariel Sharon. This caused a salient in the Egyptian line, and would be an advantage for Israel during their countercrossing.



The Egyptian campaign began with crossings at Ismailia (1) and Suez (2). After breaching the Bar-Lev Line, the Egyptians dug in to await the Israeli counterattack. The defensive movements by the Israeli 14th Armored Brigade (3) were uncoordinated and diffuse, resulting in heavy losses from Egyptian antitank missile fire.



Rather than exploit the initial Israeli losses and confusion, the Egyptians expanded their positions east of the canal (1), moving five heavy divisions across. The Israelis attacked again, with the 162d Armored Division (2) in the north and the Sinai division (3) to the south. Though again taking heavy losses, they stabilized the front and slowed the now ponderous Egyptian offensive.

The Israeli Countercrossing

For nearly a week, the tempo of the attack had been in Egyptian hands, but the course would soon change. With the Egyptian 3d Army's two-pronged attack pushing as far east as the Mitla Pass and being stopped on the western end of the Giddi Pass, they had overextended the line from their flanking unit in the north, the 2d Egyptian Army. The Israelis planned to take the pressure off of their forces facing the Egyptians in front of the passes, and turn the tide from reaction on the Israelis' part to that of the Egyptians. So, Operation Gazelle was initiated.

The Israeli staff had a plan for crossing the canal that had existed since early 1970, and the plan was modified to suit the Israeli counterattack plans. Operation Stouthearted Men, the revision of Operation Gazelle, would begin on 15 October 1973. The operation would involve three Israeli armored divisions crossing the Suez Canal at the town of Deversior on the most northern point of Great Bitter Lake, which would cause the encirclement of the Egyptian 3d Army on the eastern side of the Suez Canal. The Israelis expected the Egyptians to cease their forward attacks and try to throw the Israelis back over the canal, or destroy them on the western bank of the Suez, resulting in attacking Egyptian forces going from proactive to reactive maneuvers. Their tempo of attack would cease through the Sinai as they tried to cut off the Israelis and relieve the Egyptian 3d Army.

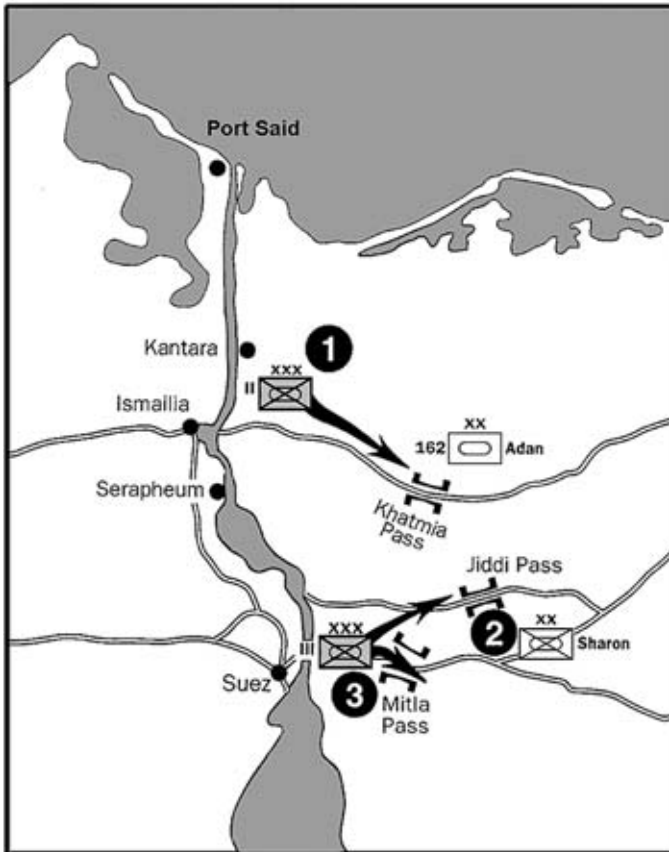
The Israelis, with support of their flying artillery, were able to drag a pieced-together bridge, made from a pontoon bridge and commercial bridging equipment, and establish their own bridge-

head on the western bank of the Suez Canal. Sharon's division would attack, build, and establish the bridgehead, while the Adan division moving from the northern part of the Sinai and Major General Kalman Magen's division from the southern Sinai exploited the bridgehead on the western bank of the Suez. The two armored divisions would pass through Sharon's division and would penetrate up to 20 kilometers on the western shore of the Suez, cutting off all major supply routes to the Egyptian 3d Army, which numbered some 20,000 men and well over 500 armored vehicles. The Israelis from that point would fend off many relief operations conducted by the Egyptians to free their trapped men. The Israelis would continue their fragile hold on the western bank until the U.N. cease-fire, which the United States brokered with the support of the Soviet Union. Both nations would come very close to facing one another in the Sinai. This was also one of President Sadat's key goals, bringing the world to light on the Arab-Israeli conflict — not as a regional conflict but one of global proportions.

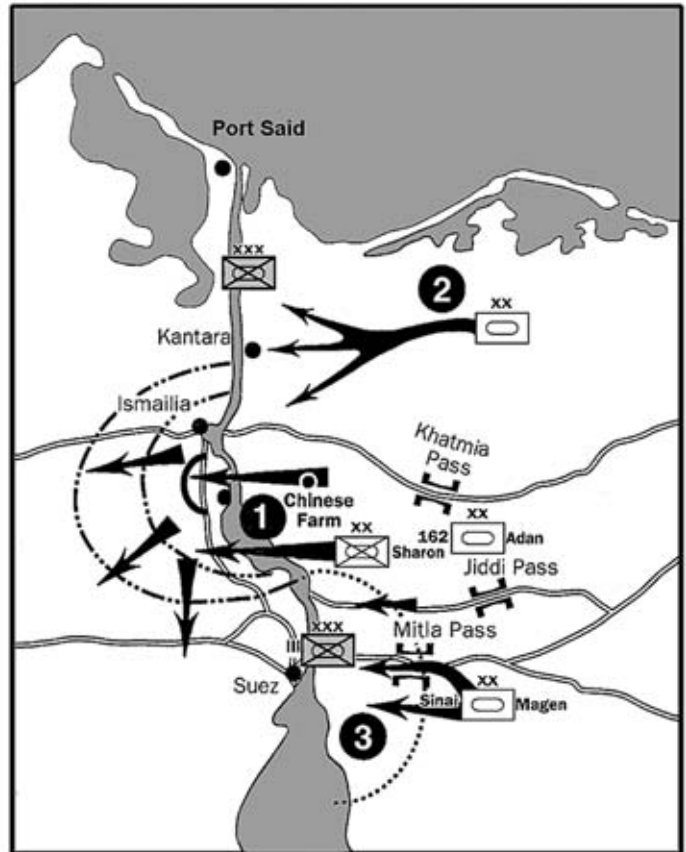
Lessons Learned

The October War of 1973 would change how modern armies would fight future battles with new technologies and tactics associated with technology. It also demonstrated that a lucky and clever enemy could outfight a technologically advanced force as the Egyptians had done with the Israelis.

The Egyptians used extensive air defense systems to balance out their inferior air force when confronting the Israeli air force. Egyptian aircraft, for the most part, was delegated to a ground-attack role and would not fly far beyond their air defense bar-



After a buildup of several days, the Egyptians entered the third phase of their campaign, the breakout. In the north, II Corps (1) made for the Khatmia Pass, while in the south, III Corps attacked toward the Jiddi (2) and Mitla (3) passes. The slow pace of the Egyptian attacks, plus the Israeli's combined arms tactics, made their eventual defeat inevitable.



Using plans he created while in the Sinai, Ariel Sharon led the Israeli counterattack across the Suez Canal. Striking at the weak point between the two corps (1), Sharon broke into the Egyptian rear, completely unhinging their position. Sharon was supported by fixing attacks in the north (2) and south (3).

rier established along the Suez Canal. Fratricide was an issue when pilots did not enter through designated points in the barrier. The Egyptian's approach to the high sand rampart demonstrated simple ingenuity on their part. What the Israelis estimated would take Egyptian forces 10-to-12 hours to demolish, only took 2-to-3 hours in some places along the canal.

Water cannons drastically upset the Israeli timetables for defense. The Egyptians also incorporated a 1-kilometer buffer zone forward of the canal where they had been infiltrated by infantry and commandos wielding RPG and SAGGER antitank guided missile (ATGM) systems. As the Israeli armor crashed through the desert, with little or no infantry support of their own, to rescue forces trapped in the Bar-Lev Line, they were met with devastating volleys of SAGGER missiles or antiarmor ambushes where a tank would be struck as many as five times by RPGs.

The Egyptians had learned from the Six Day War and the War of Attrition that the Israelis were loyal to trapped or besieged comrades and were also tenacious in the attack. Leader of the Egyptian army, General Ahmed Ismail used that to his advantage to initially devastate Israeli forces as they counterattacked in piece-meal fashion.

The Egyptians and Syrians were solely dependent on the Soviet Union for technical support, arms, munitions, and transportation on a global scale. The latter was the Soviet Union instituting the "air-bridge," where a massive amount of Soviet war materiel was airlifted into Cairo and Damascus. The technicians manned air defense equipment around Cairo to the Ismailia

highway. The air defense technicians numbered some 500 personnel. However, the support did not stop there. Since the War of Attrition, Soviet fighter pilots were flying combat missions in the Sinai against the Israeli air force. Their exact losses for the October War vary from 23 wounded to six killed.

The United States also alleged that North Korean pilots were also flying combat missions over Egypt, but the North Korean government denied the accusations saying that they were deployed only for a training exercise. Another important asset the Soviet Union provided its Arab allies was strategic intelligence.

During the Arab-Israeli War of 1973, the Soviet Union would launch a total of two COSMOS spy satellites to gather information on both Arab, but more importantly, Israeli losses throughout the war. This would enable the Egyptians to gauge their progress against the Israeli forces and help determine strategic targets to attack with SCUDs. The true lesson to be learned from the war would be felt by Israeli forces.

Prior to the conflict, Israeli forces were overconfident and underestimated their Arab enemies, as well as its capabilities, as the Israeli air force discovered as it broke against the Egyptian air defense barrier over the Suez Canal. The Israeli's use of ATGM was limited to defensive. They were also the first generation of ATGM of massive sizes, such as French SS-10 and SS-11, the European equivalent of the Soviet SNAPPER missile. Initially, the semiautomatic tracking tube-launched, optically tracked, wire-guided (TOW) missile was offered prior to the war, but the Israelis declined. This would change, as the Israelis were in dire straits early on in the conflict. The Israeli



"The Israelis were able to hold the Syrian drive for 3 days until they could counterattack with five mechanized brigades and one elite light infantry brigade (Golani Brigade). By 10 October, the Israelis had pushed the Syrian forces back to the original demarcation line, known as the purple line, and continued the attack through the purple line and into the interior of Syria."

government made a request for the TOW missiles and the United States airlifted the missiles from Holland. They had literally been removed from the European war stock.

Israeli armored forces learned a terrible lesson from rushing forward without infantry support. Time and time again, Israeli tanks were picked off by a SAGGER gunner who had fired less than 150 missiles in training prior to the war. RPG-equipped infantrymen gnawed away at the Israeli armor as it closed against the 1-kilometer buffer zone established on the first day of the war to protect the bridgeheads and allow Egyptian armor forward to the eastern bank of the Suez. The Israelis learned the importance of electronic countermeasures against air defense systems.

The Israeli air force took a devastating beating as it attacked the Egyptian bridgeheads across the Suez. In one day, the Israelis lost a total of 20 aircraft against the air defense barrier. As the war continued, Israeli commercial airliners were seen landing at U.S. Air Force bases on the east coast picking up electronic countermeasure pods and other components that were successful against North Vietnamese air defense systems.

The most valuable lesson learned by the Israelis was that they had underestimated the abilities of their Arab adversaries. They would not be fighting the Arab armies of 1956 or 1967, but a new Arab soldier who was determined to take back what was his and restore his prominence in the Middle East. The Israelis were relying more and more on sophisticated weaponry to press their advantage on their Arab enemies; and not relying on simple and proven past techniques. A large part of Bar-Lev fortifications had lapsed into disrepair — especially Israel's secret weapon. Pipes leading from the edge of the bank were connected to oil tanks on Israel's side of the Suez. The pipes would be opened, oil would float to the surface, and then be ignited.

Egyptian frogmen cemented the nozzles shut, but reported that many of the valves had been overtightened so it would take more than the turn of a hand to operate. The original fort had 31 fortified positions, and after the War of Attrition, five would be sealed with sand, bringing the total number down to 26. The Israelis had given up maneuver for an initial static defense.

The United States watched as the war progressed and as events unfolded in the Sinai and Golan Heights. The October War reinforced the idea of the combined arms fight and the role that advanced technology plays in a conflict, which can be carried into present day.



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Mortar Training and Integration

by Captain Michael A. Porcelli

As a tanker, I enjoy reading about and learning from my fellow tankers' past experiences. However, as a tanker in an armor battalion, nothing prepared me to lead 11Cs. I attended the Infantry Mortars Leaders Course (IMLC) before taking command of the platoon, but nothing in my military career had prepared me for the mortars. Even my predecessor did not really have any useful tactics, techniques, and procedures (TTP) or advice to give me as he was leaving — except to watch out for a few troublemakers. Does this sound familiar to those of you who have been mortar platoon leaders?

At first, I felt a little lost leading a platoon so different from my tanking experiences; with time, a lot of listening, and active learning, my platoon sergeant and I turned our platoon into one of the best mortar platoons in the brigade. However, this article is not about me, but about you — the future mortar platoon leader. What are your training objectives for next quarter? When are you firing next? When is your next mortar training and evaluation program (MORTEP)? Are your men trained in their individual tasks, how about gunnery and fire direction center (FDC) tasks? And the most important

question, are your mortars ready to go to war and support the battalion? These are questions I asked myself, and questions that I have been asked as a mortar platoon leader. And with a hard swallow, I had to give the answers, even when I first took over the platoon.

This article is not about mortar capabilities, limitations, and how mortars are generally used incorrectly in a battalion. This article is about coming up with an effective training program for not only 11Cs, but also battalion leaders, to include junior noncommissioned officers (NCOs). That's right — you will train tankers along with your mortarmen. Remember, mortar platoon leaders, we fight as a combined-arms team, and that team includes you. With training integrated at battalion and company levels, the 19Ks and 19Ds will have a general understanding of how long it takes to conduct a hasty occupation or fire a hip-shot, or the process it takes to set up the guns and process the firing data. In the end, mortars will not only be used more, but more correctly.

First, let's start big and work our way down. As a mortar platoon leader, you

must be the resident expert on mortars, which requires a little reading. However, your wealth of knowledge will be bestowed on you by your platoon sergeant — if you do not pick this man's brain, you are a fool. A typical mortar platoon sergeant has between 15-to-18 years as a mortarman, and has most likely served in light, heavy, and cavalry units. This is the man to assist you in creating a training program that works, and he acts as a sounding board for your training ideas. This goes for all 11C NCOs and soldiers. You will never meet a more professional bunch of soldiers in your career, and each one is willing to do what it takes to be the best mortar platoon in the brigade.

A mortar platoon leader must be very proactive — ranges and ammo just do not mysteriously appear each time you train. Mortar platoon leaders must now request these things to conduct training events. Mortar platoon leaders will discover that they are like mini-company commanders and, as such, must ensure all necessary training resources are available. The two best candidates to assist in this task are the platoon sergeant and FDC chief. Most likely, your platoon sergeant and FDC chief have been on post longer than





“As scouts conduct area, route, or zone reconnaissance, mortars can maneuver to firing points that support the scout’s scheme of maneuver and process their calls for fire. When the mortar platoon conducts live fire, ask the scout platoon to come along and call in fire missions.”

you, and have a greater knowledge of what ranges or training areas could best support your upcoming training event.

Mortar platoon leaders, let’s talk about how you must integrate into the battalion staff. “But hold on, I’m not part of the battalion staff; I’m just a platoon leader.” Negative, mortar platoon leader, check your manuals, such as U.S. Army Field Manual, 7-90, *Tactical Employment of Mortars*, and remember your IMLC training.¹ The mortar platoon is the personal artillery battery for the battalion commander. Sure, the fire support officer (FSO) will have a general understanding of what mortars can do and help during the planning process, but if the mortar platoon leader is not present during the military decisionmaking process (MDMP), he will receive firing points that do not completely integrate into the battalion’s scheme of maneuver, and he will receive essential fire support tasks that are not specific enough to fire priority targets. The mortar platoon leader must make himself part of the battalion staff, and be present during the wargaming process. This will not only help him come up with an operation order, but en-

sure that there is proper integration between him and the battalion maneuver elements, which will ensure rapid, accurate fires when needed. The mortar platoon leader must also be prepared during the MDMP to brief his current operational status, number of on-hand rounds, and the possible number of missions the platoon can fire with the current amount of ammunition. Bring worksheets that might pertain to the next mission, especially the quick smoke worksheet — to brief approximately how many white phosphorus rounds are needed for a smoke mission. Do not forget the logistics of being in the mortars — another reason the mortar platoon leader needs to be present during the MDMP. Based on the unit’s course of action, the mortar platoon leader can advise the S3 FSO on how much ammo each target will require, at what point in the battle the platoon will need a mobile push package (MPP), or if they need the MPP to move with them. The mortar platoon leader can tell the S4, who is standing right next to the S3 during the MDMP, what sort of ammo break down he will need in the MPP, based on the type of missions the platoon will be firing.

“What about my platoon during all this wargaming — don’t I need to be with them to make sure they are doing everything I need them to do?” Negative, mortar platoon leader, you will come to find out that you will spend a lot of time away from your platoon in the field, coordinating, attending the MDMP, attending operation orders, and reconning alternate firing points. Again, this is why the mortar platoon leader needs a good working relationship with his platoon sergeant and FDC chief. These are the men who get things done for the platoon. With a good working relationship with the platoon sergeant and FDC chief, a good tactical SOP, and a five-point contingency plan, the mortar platoon will do great things when the platoon leader is not present, leaving him time to do other things.

Now we will focus on the platoon. When the mortar platoon leader first takes the platoon, he know what the battalion’s mission essential task list (METL) is and what collective tasks the platoon must accomplish to support the METL. Once the platoon leader and platoon sergeant have designed the essential platoon collective tasks, write them down, and show them to the battalion commander for his review. Make sure the battalion commander has no other tasks he wants you to train, and once he reviews the task list, have him approve it.

Now that we have the collective tasks narrowed down, we will crosswalk them with section and individual tasks then incorporate the section and individual tasks into the collective tasks. With these tasks in mind, the platoon leader should sit down with the platoon sergeant and identify individual and section tasks that need to be trained, then move on to the collective platoon tasks. A great source of information to identify tasks that need to be trained is the platoon’s last MORTEP or combat training center evaluation.

Individual, section, and platoon collective tasks to be trained have been identified, now it is time to review the battalion training schedule (these schedules should reflect out to 5 to 6 months, depending on the unit) to determine where these tasks can be accomplished. Once training requirements have been determined, the battalion S3 or XO should review the requirements to ensure your training does not conflict with the battalion training calendar (things do tend to change on the long-term training calendar; so this is a good last check prior to planning for training, and it also informs

the S3 and XO what the platoon is doing in advance). Once you determine when these tasks are to be trained, compile a list of resources needed to accomplish training and request them through the S3 section and/or HHC company commander. Now it is time to determine the near-term training calendar (in some units this is done 6, 5, or 3 weeks out). Publish these training calendars and have them approved by the battalion XO or S3, and once approved, they should be posted for all soldiers to review and discuss the upcoming training events (squad leaders should be the ones doing this, however, it's always good to hear it from the platoon leader once in a while).

Each unit is different in their abilities and levels of training. I will give some TTPs that might help your training program and integration into the battalion.

Individual soldier training. As we all know, these are the basic tasks that soldiers must know and apply; it is the foundation on which all other training can grow. One of the best ways to knock out the majority of individual tasks is to conduct expert infantry badge (EIB) training. Tasks in the EIB encompass many things, including weapons qualification, land navigation, emplacing mines, and a high state of physical fitness. Most of these tasks make for great sergeant's time training. Fight for the mortar platoon to go to the EIB test. Remember, the men you are in charge of are infantrymen — the only infantrymen in an armor battalion — and as such many times battalion leaders will not put a whole lot of emphasis on the EIB. Make them understand the importance of the EIB and get your men to go, otherwise lose their respect. Couple the constant EIB training with constant gunner's exam training. How hard is it to accomplish two or three gunner's exam tasks per week? Not difficult at all. Some tasks can be performed in the motor pool, while others can be trained just outside the motor pool. The best thing about it is, you don't need that many resources.

Crew-level training. Once crewmembers are individually trained and proficient on individual tasks, each member should be cross-trained within the crew. Drivers, gunners, assistant gunners, and tank commanders need to train at each position to remain proficient in all crew-level tasks. That new private that was just assigned as a driver should be cross-trained on other positions because he may be the new gunner or tank commander at

the National Training Center when other crewmembers have been killed. Squad leaders should already be doing this, but just spot check and always ask if PV2 Smith can take over SGT White's job. Do not forget about the FDC, they need to be training for the FDC exam. Once the FDC section is cross-trained, gun crews should be cross-trained in FDC procedures. This is easy and can be done as sergeant's time training. Have the FDC chief or senior computer operator train the gun crews — especially the squad leaders — on the M16 plotting board and the mortar ballistic computer. Mortar platoon leaders should attend this training as well, not only to spot check, but also to maintain proficiency in FDC and crew tasks. When a unit goes to the NTC and the FDC gets killed, guess who's processing the calls for fire — the mortar platoon leader and his base gun. Two computers should be kept with the FDC, one with the platoon leader, and one with the base gun, along with plenty of copies of computer records and data sheets. Ensure all computers have the initial set-up data. The platoon leader should keep one aiming circle and leave one with the FDC.

Section/platoon training and higher. This is where a mortar platoon leader makes his money. Train not only the mortar platoon, but battalion leaders as well. First, strive to train constantly with the FSO, fire support team (FIST), and observers in every type of platoon, or battalion training exercise. This will form the habitual relationship with the FSO and the FIST. The habitual relationship will be formed with the FSO during the MDMP, but it is necessary to coordinate for the battalion's FIST to be present at whatever type of training you conduct. However, in some armor battalions, the most effective observers — the scouts — almost never train with the mortars. Every scout needs to be proficient in calling for indirect fire, and the only way they can become proficient is to train with the mortar platoon. The mortar platoon leader should coordinate with the scout platoon leader and see when he is taking his platoon out for training, and have two mortar platoons go out at the same time. As scouts conduct area, route, or zone reconnaissance, mortars can maneuver to firing points that support the scout's scheme of maneuver and process their calls for fire. When the mortar platoon conducts live fire, ask the scout platoon to come along and call in fire missions. Coordinate with the company command-

er to conduct call for fire classes for the scout companies, which also makes for great sergeants' time training. This adds realism to both training events and creates the habitual relationships needed to be successful.

Now that we are training the scouts, we need to train the rest of the battalion. The mortar platoon leader should talk with the battalion commander, and during one platoon training event, have all platoon sergeants and above in the battalion observe training. In essence, the mortar platoon leader will be demonstrating what a hip-shot, hasty occupation, deliberate occupation looks like, and how long it takes to conduct each. Using short-range training rounds (SRTRs), let the platoon sergeants call for fire on mock targets to complete their understanding of what it takes to fire a mission. (If the mortar platoon tells you that they do not have any SRTRs, then they are probably lying to you — these rounds are inert and only require an \$18 per-round refurbish kit to use again.). Once the platoon sergeants have observed training, let all tank commanders and above in the battalion observe the next live fire exercise and call in missions.

I hope this article assists in training mortar platoons in an armor battalion. You will find a great appreciation for mortars and what they can do on the battlefield as a force multiplier. In closing, let me say it was an honor and privilege to lead such professional and motivated soldiers — as it will be for all mortar platoon leaders.



Notes

¹U.S. Army Field Manual, 7-90, *Tactical Employment of Mortars*. U.S. Government Printing Office, Washington, DC, 9 October 1992.

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The Army's First ADAM Cell

by Captain Scott L. Mace

As the Army transitions to the fighting force of tomorrow, it is creating different types of sections within its brigades. This produced the Air Defense Airspace Management (ADAM) Cell in the new Stryker Brigade Combat Team (SBCT). The ADAM Cell consists of six personnel, and is the only organic air defense element in the SBCT. There are no air and missile defense fire units or radars organic to the SBCT. The ADAM Cell is part of the SBCT main tactical operations center (TOC) and is a critical link to the maneuver commander in the new lighter and more lethal brigade combat team. Overall, the ADAM Cell has brought to the fight a wide array of systems that will drastically change the way a brigade sees its air picture on the battlefield. This is a huge step from the days of forward area alerting radar and calling out grid squares and directions for the brigade's early warning. This article is an overview of the first of six SBCTs that the Army will stand up. It also explains how the ADAM shelter is integrated into the SBCT TOC, how to setup the shelter, and the types of systems and radios used.

The ADAM Cell is part of the SBCT TOC. It is configured on the back of an

M1113 heavy chassis HMMWV that has a stronger load capacity than the normal HMMWV. This configuration allows for vehicle ease of operation and has the ability to carry more weight and increased power when pulling heavier loads. It also is a nuclear, biological, and chemical-capable rigid wall shelter (RWS), with power connections along both sides to allow local area network (LAN) connections and antenna inputs from a myriad of required antennas. The cell's location in the TOC allows for quick and easy communication with other cells.

In addition to the shelter, the ADAM Cell's equipment consists of a standard M1097 HMMWV support vehicle, a 10-kilowatt generator, and a high-mobility trailer (HMT) that can carry a 1¼-ton load. These vehicles carry the cell staff and extra equipment. The staff includes an air defense captain as the ADAM officer in charge, an aviation captain, a warrant officer systems integrator, an E-6 air defense early warning systems operator, an E-5 air defense early warning systems operator, and an E-7 for aviation operations.

The biggest change as you look at the ADAM Cell is the technology jump that has been accomplished. There are four

computer systems that monitor the overall air picture of the SBCT area of responsibility and the theater of operations in which the SBCT may operate. There are also 12 radio systems that provide the cell with a complete array of redundant communications capabilities as they establish and maintain the air picture.

The shelter is laid out in a very user-friendly design, making it easy for the staff to move around inside the tent area to observe various operating systems. In this particular ADAM shelter, we share the space with the Air Force liaison officer (ALO). Next to the ADAM shelter is the fire and effects coordination cell (FECC). This means that all of the airspace users are collocated for immediate airspace management and synchronization. The ALO can report inbound friendly aircraft and the FECC section can request airspace clearance quickly and with minimum time lost.

The Tactical Airspace Integration System (TAIS), one of four processors within the ADAM Cell, provides the ability to manage airspace deconfliction. This is done in a matter of seconds as opposed to minutes. For example, this system can be used in conjunction with a fire mission from a field artillery unit to reroute

aircraft through a different corridor and prevent losses to friendly fire. A request comes to the cell and the TAIS operator generates a 3-dimensional picture of the airspace and knows within a matter of seconds if there is any conflict with friendly air. This powerful machine does all of the work for the operator. The TAIS will also receive a text message copy of the airspace coordination order (ACO) from the higher Air Force Air Operations Center or the Army's Battlefield Coordination Detachment, then convert the ACO into a graphic format, and display it on the flat screen. This precludes the operator from manually inputting the airspace control measures onto the map overlays. An operation that took several man-hours to complete, now takes seconds.

The Air Defense System Integrator provides three functions to the cell. First, it provides routing capabilities to support tactical digital data links (TADIL) A, B, and J. It also provides the capability to receive intelligence information from the Integrated Broadcast System (IBS), specifically from the Tactical Information Broadcast System and the Tactical Data Dissemination System. Finally, it also provides a set of command and control functions to the crew of the ADAM Cell.

A standard forward area air defense (FAAD) command and control (C2) processor also provides the cell the ability to manage air defense engagements and early warning. Specifically, it provides the Army's FAAD datalink (sentinel radar picture), and controls the air and missile defense engagement operations. The fourth processor is the Air and Missile Defense Work Station (AMDWS). The AMDWS is one of the original five Army Battlefield Command Systems. It provides the air and missile defense force planning and operations for the ADAM Cell.

There are several radio systems in the ADAM shelter that add a high degree of communications ability. First, are the vehicle radio communication (VRC)-92 and the VRC-90 single channel and ground airborne radio system (SINGARS) advanced system improvement program (ASIP) radios that provide voice communications throughout the SBCT for C2. These radios also provide the datalink between the ADAM Cell and the sentinel radar section for the FAAD datalink (FDL) picture. The PSC-5 radio provides both voice and data C2 in the ultra-high frequency satellite band. This is primarily for SBCT operations and intelligence, and specifically allows the SBCT to re-

ceive tactical ballistic missile (TBM) alerts. The Harris 150 radio system (voice) is primarily used to support the aviation battalion flight operations net. The MacKay radio system (high-frequency data) is used to gain access to the TADIL-A link. The VRC-103 will be used as an aviation battalion flight operations radio, operating in multiple band frequencies in high frequency and ultra-high frequency (UHF) bands.

The Joint Tactical Terminal (JTT), operating in the UHF band, provides access to the IBS for the receipt of satellite intelligence and targeting information. The Joint Tactical Information Data System (JTIDS) provides the shelter with access to the TADIL-J network for air tracks while operating in the UHF band. The LST-5 radio operates in the UHF satellite band to provide access to the TADIL-A network for air tracks. An enhanced positioning locating and reporting system (EPLRS) radio that operates in the UHF band, can communicate with the air defense network.

The redundancy of the shelter is apparent with all the radio and computer systems that are operating in the cell. This provides the cell with the ability to use alternate means to provide support to the maneuver commander.

There is also an internet communication device (*Access Net*) in the TOC that allows for easy and efficient information flow. It is a very user-friendly device that can be programmed within a few minutes to monitor any net. It controls all of the radio systems in the ADAM Cell. It is easy to monitor one net or many nets using the touch screen device to navigate between the systems. You can push a button and switch from radio to radio without leaving the workstation. This includes monitoring and communicating on the high frequency, satellite communication (SATCOM), and SINGARS ASIP radios. The headphones that are used with *Access Net* have noise canceling technology, which allows the user to communicate without noise interference.

There are also many small things that provide for increased operating potential; for instance, there is a color printer mounted inside of the shelter. During the I Corps Warfighter 02 exercise at Fort Lewis, Washington, the cell could quickly print out an enemy air chart to identify a potential airstrip or landing zone to the S2, or use the chart to brief the brigade commander.

There are extra ports on the network hub to plug in a laptop. This allows the AMDWS user to take a snap shot of the



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screen, which the cell can access the AMDWS through the laptop, retrieve the snapshot, and put it into a slide without the AMDWS user having to take the time to do the operation. This allows for easier updates of information during the battle update brief to the brigade commander. The ability to insert a picture into the update brief helps explain enemy rotary, fixed-wing, unmanned aerial vehicle, and TBM activities. There is also the ability to push the AMDWS screen to the brigade commander's screen and allow the commander to see the same screen the AMDWS operator is viewing.

According to Colonel Michael Rounds, 3d Brigade commander for the Army's first Stryker Brigade, the ADAM Cell has four primary tasks in support of SBCT operations. First, is providing the brigade with a "clear picture of both the friendly and hostile aircraft." "Having sentinel radars in the SBCT..." to do this mission is critical as it helps us to see ourselves "from within," as we fight with our own lift and transport aircraft. Second, is the ability to integrate analog air defense units into our digital operations. In the near term, most SBCT air defense augmentation will be from analog units. Our ability to "plug" an analog unit into the brigade was demonstrated during the recent I Corps Warfighter 02.

The 111th ADA from New Mexico, a National Guard Patriot unit, successfully

communicated with the SBCT through an I Corp-provided digital bridge. The ADAM Cell was able to combine the air defense priorities of the SBCT with the capabilities of the 111th to ensure proper air defense coverage for the SBCT. A third expectation of the ADAM Cell is to participate in the "parallel and collaborative planning process..." with both higher and lower echelons of command. The ADAM Cell "is the subject matter expert..." and has to coordinate a common ADA posture in the SBCT. Finally, the overall management of Army airspace command and control (A2C2) for the SBCT is a very important mission of the ADAM Cell.

When asked if there were any issues with the ADAM Cell in the SBCT, Rounds said he would like, "...to have organic sentinel radars in the SBCT." It only adds to his overall air picture. He continued by saying that augmentation of air defense assets from other units would need to be wheeled assets to maintain "functionality and speed" of the SBCT. He would like to see Strykers with stinger teams in the SBCT or infantry squads that carry stingers with them. This would increase the SBCT's effectiveness against potential air defense threats. In closing, Rounds stated that the ADAM Cell is a valuable asset to the brigade.

Overall, the ADAM Cell is a significant addition to the SBCT. It adds a new di-

mension to the air defense mission in an ever-changing threat environment. The multifunctional abilities of the ADAM Cell allow for greater flexibility to support the SBCT throughout its diverse mission profile. This cell in the SBCT provides the capability to receive air pictures from all branches of service, and from some of our allies as they produce a picture.

From the U.S. Navy's Aegis cruiser, to the U.S. Army's Patriot missile system, and AWACS aircraft flying overhead, the ADAM Cell provides large amounts of information never before available to the brigade commander. As we continue to transform into a lighter and more lethal force, air defense must continue to change its way of doing business to be effective in the future.



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Digital Battlefield from Page 20

the leader to a fixed terminal, it weakens his ability to lead and provides an unhealthy excuse to avoid his physical presence at the critical point of the battle.

Technology is morally neutral. Advances in command and control digital electronics and software do not absolve the battlefield leader from the toughest decisions — when to kill and whom to kill. Trends in warfare are moving toward an increase in stability operations and combat in urban areas where it is difficult to discern friend from foe, civilian from combatant. The capability of defining human targets and initiating lethal action are currently beyond technology and remains the responsibility of the combat leader. Civilian casualties caused by unattended and abandoned minefields are examples of weapons left to determine their own targets. The

toughest decisions must still be made by the leader's analog mind. Perhaps it should always be so.

The Future

Weapons are becoming increasingly lethal while the technologies used to control these weapons are becoming more accurate through the application of digital technology. However, soldiers who operate the digital controls still possess the strengths and weaknesses of the analog human being. Our combat leaders must learn to employ digital technology and reap its advantages while still retaining the analog tools that provide reliable backup and the analog skills that are ultimately the only means of successful leadership of human soldiers.



Notes

¹George S. Patton Jr., *War As I Knew It*, Houghton Mifflin, Boston, 1947, p. 354.

²S.L.A. Marshall, *Men Against Fire*, Peter Smith, Gloucester, Massachusetts, 1978, p. 41.

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Photo: Warren Zinn
Army Times

Course-of-Action Development for the Maneuverist Approach

by Lieutenant Colonel Kevin D. Poling

The commander's concept is his supreme contribution to the prospect of victory on the battlefield whether he is at the tactical or operational level. Without a sound and dominating concept of operation, no amount of command presence, personal flair, years of rectitude, demonstrated integrity, advanced degrees, perfectly managed assignments, warrior spirit, personal courage, weapons proficiency or troop morale can hope to compensate. Of all the qualities we seek to imbue in our leaders, the ability to create and apply a powerful pre-emptive concept in the heat and pressures of battle and to propagate that central set of ideas throughout the minds of his subordinates is the heart of command.¹

— General William E. DePuy

I congratulate all who are participating in current tactical operations in Iraq. My recommendations in this article are based on observations from unit training events over the past several years and are not meant as a bad reflection of our brilliant success at the tactical level in Operation Iraqi Freedom. I hope this article provides a foundation on which to discuss lessons learned from this war.

One of the great benefits of being an observer/controller at the National Training Center (NTC) is the ability to sample and assess the smorgasbord of techniques and procedures used by our battalion-sized units in conducting operations over a 15-day campaign and training rotation. U.S. Army doctrine, although prescriptive, gives commanders a fair amount of latitude in developing various methods to accomplish their assigned task and purpose. Doctrine, as expressed in our respective field manuals and mission training plans, lays the foundation on which battalions develop varying internal techniques and procedures. Modifications are made that reflect not only the commander's personal viewpoints on using varying techniques and procedures to execute doctrinal missions, but also a habitual way of doing things tied to the higher headquarters' method of executing doctrine and missions.

More specifically, battalions arrive at the NTC with various tactical standing operating procedures (TACSOPs) used to plan, prepare for, and execute missions. These measures constitute the very essence of the unit's ability to effectively convey missions to subordinate units. Each battalion comes to the NTC with some rehearsed, if not also written, methodology on how the commander and staff will develop and publish the battalion's operations order (OPORD) using the military decision-making process (MDMP) from U.S. Army Field Manual (FM) 101-5, *Staff Organization and Operations*, as the guide.² Some units execute this technical process better than others and for differing reasons: a better train-up program; a better understanding of how to operate in a time-constrained environment; or simply a better preparation than others to execute the MDMP here at the NTC.

This statement is not surprising or earth shattering. But what is astonishing is that no matter how effective or ineffective our technical process, battalion OPORDs are generally not well written and, subsequently, the battalion plan is not effectively communicated to subordinates. This observation rings true rotation after rotation. Our battalion-sized units are not meeting the standard in terms of conveying the basic combined-arms



"In many instances, the battalion gives conflicting tasks and purposes to subordinates in the concept of operations, the maneuver subparagraph, and task to subordinate unit's subparagraph. Instead of keeping things simple using task and purpose, and stating that task and purpose only once in the order, many units deem redundancy and the use of a very detailed, wordy concept as the only way to fully communicate "how" the battle will be fought."

plan to subordinate units in an easily understood or readable fashion. Subordinate unit commanders and leaders, therefore, do not truly understand what is expected of them for the upcoming mission.³ The issue is not a result of various formats we are using, but of the thought process, the art, the tactical problem-solving, and the language that goes into developing a well-conceived OPORD and concept of operations. From the military art perspective, we know full well what we have to do, but in the end, we do not really know how to develop a good tactical plan combined with the means to communicate that plan to subordinates. Without a solid course of action, units can never hope to effectively integrate the available assets of other battlefield operating systems (BOSSs) or produce an OPORD that offers subordinates a clear, concise, and simple concept of how the battalion will accomplish its assigned task and purpose.

In general, at the battalion level, we are not good tactical problemsolvers, and we do not communicate our tactical plans well to our subordinates. This article outlines a methodology that will allow battalion-sized units to develop a sound and simple tactical plan using task and *meaningful* purpose, and to communicate that plan effectively to subordinates.⁴ It starts with developing a good course of action (COA) and COA statement that, in the end, positively affects the other steps of the MDMP. COA development becomes the solid foundation and focal point of

not only the MDMP, but also of the OPORD as expressed in the concept of operations. This mental methodology becomes the military artist's guide to both developing a solid tactical plan and putting that plan into an easily understood and readable narrative for subordinates to execute. This methodology works in both time-constrained and time-abundant environments. It can be used to produce a full OPORD, or to develop and issue a fragmentary order (FRAGO) during the conduct of the fight.⁵

Small-unit fights, engagements, and battles are a contest of wills among opposing commanders, leaders, and soldiers. The critical core of warfighting lies in our mental approach to outmaneuvering and outsmarting our opponent to win.⁶ The concept of operations to win the fight is certainly the heart of command, but to what purpose? It is to shatter the opponent's will to fight, and hence the linkage between the mental activity necessary to develop a course of action and the mental goal of the maneuverist's approach to winning — two sides of the same coin. The goal of course-of-action development is to articulate a concept that, when executed, imposes our will over the enemy's to accomplish our assigned task and purpose, or our unique contribution to the higher mission. The maneuverist approach is inseparable from developing a concept of operations in the spirit of General DePuy's words and our own warfighting doctrine.⁷

*Maneuverist approach...an approach in which shattering the enemy's overall cohesion and will to fight is paramount. It calls for an attitude of mind in which doing the unexpected, using initiative and seeking originality is combined with a ruthless determination to succeed.*⁸

— Design for Military Operations:
The British Military Doctrine, 1996

If we experience problems in our creativity to develop tactical plans and effectively convey them to our subordinates, then we fall short of our goals and thus fall short in mission accomplishment. The second-order effects of this issue are critical: subordinate units spend many valuable hours figuring out *what* they must do for their part of the plan and *why*, rather than focusing on *how* to accomplish their assigned mission. Subordinate unit planning time is squandered and critical preparations contained within the troop-leading procedures (TLPs) and unit SOPs are not executed to standard, if at all. It is not enough for a battalion to have a good-looking OPORD format, a good technical orders production process and SOP, and an effective battalion timeline, if the OPORD language and the solution to the tactical problem offer unclear, conflicting, and ineffective guidance to subordinates. Although these former elements are all necessary for success, the OPORD will fail to convey the commander's mission and concept of operations, enhanced by the commander's intent, if the language, tactical solution, and guidance are conflicting and confusing. Although these issues might be clarified in a subsequent FRAGO or at the battalion rehearsal, many valuable hours of subordinate units' preparation time is needlessly wasted.

What are some of the specifics regarding this issue? In many instances, the battalion gives conflicting tasks and purposes to subordinates in the concept of operations, the maneuver subparagraph, and task to subordinate unit's subparagraph. Instead of keeping things simple using task and purpose, and stating that task and purpose only once in the order, many units deem redundancy and the use of a very detailed, wordy concept as the only way to fully communicate "how" the battle will be fought. The more words and detailed guidance the better, so goes the prevailing thought. Of course, this trend toward length increases the possibility of error, especially in a time-constrained environment mixed with the ever-increasing duress and fatigue of a rotation. Units that try to circumvent the standard OPORD format by using a matrix order are many times terse in their lan-

guage. The flow and narrative of what we want accomplished and why are lost in the various boxes of that matrix.

In other cases, the purpose and the key tasks contained in the commander's intent are in conflict with other parts of the OPORD such as the mission statement and the concept paragraph. In some instances, the developed concept of operations really does not achieve the commander's desired endstate expressed in the commander's intent. Many times, the order is strictly task-oriented, with no thought given or expressed as to the "why" of the operation or "why" we are giving our subordinate units their respective tasks, let alone any nesting of these purposes within the concept of operations. Subsequently, our wargaming process suffers because we start course-of-action analysis without a solid, well-articulated course of action on which to actually wargame. This bogs down the already difficult process of wargaming as we attempt to figure out what course of action we really developed to produce an integrated, combined-arms plan through this process. Frustration and fatigue then lead to an orders production process that produces the aforementioned type of battalion OPORD. If the maneuver plan is not well conceived or expressed, then we will never achieve a truly integrated plan with regards to using the available assets from across the other BOSs.

There is a tendency for commanders to focus on their commander's intent instead of ensuring that the commander's *intention*, their concept of operations, is fully developed and clearly expressed.⁹ Commander's intent only goes so far in explaining "how" the unit will accomplish its mission in sufficient detail.¹⁰ By keeping with the spirit of General DePuy's article and the doctrinal role of the commander's intent statement, only with a fully developed and clearly expressed concept of operations can a commander and staff give truly specific and concise guidance, fully using task and meaningful purpose, to subordinate units to accomplish the unit mission. The commander's intent is then critical to enhancing what the concept of operations states with this regard. More effort focused on the commander's intention, the concept, will reap great dividends for the commander and staff.

Based on this, less is better and we should always keep the audience in mind when writing an order. What is wrong with simply stating our subordinate units' task and purpose in a very simple narrative paragraph within the concept of operations that is enhanced by the commander's intent, and the other doctrinal parts of paragraph 3, to produce an effective and easily understood OPORD? Why, in the beginning of the 21st century, can we not live up to the guidance expressed below by three 1930 military establishments as they do address producing a clear and readable OPORD?

*An order should contain everything a subordinate must know to carry out his assignment independently, and only that. Accordingly, an order must be brief and clear, definite and complete, tailored to the understanding of the recipient and, under certain circumstances, to his nature. The person issuing it should never neglect to put himself in the shoes of the recipient.*¹¹

— German Army Regulation 300,
Command of Troops, 1936, No. 73

The order may have seemed clear to the man who wrote it, but it was not clear to the man who had to execute it, and that is the all-important thing... If seasoned professionals can misinterpret their own specialized vocabulary, it is certain that non-professionals will fare even worse. In peace, then, special emphasis should be laid on the language employed in orders. Leaders of all grades should be trained to test every word, every phrase, every sentence, for ambiguity and obscurity. If, by even the wildest stretch of the imagination, a phrase can be tortured out

*of its true meaning, the chance is always present that it will be. Short, simple sentences of simple, commonplace words, will go far toward making an order unmistakable.*¹²

— U.S. Army Infantry School, *Infantry in Battle*, 1939

*When issuing orders, the formation commander must pay special attention to the clear and concise formulation of the broad missions of formations and units, and to bringing out the underlying idea of the plan he decided on... The art of drawing up orders calls for skill in putting the concept of the operation vividly and lucidly in a few words.*¹³

— Red Army's New Field Service Regulations, 1936

One can imagine an officer of the 1930s, who is versed in the doctrine of his day and reincarnated in the present, could conduct an extremely effective after-action review (AAR) on today's training battlefield as it concerns the production of battalion OPORDs. Using only the three above quotes as the standard, our OPORDs would provide an extremely effective teaching and AAR example for use by this officer. Obviously, we can do better.¹⁴

If this is the case, how can we expect to meet the goals of the concepts mentioned at the beginning of this article? My solution to this issue contains a structured thought process to produce a solid course of action and course-of-action statement. This process guides the mental and intellectual capital of the commander and staff that is critical in allowing the COA and COA statement to become the foundation of a solid decision-making process.¹⁵ Units can certainly adapt this process to a time-constrained environment in producing a FRAGO, and it also supports the tenet of agility as well because it is a *mental* model that can be used with the digitized tools provided by the Army's battle command systems. That is what tactical problem-solving is all about.

The prerequisites established for COA development, outlined below, give needed focus to both the mission analysis (MA) process, as well as the guidance given by the commander to the staff following the MA brief. The commander and staff then know full well what answers they must produce as part of the MA process to meet the prerequisites of COA development. On the other end, a fully developed combined arms COA and statement provide needed focus for course-of-action analysis and will make the wargaming process smoother for the entire staff. No more COA development during wargaming need occur. The staff can focus on *how to* integrate available assets into the plan and synchronize the activities of those assets for the fight. Wargaming is reestablished as a specific "how to" integration drill rather than as a base plan development mechanism. In addition, this process will bring some intellectual and procedural discipline to many units' practice of just taking the commander's guidance of a directed COA and going right into wargaming without first producing a formal COA and COA statement. After wargaming, the resulting outputs, along with the COA statement, are refined to produce the doctrinal pieces of the unit's OPORD for that particular mission.¹⁶

Hence, COA development becomes the central foundation on which to execute the decisionmaking process that results in a solution to the unit's tactical problem and expression of that solution in the unit's OPORD. The 11 steps of that COA development process are listed below:

STEP 0: Mission analysis conclusions that answer COA development prerequisites.

The commander and staff must answer the following prerequisites coming out of the mission analysis process and the commander's guidance to develop a course of action. This is not an

all-inclusive list. Units should adapt these prerequisites as necessary for FRAGOs and extremely short timelines:

- Understand time available.

- Estimate roughly the correlation of force ratios and comparative combat power between friendly and enemy forces. These numbers tell you nothing about friendly or enemy force capabilities. However, planning without regard to relative combat-power capabilities at specific places and times leads to flawed-planning assumptions. The numbers derived in this step are tools for planning the array of forces and drawing logical conclusions about estimated combat-power capabilities at the start point, decisive point, and endstate throughout the COA development process.

- Develop a modified combined obstacle overlay (MCOO) that describes the physical environment, such as effects of terrain, weather, and civilian considerations, in which we will operate.

- Enemy considerations: develop an enemy situation template (SITEMP) and course-of-action statement two levels down, using task and purpose and the nesting concept that reflect the most likely enemy course(s) of action; define enemy success and failure through the eyes of the enemy commander; define criteria that will cause the enemy commander to change his COA or execute a contingency plan; define times and places where the enemy commander can decide to change his COA or execute a contingency/counterattack plan; define times and places where the major enemy force is decisively committed, such as the inability to change their COA, even if the commander tries to; and define points where the enemy commander can mass combat power faster than we can.

- Friendly considerations: understand the current operation and estimated duration as it affects the next mission; understand the approved restated mission and the unit's unique contribution to the higher headquarters' task and purpose; understand the unit's limitations, and the mission's critical event times and locations; receive commander's guidance that at least identifies the decisive point within the area of operations and the mission's endstate; understand current and projected combat power two levels down; define the minimum space subordinate units require to occupy for critical events such as the frontage, depth, and size of sectors, zones, and battle positions; define the minimum combat power or resources needed to perform critical events to accomplish task and purpose; define the time and place of decisive commitment such as the point during execution where we lose the flexibility to change a COA; identify decision points and transition points such as where we can transition to a branch or sequel with capability required to execute; and identify reconnaissance priorities and time required for reconnaissance over the duration of the operation.

- Analysis of combat power conclusions — compare friendly and enemy strengths and weaknesses using the elements of combat power. List your conclusions regarding relative combat power strengths and weaknesses for the operation. Identify who possesses the advantage in each category, with particular emphasis on how these elements of combat power affect using the maneuverist approach:

- *Maneuver*: explain why each side has positional or mobility advantages or disadvantages relating to other friendly forces, the enemy, and the terrain. The aim is to understand where either side can gain a positional advantage over the opponent to deliver fires or fire potential to accomplish their task and purpose.

- *Firepower*: explain the advantages and disadvantages associated with direct and indirect fire capabilities. Consider

weapons system range capabilities, day and night target acquisition capabilities, nonlethal capabilities, joint capabilities, and sustainment capabilities. The aim is to understand how either side can best use firepower to integrate with, and enhance the advantages of, maneuver to accomplish their task and purpose.

- *Protection*: explain the advantages and disadvantages associated with each side's ability to prevent the enemy from disrupting preparation and execution of the operation with emphasis on force protection measures. Consider reconnaissance and security capabilities; passive and active protective measures within the physical operating environment; engineer, air defense artillery, chemical, and signal capabilities, and lines of communications security capabilities. Factor in considerations of safety, field discipline, and fratricide avoidance as necessary. The aim is to understand how either side can best preserve their combat power while degrading the opponent's combat power.

- *Leadership*: explain any factors that may enhance or inhibit either side's ability to operate at its optimum level of proficiency. At the tactical level, consider both unit leadership and specific leader personalities. Consider how long a force has been in combat, the effect of casualties and replacements, the effect of unit reorganization or organizational changes, and communications capabilities. The aim is to understand how either side can best use its leadership capabilities while exploiting the leadership vulnerabilities of their opponent.

- *Information*: explain any factors that may enhance or degrade either side's ability to conduct offensive or defensive information operations (IO). Consider how offensive IO by either side can seize and retain the initiative by creating effects which impact on the opponent's information, information systems (INFOSYS), and decisionmakers. For defensive IO, consider either side's ability or inability to protect and defend information and their information systems. Consider both offensive and defensive capabilities in terms of IO elements and related activities as necessary: military deception, psychological operations (PSYOP), electronic warfare (EW), operations security (OPSEC), physical destruction, computer network attack, counterdeception, counterpropaganda, counterintelligence, physical security, information assurance, public affairs, and civil-military affairs. The aim is to understand how either side can best exploit the use of information and information systems to degrade their opponent's ability and enhance their own ability to employ the other four elements of combat power to accomplish their task and purpose.

STEP 1: Generate conceptual possibilities and gather tools.

Based on the conclusions in STEP 0, you can begin to develop options for exploiting enemy weaknesses and capitalizing on your strengths to achieve your purpose. The conclusions also establish a relationship between enemy forces, friendly forces, and the physical environment relative to the decisive point. To develop a plan to impose friendly will on the opponent, you must visualize the point at which, relative to time, space, requirements, and realistic capabilities, our side will start winning and the enemy starts losing — the decisive point of the operation. You should now have a rough, mental course of action developed in accordance with the maneuverist approach on which to proceed:

- The COA developer can use a detailed sketch map, computer screen, or a physical map of the area of operations (AO), posted with high-level graphics, to begin his physical development of the COA. Ensure that the visual aspects and understanding of the MCOO are represented on any of these formats. He should

also include staff representatives of the available BOS assets, such as ADA, fire support, MI, engineer, chemical, IO, aviation, and signal, for them to understand the development of the scheme of maneuver, and participate in the process relative to their specific BOS and the commander's guidance.

- Post the commander's intent and restated mission nearby as a ready reference. Post the "nesting diagram" that shows our unit's relationship to the higher headquarters' mission as well as our "horizontal" task and purpose relationship with other units executing this operation.

- Array enemy forces at the decisive point using the most likely enemy COA SITEMP that portrays enemy forces two levels down. In addition, post the enemy COA statement as a ready reference.

STEP 2: Array main effort, then supporting effort forces, two levels down at the decisive point.¹⁷

Array friendly combat power two levels down at the decisive point using decision graphics on the first, working sketch. For example, at brigade-level, show maneuver companies; at battalion-level, show maneuver platoons. Array forces independent of the current task organization and current command and support relationships.

Allocate sufficient combat power required to accomplish all critical events at the decisive point. Combat power is based on the COA developer's use of battlefield calculus and tactical judgment drawn from the conclusions in Step 0. This first array should show an informal grouping of maneuver elements two levels down.

Use stickers, a pencil, or generic computer icons first. Do not commit "pen to paper" until satisfied with the array of friendly forces required to accomplish the mission. Stay focused on the planned operation and your unit's unique contribution to the higher headquarters' mission. Beyond taking a note regarding

the requirements, do not get sidetracked by branches or sequels at this point.

STEP 3: Identify meaningful purposes for the main effort force and all supporting effort forces.

Develop a meaningful purpose for the main effort maneuver force that "vertically nests" with the higher headquarters' mission, and then develop meaningful purposes for the maneuver force supporting efforts that "horizontally nest" directly or indirectly with supporting the mission accomplishment of our main effort force. Use bullet phrases at this point. If you initially plan on having a reserve force, identify purposes for commitment of that reserve in descending order of priority.

Using input from the BOS representatives, develop meaningful purposes for the supporting efforts of combat support assets that horizontally nest directly or indirectly with supporting the mission accomplishment of our main effort force. Again, use bullet phrases, for example:

- Protect the left flank of Armor Company No. 1.
- Prevent enemy from disrupting 2d Brigade's defensive preparations.
- Enable TF 1-25 AR to seize OBJ BLUE.
- Allow mech team No. 1 to mass fires against enemy in OBJ RED.
- Cause enemy to commit AGMB to the north of OBJ GREEN.
- Deny enemy from massing direct fires against TF 1-5 IN's attack along AXIS GOLD.

STEP 4: Determine tactical tasks that will accomplish the stated purpose for the main effort force and supporting effort forces.

Determine the tactical task that provides the estimated minimum effects needed to achieve the purpose of the main effort force, maneuver force supporting efforts, reserve force, and other BOS asset supporting efforts, respectively. Tactical tasks and definitions are explained in Appendix B of FM 3-90, *Tactics*.¹⁸

STEP 5: Task-organize forces and then assign command and control headquarters to unit groupings.

Formalize the task organization of combat power two levels down, and then assign headquarters to each of these groupings. Based on time available and your commander's preferences, you can assign specific units to these groupings or you can assign generic headquarters. You can assign specific units during wargaming after further analysis of what unit would best suit the specifics of the mission (B/ 1-26 Armor versus Armor Company No. 2).

STEP 6: Reevaluate vertical and horizontal nesting of subordinate unit and combat support assets' task and purpose.

Take a step back and evaluate your rough course of action at this time to determine if the task and purpose you have assigned to the main effort "vertically" supports mission accomplishment of your unit and higher headquarters. Also, determine if you are supporting efforts' task and purpose directly or indirectly, "horizontally" supports mission accomplishment of the main effort force. Make adjustments as necessary. Include all BOS representatives in this reevaluation process to ensure these



"To develop a plan to impose friendly will on the opponent, you must visualize the point at which, relative to time, space, requirements, and realistic capabilities, our side will start winning and the enemy starts losing — the decisive point of the operation. You should now have a rough, mental course of action developed in accordance with the maneuverist approach on which to proceed."



“One of the great benefits of being an observer/controller at the National Training Center (NTC) is the ability to sample and assess the smorgasbord of techniques and procedures used by our battalion-sized units in conducting operations over a 15-day campaign and training rotation. U.S. Army doctrine, although prescriptive, gives commanders a fair amount of latitude in developing various methods to accomplish their assigned task and purpose. Doctrine, as expressed in our respective field manuals and mission training plans, lays the foundation on which battalions develop varying internal techniques and procedures.”

fight. Use the components of the battlefield organization to guide this step as necessary. Brevity and simplicity in explaining the scheme of maneuver are paramount.

assets are used effectively to allow either the main effort or supporting efforts to accomplish their task and purpose, respectively. Include the XO to get a different perspective on the details of the COA. Does your draft COA achieve the commander’s desired endstate?

Conduct a risk analysis. Where requirements exceed available combat power, conduct this risk analysis and reassess the COA for feasibility, suitability, and acceptability. Risk analysis includes analyzing the risks to the force and determine measures required to protect the force. There are two types of risk inherent to any COA: the COA incurs unacceptable friendly casualties, thus rendering the unit incapable to continue the fight; and the enemy does something unexpected that our COA cannot handle. All combat incurs both risks. The objective is to minimize them to acceptable levels. Develop an understanding of the risks by comparing potential enemy threats, combat power availability or combat multipliers to mitigate the threats, and whether or not mission success outweighs the risk. Never accept unnecessary risk. Do not accept risk just because something is in the “too hard” box. This reflects indiscipline and can be quickly associated with tactical incompetence. To identify risk to the unit and the mission define the enemy action, identify friendly combat power shortfall, identify available combat multipliers to mitigate risk, and determine if risk acceptable or unacceptable.

If you determine more than one decisive point, or have more than one essential task and purpose for the main and supporting effort forces, you will probably realize that the COA may fail tests of feasibility or suitability because of incorrect analysis of the unique contribution of your unit to higher headquarters’ success, incorrect analysis of time and space requirements, incorrect analysis of subunit capabilities to meet critical requirements, and the COA addressed a branch or sequel rather than the current operation.

The course of action will be too complicated to articulate in an OPORD or a FRAGO, and cannot be coordinated clearly, concisely, simply, and timely. Once necessary adjustments are made, proceed to Step 7.

STEP 7: Develop the full scheme of maneuver.

From the decisive point, develop the scheme of maneuver by working your way backward to the start point and forward to the endstate. Address, in enough detail to cover necessary unit activities and tactical movement, how your unit reaches the decisive point of the operation, wins the fight at the decisive point (which you already have accomplished above), and then achieves the desired endstate. If the operation is phased, develop these phases as they support the unit reaching the decisive point in the

STEP 8: Develop and assign necessary graphic control measures.

Develop the minimum control measures required to clearly convey scheme of maneuver, responsibility for terrain, initial direct and indirect fire planning, and any other coordination activities to ensure that subordinate units can accomplish their assigned task and purpose.

STEP 9: Prepare the course-of-action statement.

The COA statement must be a clear and concise expression of the unit’s solution to its current tactical problem. The statement must be easy to read and understood by a subordinate in a single rapid reading. Take the bullet comments and phrases from your work in the previous steps, and then write proper English sentences and paragraphs that clearly convey the flow of the operation. Use the following outline to construct the COA statement in paragraph form:

- Restated mission — who, what, where, when, and why.
- State the general type of offensive, defensive, or tactical enabling operation for the force as a whole, and responsibility for critical doctrinal missions associated with the respective type of operation. If conducting stability operations or support operations, address the specific type and any known specifics of the operation.¹⁹
- Using battlefield organization categories — shaping, sustaining, and decisive operations or deep, close, and rear areas — describe how the integration of subordinate maneuver units and BOS supporting assets will achieve the decisive point and execute the scheme of maneuver.
- Articulate how we successfully accomplish our mission in relationship to the decisive point. Include all elements, such as task and purpose for the main effort, task and purpose for maneuver supporting efforts, task and purpose for BOS supporting assets, task and purpose for reconnaissance and security forces, priorities of commitment (tasks and purposes in descending order of priority) for the reserve force, and task and purpose for the tactical combat force (TCF). If the operation is phased, clearly define, in terms of an event or conditions, when each phase starts.
- State acceptable risk and the justification for accepting it. Address and mitigate risk in wargaming, do not include these statements as you transfer the COA statement into the OPORD’s concept of operations.
- Conclude with the commander’s desired endstate from his intent.

STEP 10: Prepare the course-of-action sketch.

The final COA sketch must clearly convey the scheme of maneuver articulated in the statement using correct graphics in accordance with FM 101-5-1, *Operational Terms and Graphics*.²⁰ Use decision graphics to show combat power allocated to accomplish the task and purpose, and appropriate level of command responsibility. Using decision graphics will ease the COA analysis process by the staff as they adjudicate results from the wargame. Portray units in a manner that conveys relationship to the overall type of operation. Use dashed symbols to convey endstate. Draw solid and dashed boundaries to convey subordinate responsibility for terrain. Appropriately include the following on the sketch to provide a clearer picture of the scheme of maneuver, direct and indirect fire planning, and areas of responsibility: boundaries one level down to designate zones/sectors; additional phase lines; assembly areas; battle positions; axis of advance/direction of attack; engagement areas; objectives; forward edge of battle area, forward line of own troops, and/or line of departure/line of contact; major manmade and natural obstacles; direct fire and indirect fire support coordination measures; key terrain; identifying features, such as cities, rivers, and highways, to enhance orientation; and any other measure that enhances the effectiveness of the sketch in visualizing how your unit accomplishes its task and purpose and wins the fight.

In many ways, developing an effective, easily understood COA and COA statement is like developing and writing a narrative composition. The mission statement becomes your thesis, while the commander's desired endstate functions as the conclusion. From where does the composition's main body come? Of course, from the intellectual capital and hard work the COA developer exhibits during execution of Steps 0 through 8, which are the major points that serve to prove your thesis.

These steps function as a mechanism to develop a solid solution to the unit's current tactical problem, and the derived product serves as the basis for the main body of the narrative — the concept of operations. Major Marion Miles explains, "A unit's purpose must order the concept of the operation by connecting subordinates either directly or indirectly. All the functional systems within the organization must be connected by purpose to the maneuver function. On a chaotic battlefield, this is the only reliable way to achieve synchronization. Articulating a common purpose is the only consistent method to secure intelligent, adaptive initiative."²¹ This process is a structured, mental methodology that allows you to solve the tactical problem using the maneuverist approach and clearly articulates that solution to your subordinates. I believe this process will assist our units and leaders in generating and disseminating the best possible tactical solutions to defeat any future adversary.



Notes

¹General William E. DePuy, "Concept of Operations: The Heart of Command, The Tool of Doctrine," *Army*, August 1988, p. 40. This article plays a prominent role in the course methodology of A306, *Maneuver Brigade Warfighting for the S3/XO*, online at <https://cgsc2.leavenworth.army.mil/ctac/courses/a306/advbook.asp>, Lesson 4.

²U.S. Army Field Manual (FM) 101-5, *Staff Organization and Operations*, U.S. Government Printing Office (GPO), Washington, DC, 31 May 1997.

³*Ibid.*, pp. H-3 and H-4.

⁴I believe Major James Larsen says it best in regards to *meaningful* purpose in his article, "Fighting with a Purpose," which is used in CGSC's A302 elective course on Corps Operations. "The purpose — the 'why' — in the mission statement and the accompaniment of every task assigned in the concept of operations must be meaningful. The main effort's purpose must relate to the higher headquarters' purpose (vertically nested). The purpose assigned to each supporting effort must relate either directly or indirectly to that of the main effort (horizontal nesting). It is only through a clear and thorough understanding of the interrelationship of purpose that large, complex organizations can prosper in a chaotic environment, the talent of leaders can be exploited, and the conditions set for subordinate initiative. We must understand that the tasks that we derive during mission analysis may change during execution... Only a clear understanding of our purpose will usually prevail in the fight against a willing and able enemy... For sol-

diers and leaders to act boldly and decisively in a chaotic environment, they must also understand their unit's true purpose — their unit's unique contribution to the fight."; CPT Dave Thompson and CPT P. Kevin Dixon, "The Reason 'Why' We Will Win," *ARMOR*, July-August 1997; MAJ Luther Shealy, "Purpose-The Power Behind Initiative," <https://cgsc2.leavenworth.army.mil/ctac/courses/a306/advbook.asp>, Lesson 1; and MAJ Marion L. Miles, "Fighting Without Boundaries: Unleashing Initiative on the Tactical Battlefield," School of Advanced Military Studies, Fort Leavenworth, KS, pp. 11-26 and 41-46, for the relationship of purpose and subordinate leader initiative.

⁵LTC John F. Antal, "It's Not the Speed of the Computer That Counts! — The Case for Rapid Battlefield Decision-Making," *ARMOR*, May-June 1998. For more on the differences between analytical and recognition decisionmaking, see Major John Schmitt, "How We Decide," *Marine Corps Gazette*, October 1995; and FM 6.0 (DRAG), *Command and Control*, GPO, Washington, DC, March 2001, paragraphs 2-47 to 2-53.

⁶W.J. Wood, *Leaders and Battles - The Art of Military Leadership*, Presidio Press, Novato, CA, 1984.

⁷Major General John Kiszely, "The British Army and Approaches to Warfare since 1945," in Brian Holden Reid's *Military Power-Land Warfare in Theory and Practice*, Frank Cass & Company, Ltd., London, 1997, pp. 180-181; FM 6-0 (DRAG), paragraphs 1-50 through 1-57; and FM 3-90, *Tactics*, Chapter 1, paragraphs 1-16 and 1-38 through 1-49.

⁸Kiszely, pp. 180-181.

⁹Merriam Webster's Collegiate Dictionary defines "intent" as "that which is intended; purpose; having the mind fixed on some purpose," while "intention" is defined as "a plan of action; design; determination to act in a certain way." Please note the subtle distinction which parallels and guides the different purposes of commander's intent and the concept of the operation within a unit's OPORD.

¹⁰FM 101-5, *Staff Organization and Operations* p. 5-9, for an explanation of "what" commander's intent consists. Of note, it is *not* COA specific, which means its function is different from the concept of operations. See also FM 6-0 (DRAG), *Command and Control*, paragraph 1-57, 2-11, and 4-23 to 4-28.

¹¹LTC John F. Antal, "The Wehrmacht Approach to Maneuver Warfare Command and Control," in Richard D. Hooker's, *Maneuver Warfare: An Anthology*, Presidio Press, Novato, CA, 1993, p. 349.

¹²"Infantry in Battle," *The Infantry Journal, Inc.*, 1939, pp. 161 and 158.

¹³Richard Simpkin, *Deep Battle: The Brainchild of Marshall Tukhachevskii*, Brassey's Defence Publishers, 1987, p. 205.

¹⁴Unfortunately, this is not a new problem. See William F. Crain, School for Advanced Military Studies monograph, "The Mission: The Dilemma of Specified Task and Implied Commander's Intent," U.S. Command and General Staff College, Fort Leavenworth, KS, 1989, p. 38.

¹⁵*Infantry in Battle*, p. 1, states, "each situation is unique and must be solved on its own merits. It follows, then, that the leader who would become a competent tactician must first close his mind to the alluring formulae that well-meaning people offer in the name of victory. To master his difficult art, he must learn to cut to the heart of a situation, recognize its decisive elements and base his course of action on these."

¹⁶Standard outputs from wargaming, but certainly not limited to these items, are as follows: a synchronization matrix; finalized task organization and command/support relationships for subordinate units; additional tasks and coordinating instructions for subordinate units; a finalized R&S plan; finalized direct and indirect fire plans for the unit; finalized graphic control measures; command and control, combat service support, and MOB/C-MOB/SURV considerations; finalized commander's critical information requirements that underscore and support the commander's decision points; production of a decision support template that identifies and integrates branches to the base plan; and any modifications to the base COA statement as it becomes the OPORD concept of operations.

¹⁷Based on how your mind functions best, you can execute Steps 2 through 5 either sequentially as laid out above, or you can execute these steps simultaneously to produce the desired effect.

¹⁸FM 3-90, *Tactics*, GPO, Washington, DC, 4 July 2001.

¹⁹For an explanation of applying the maneuverist approach to stability operations, see COL J.J.A. Wallace, "Manoeuvre Theory in Operations Other Than War," in Brian Holden Reid.

²⁰FM 101-5-1, *Operational Terms and Graphics*, GPO, Washington, DC, 30 September 1997.

²¹Miles, p. 47.

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The 2d Armored Cavalry Regiment's Outlook

by Sergeant First Class Thomas G. Adams

The 2d Armored Cavalry Regiment's (ACR) future has been discussed and written about ad nauseam. Which begs the question: What will it be like until then? Having been assigned to L Troop, 3d Squadron, 2d ACR for nearly six years, I have had some time to troubleshoot and problemsolve some of the capabilities and limitations of this organization. This is what I've come up with so far:

Issue: Increase Battlespace Management

Recommendation 1: The Army is buying a new laser target designator — give the old ones to the 2d ACR. The ground laser locator vehicle designator (GLLVD) uses the same thermal night sight that our current tube-launched, optically tracked, wire guided missile (TOW) systems use. Putting a GLLVD on each TOW not only increases options for the commander to use his copperhead artillery, it also allows the scouts to designate for Hellfire missiles, thereby decreasing or eliminating the warrior's flight time to and from the forward area arming and refueling point to reload a Hellfire. With the scouts designating the targets, the OH-58 Kiowa can stay out of contact, fire from a safer position with a fire-and-forget technique that further reduces turn around time for the next shot. Not having to acquire and track their own targets greatly increases the Kiowa's rate of fire and survivability, and because the Army does not have to buy new lasers, this option is inexpensive and available before 2010.

Recommendation 2: The Army is getting a new light howitzer to replace the current 105mm — again, give the old ones to the 2d ACR. The 120mm mortar only has 7,200 meters of range. With these mortars, a 2-kilometer doctrinal distance from the forward line of own troops and the doctrinal or extended frontage of the ground cavalry troop (GCT), the effective range at the troop boundaries creates seams that are too often exploited by the opposing force or the enemy. Replacing the 120mm mortar with the 105mm towed howitzer eliminates the indirect fire seams between the GCT and squadron. It also increases the sustained rate of fire and adds a direct fire antitank option for the GCT commander. The primary mover remains a HMMWV and troop-end strength stays the same with an MOS change from 11C to 13B, or consolidate the mortars into a squadron mortar platoon with a slight increase in 13B manning.

Recommendation 3: Change the squadron's howitzer battery to 105mm. This increases the squadron's deployability, mobility, and flexibility by adding antitank/direct fire capabilities, increasing sustained rate of fire, and changing the



primary mover to a HMMWV. The howitzer battery's unit basic load of ammunition can be increased by using 5-tons as ammo haulers, or reduce the squadron/regiment logprint by changing ammo haulers to HMMWVs. The squadron commander does lose some ammo options by switching to 105mm; organizing a regimental howitzer battery of 155mm, or relying on attachments can offset this.

Issue: Maximize 155mm Towed Howitzer Capabilities and Minimize Limitations

The towed 155mm howitzers are very accurate, but are limited because it takes an excessive amount of time to emplace or react to an out-of-battery mission.

Recommendation: Small emplacement excavators (SEE) should dig in the trails of the howitzers, with alternate holes dug left and right of the main holes to react to out-of-battery missions. Time permitting, additional pre-dug holes or trenches could be used to provide full-sector or 360-degree capability. The SEE can also help lift the trails out of the holes when they need to be moved.



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LETTERS from Page 4

Another example of simulation use at the USMA is incorporating the game *Army Operations* into the military science 102 classes, "Ground Maneuver Warfare I." Again, the cadets go through the process of developing operations orders and then executing their orders in a simulations classroom. The valuable lessons of fire and movement and synchronized planning are taught just as effectively in this environment as they are in the training area, and in this case, the cost was zero.

To keep the price tag of this new software low, market powers must be used to reduce expenses. One obvious method of reducing costs is to share the expense with the Marine Corps. Certainly, a simulator of this type would prove just as useful to them. Adding their equipment and littoral terrain to the simulator would not be difficult. The biggest way to reduce cost is to contract with a company and allow them to sell the simulator as a commercial game. The demand for military simulators in the civilian community is evinced by the popularity of games such as *Steel Panthers III*, *Panzer General*, and even *Army Operations*. A commercially available, tactical simulator/game actually used by the Armed Forces would be enormously popular. Armchair generals everywhere would rejoice.

If security concerns exist about simulator access, versions can be created with slight modifications, which are then marketed to civilians. Such an approach would allow the simulator to be developed with less expense since the developer could recoup some of its investment in the civilian market instead of charging the military the full cost. Once obtained, this software could be distributed to each battalion on CD-ROM for local use. This is the approach currently being used by 1st Armored Division and USMA with the *Steel Beasts* software. To obtain a superb simulator with custom specifications, these units combined spent approximately \$130,000. This is far less than the development costs for SIMNET and CCTT, yet is readily useable at battalion and below on existing equipment.

In conclusion, the ability to maneuver in the field most likely will not increase. Our combat leaders need more repetitions in a low-stress environment to gain tactical proficiency. The Army has apparently come to the same conclusion with the reorganization of its military education program for lieutenants through majors. The bottom line here is that units need easier access to realistic tactical simulators. Existing simulators require too much planning overhead to allow convenient access and often cost too much. A battalion commander needs the capability to run his company commanders through a battalion-level attack during an OPD without 3 months of planning. A PC-based simulator can provide this ability and do so at relatively low cost. Such a system can also be readily improved as PCs and LAN technology improves. The time has come to increase our repetitions using existing, low cost technology.

CPT PAUL MAXWELL
USMA
West Point, NY

Live Fire Accuracy-Screening Test — Is It Necessary?

Dear Sir:

When the possibility of deployment was brought up a few months ago, one question resounded from several meetings, "Do we need to screen with service ammunition, and if so, how?"

The question as to whether or not to screen service rounds seems to originate from their increased accuracy over training rounds. As defined in U.S. Army Field Manual 3-20.12, the live fire accuracy-screening test (LFAST) is designed to "ensure tanks can fire accurately using the fleet zero computer correction factor method of calibration," not to evaluate the ballistic solution. Armament accuracy checks (AACs) for the M1A1, or the automatic ballistic solution check for the M1A2/SEP, one prerequisite for conducting the LFAST, more specifically check 5 — the ballistic solution checks — are conducted to ensure that the ballistic solutions are properly implemented for fire control components and all main gun ammunition.

The computer correction factor (CCF) refines ballistic solutions, is obtained from stationary tank firings, and corrects for mean jump. Mean jump is one of three fixed biases. A fixed bias, as defined by U.S. Army Armor Center's Master Gunner Branch, is "an error of the ammunition, weapons, and fire control system that at any given range will cause a round to miss the desired aiming point in a constant direction. These errors are predictable, and therefore can be compensated for." Mean jump is also defined by the Master Gunner Branch as "the average difference between the actual impact of a group of rounds, fired over many occasions, and the intended strike of those rounds, given that all inputs to the fire control system are correct or within tolerance." In short, screening evaluates that the tank can accurately fire using the fleet CCF and that mean jump is properly compensated for that specific vehicle. While it is true that service rounds are much more accurate than training, the LFAST is not designed to evaluate the accuracy of the round. Main gun rounds, especially service rounds, are put through a long, rigorous series of tests and evaluations and are accepted only when a very stringent accuracy tolerance is met.

Most failures of the LFAST that result in a discrete CCF are due to initial errors during boresighting, undetected mechanical failure, crew error, or errors that can occur due to tolerances in the muzzle boresight device (MBD). Prior to conducting the LFAST, crews must complete the following to ensure the tank is ready to conduct screening operations with minimal expenditure of rounds:

- A thorough preventive maintenance checks and services (PMCS), ensuring all deficiencies that may effect direct fire precision are corrected. This should be completed several days prior to departing the motor pool to allow time for parts to arrive.
- AACs for the M1A1; automatic ballistic solution check for M1A2/SEP.

- Prepare-to-fire checks. These are not meant to replace a thorough PMCS. They are specific checks, typically determined by the commander and the master gunner, that crews should perform just prior to live fire.

- Collimation check of the muzzle boresight device (MBD).

- Boresighting with collimated MBD, to include all manual input data such as CCFs, air temperature, ammunition temperature, and barometric pressure.

A great majority of current tankers have never fired service ammunition. They, along with the rest of us who fire training ammunition on a regular basis, are not accustomed to the increased shock of firing that type of ammunition. Additionally, anything that will give the crew added confidence in their weapons system makes them a more lethal, competent, and dependable crew.

As everyone is aware, we use plywood targets to screen prior to conducting live-fire tank tables at home station gunnery. So what type of material do we use when screening service ammunition and where do we get it? Plywood is fine for Sabot rounds because it is a kinetic energy round, but what about high explosive antitank (HEAT) rounds or multipurpose antitank (MPAT) ammunition? Will they detonate and destroy our normal thin plywood targets? The answer is yes.

Through some research, I have found that there are several different types of material that may be used for screening service HEAT or MPAT ammunition. As suggested in Master Gunner Newsletter 03-02, use target cloth (NSN 8305-00-285-2152). There are a couple of problems that may be encountered when using target cloth. First, it comes in three-foot wide rolls. The unit has to have the panels sewn into 10' X 10' panels. Second, because it is a cloth, the round rips through the target and, therefore, it may not leave an easily identifiable point of impact. You can purchase rolls of denim or similar material, but the same problems would be encountered.

For several years, Yuma Proving Grounds has used a material they describe as "sunshade." It is basically the same material used to make home window screens, but denser. It is a tightly woven, black, fiberglass mesh that is purchased locally from a provider in Yuma. Because the round is hot when it strikes the target, the round actually burns through the panel, leaving a clearly defined hole that can be easily seen with low power optics at 1500 meters.

Here is the process that should be followed if units would like to procure these panels. A unit representative should first contact a team leader for Yuma Proving Grounds' Automotive and Combat Systems Division for Direct Fire Weapons, at DSN 899-6492. He will then verify that enough material is on-hand to complete the order and get a price estimate. Once you have the price estimate, your S4 can initiate a military interdepartmental purchase request (MIPR). The S4 can contact Yuma's Direct Fire Weapons Department Logistics Co-

LETTERS *continued*

ordinator at DSN 899-6205 for the information needed to complete the MIPR. The cost will be approximately \$1500 for 20 panels, which includes overnight shipping, if necessary. The material comes in six-foot rolls and is sewn together in their fabric shop. I would recommend that units order 11' by 11' panels to have some overage on either side for securing the panels to a frame.

Then there is the task of marking the panel. I made an illustration of the LFAST panel marked with measurements of the circle and crosshairs and took it to our local TSC. They then made a full-sized stencil out of a vinyl material. I then used regular white spray paint to mark the panel. Simply lay the panel on the ground, line up the stencil over it, and paint. Each panel requires one standard can of paint to be properly marked.

Prior to conducting the LFAST, the unit chain of command and the S4 must ensure that ammunition resupply is available and in sufficient quantity to replace the rounds fired from the unit's basic load prior to crossing the line of departure — prior to firing, confirm that there are no resupply constraints. Units may have to decrease the number of rounds fired to calculate a discrete CCF if there is insufficient service ammunition to conduct the LFAST. Finally, host nation environmental concerns about depleted uranium might hinder units from firing service Sabot. If this is the case, units will have to use the fleet CCF.

In the final analysis, screening is a necessary step in building combat power during reception, staging, onward movement, and integration. This will maintain the normal routine of gunnery preparation that all crews are accustomed to following. Most importantly, however, it will give the crews confidence that they will destroy what they engage. It confirms that their boresight is correct, that the breach works properly, it demonstrates the explosive power of the HEAT and/or MPAT round, and confirms that they are part of one of the most lethal combat platforms in the entire world.

SSG CHRISTOPHER M. QUILL
1-66 Armor Master Gunner

14th Cavalry Association Reunion

The 14th Cavalry Reunion will be held from 18 June through 22 June 2003 in Tacoma/Fort Lewis, Washington. The reunion is for all 14th Cavalry troops — Horse, WWII, Constabulary, ACR, and RSTA. Contact Frank Varljen at 703-791-6218 or e-mail at <f.varljen@verizon.net>.

USMC Vietnam Tankers Reunion

The USMC Tankers Reunion will be held from 21 August through 23 August 2003 at the Doubletree Airport Hotel, Seattle, Washington. The arrival day is scheduled for 20 August and departure day is scheduled for 24 August. For more information, please contact Dick Carey at 278 Main Street, Mashpee, MA 02649, e-mail <warveteran@aol.com>, or call 508-477-5957.

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ground elements are not tracking very specifically, or are not passing that information to the Apaches, maneuver in zone behind the front-line trace can quickly become a quagmire. If the enemy forces are in such proximity to preclude the use of indirect fires, the Apaches must have specific location of bypassed elements to engage them prior to operating in the zone. Without the ability to engage enemy behind the front-line trace, the Apache becomes extremely vulnerable as it maneuvers in zone.

Clearance of indirect fires. The final critical piece of air-ground integration is clearance of indirect fires. The key to efficient integration of indirect fires is division of tasks. It is most effective to use the ground maneuver FSE for targets of opportunity and the FSE supporting the aviation brigade for suppression of enemy air defense and ABF preparatory fires. If done correctly, dividing fires between the ground and aviation FSEs increases the available fires while decreasing the response time.

For this concept to be effective, it is critical for the targeting officer of the ground maneuver unit to understand the needs of aviation. While ADA does not pose a significant threat to the elements on the ground, it is difficult for Apaches to assist the ground scheme of maneuver, and for that reason, known ADA must be included in the ground maneuver concept of fires. During maneuver in zone, it is critical for Apaches to call for fires directly to the ground FSE on their net. For this to be effective, the ground commander must understand and incorporate the threat to aviation in his fires. Therefore, each FSE must coordinate fires through liaison and fire support rehearsals. Once in the battlespace, the critical piece to integration of indirect fires is to deconflict the location of COLT and scout elements with ABFs. For Apaches to operate in the close fight, they must have the availability of indirect fires to prepare the ABFs. Without this, Apaches are susceptible to surface-to-air missiles that have been bypassed or undiscovered by ground maneuver elements.

When the leader of the ground maneuver element is able to communicate directly with the Apaches on station and provide them accurate and timely situation updates of both friendly and enemy elements, the Apache can maneuver to best shape the battlefield. The integration of direct fires, tied to decisive events of the ground maneuver scheme, and ac-

curate and timely integration of indirect fires, are the ultimate goals of air-ground integration. The final result is a quick, coordinated, and efficient destruction of the enemy.



Notes

¹U.S. Army Field Manual (FM) 1-100, *Aviation Operations*, U.S. Government Printing Office, Washington, DC, 21 February 1997.

²FM 101-5, *Staff Organization and Operations*, U.S. GPO, Washington, DC, 31 May 1997.

³FM 1-111, *Aviation Brigades*, U.S. GPO, Washington, DC, 27 October 1997.

⁴Ibid.

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CPT Murphy A. Caine authored the "Mission Planning With the Ground Battalion" section of this article. He is currently serving as a support platoon leader, HHC, 1-227th Aviation Regiment, 1st Cavalry Division, Fort Hood. He received a B.S. from the United States Military Academy. He has served in various command and staff positions, to include support platoon leader, HHC, 1-227th Aviation Regiment, Fort Hood; scout platoon leader, B Company, 1-227th Aviation Regiment, Fort Hood; attack platoon leader, B Company, 1-227th Aviation Regiment, Fort Hood.

1LT Joseph G. Bruhl authored the "Battle Execution: Real Time Integration" section of this article. He is currently serving as a scout platoon leader, B Company, 1-227th Aviation Regiment, Fort Hood. He received a B.A. from Truman University. He has served in various command and staff positions, to include scout platoon leader, B Company, 1-227th Aviation Regiment, Fort Hood; and attack platoon leader, 1-227th Aviation Regiment, Fort Hood.

REVIEWS

An Army at Dawn by Rick Atkinson, Henry Holt and Company, New York, 681 pp., \$30.00.

Although early, it is not too early to declare Rick Atkinson the finest military historian of the 21st century. His new history of America at war in North Africa during 1942–1943 is the first of *The Liberation Trilogy*, with books to follow on Italy and Western Europe over the next 6 years.

Students and readers of military history are accustomed to authors who get the history right without the emotional content, or those who focus on the human face of war without following the flow of a campaign. Atkinson's art is to weave the emotional stress of war into the historical flow of battle. The reader gains the history, but with a deep sense of the human drama and all of its ambivalence. Atkinson has mastered the use of nuance, phrase, and prophetic suggestion in a style that is both poetic and emotional. You will laugh and cry when reading this book! He weaves the tales of countless soldiers — heroes and cowards — with a withering insight into their commanders. Whether praising or skewering these leaders, the diaries, letters, and reports of the soldiers have been exhaustively mined and woven into a tapestry that enfolds the reader with a vivid realism that sets a new standard for military history.

Worthy of praise are Atkinson's maps, which are both timely and useful. They are clear and concise and afford the reader a clarity that most historians and biographers fail to provide.

Beginning in the United States during 1942 with the planning for *Operation Torch*, Atkinson deftly portrays President Franklin Delano Roosevelt, Army Chief of Staff General George C. Marshall, and the principal Army and Navy commanders, Major General George S. Patton Jr. and Rear Admiral H. Kent Hewitt. His portraits of these men are highlighted by small details either unknown or previously ignored. Hewitt had commanded the *U.S.S. Indianapolis* in 1936 when President Roosevelt had spent a month aboard on a South American trip. So it is the wealthy, urbane, connected Patton who is left agog when the quiet Admiral introduces Patton to his commander in chief for the very first time. Details like this abound and are used by Atkinson in a prophetic way as he leads the reader to a fuller understanding of the complexities and relationships that turn future moments of history.

In his first meeting with the President, Patton in his inimitable way declares, "I will leave the beaches a conqueror or a corpse." It is no surprise that four and a half months later, the President notes in his diary that Patton, while escorting the President at Casablanca, tells him "at least five times that he hoped to die with his boots on." These threads abound in the book and reflect Atkinson's writing at its best.

For the inept or incapable, Atkinson's razor-edged sword is deft and frequent. Lieutenant

General Lloyd Fredendall is served up to the reader repeatedly in the middle portion of the book for his weak command and lack of personal courage. Having directed the dispersal of his American battalions among multiple Allied commands while savoring the taste of battle 200 miles from the fighting, Fredendall expends his engineer resources burrowing twin caves into a mountain for his II Corps headquarters. Atkinson savages Fredendall for issuing orders directly to his battalions while ignoring his division commanders and then fretting in an alcoholic stupor. Fredendall repairs to a Vichy mansion when the debacle at Kasserine Pass brings the fighting to within 100 miles of his cave. The 1st Infantry Division's mud-spattered artillery chief, Brigadier General Clift Andrus must await Fredendall's orders until served, "Dinner! Tablecloths, silver, waiters in white, beef — even ice cream." Sensing the personal consequences of the disaster, Fredendall cables Eisenhower to disparage Major General Orlando "Pinky" Ward, the 1st Armored Division commander, and try to make him the scapegoat.

General Andrus, a name forgotten by history, gains high praise from Atkinson for his superb artillery skills. Major General Terry Allen, one of the few fighters in senior command at this stage of the war, called his artillery chief, known as Mr. Chips, "The most skilled and practical artillery officer I know." Atkinson sees the artillery skills of Andrus as the crucial element that holds Rommel at Kasserine. What seals this German victory as the high water mark for the Axis in North Africa is another artilleryman, Brigadier General Stafford Le Roh Irwin, the 9th Infantry Division's artillery commander, who was "a skilled watercolorist who loved poetry almost as much as he loved massing fires." The reader comes away with a sense of the moment as well as a fresh appreciation for leaders vital to the success of America's fledgling Army and warmed with the glow of insight into their personality and character.

Reading this campaign afresh, the reader is left in wonder at the insecurity and weakness of the Allied commander, Lieutenant General Dwight D. Eisenhower, during the first half of the campaign. Yet, just as the American forces began to find the mettle to weather the brutality of modern war after Kasserine, so too does Eisenhower ripen into the leader our memories crave to recall. Atkinson leads you to these inflection points of history where the course of events are changed, always carefully highlighting them with personal and provocative vignettes of the soldiers and their commanders. These details are so intimately woven into events that at first reading, it is easy to question the author's knowledge of such details. What is so professionally satisfying is to check his sources and never find him wanting.

What we want is more of Rick Atkinson's *Liberation Trilogy*. Waiting three years for his treatment of the campaign in Italy will require patience, but a periodic rereading of *An Army at*

Dawn will at least make the wait worthwhile and help pass the time.

MG RICHARD D. CHEGAR
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SHARP CORNERS: Urban Operations at the Century's End, by Dr. Roger J. Spiller, Combat Studies Institute, U.S. Army Command and General Staff College Press, Fort Leavenworth, KS, 2000, 146 pp., available online at www-cgsc.army.mil/csi/.

I am proud to have been Roger Spiller's student while at Fort Leavenworth. That said, this is the most insightful 21st-century book on warfare that I have read. This book must occupy a place on a professional soldier's bookshelf. It must be read, reread, dog-eared, written in, discussed, and thought on.

The introduction is packed with concise prose. Spiller outlines his purpose to articulate where urban conflict will fit into the operational art, modestly writing, "it is hoped... this study will contribute." It most certainly does just that. Spiller previews his work tongue-in-cheek, "Like Gaul, the study is made of three parts."

The first part of the study develops the theme that to take apart a city one must know how cities are constructed in the larger sense. There is the ground-level city of streets and boulevards, and offices and homes. There is the subterranean city of sewers, subways, and tunnels. There is the above-ground-level city of skyscrapers, high-rises, and towers. Finally, there is the cyber city — that region of the ether where wireless local area networks dominate. How the entity that is a city came to be is a part of this section. The reader gets a glimpse of urban design, city management, public transportation management, and those means by which a city gains its fuel, power, food, and information. Knowing how a city is made and built, one can begin to get an idea of how to disrupt the pattern of activity in a city, and how to use the city to an attacker's advantage. The first section then sets the stage for the rest of the work. The first section ends with Spiller writing, "Looking backward, we can see that modern war began turning slowly toward urban operations again during the Second World War and that this trend has gained momentum ever since."

The second part of the study puts urban conflict into a historical perspective. In one chapter, Spiller distills the experience of other armies into a concise historical review of combat in cities. His section titles give a clue of the content and context of his work, such as "The Nature and Conduct of the Siege," "The Question of Asymmetry," and "The Invisible City." Spiller writes that cities bring out the worst in armies, and that armies bring out the worst in cities. Historically, the city that lay in the path of an advancing army had few options: capitulation before siege; resist long

enough to satisfy the dictates of honor; resist to avoid losing and hope the army will lose its will; and finally, resist to the bitter end. Besieging armies had three options on conclusion of a siege: put the entire city to the sword; treat the defeated surviving defenders honorably, as well as their families; and sell the survivors into slavery and relocate the remaining population while razing the town. Spiller illustrates these points with examples from *Thucydides to the Romans*.

In the final two sections of the second part, "The Question of Asymmetry" and "The Invisible City," Spiller sets the stage for the real essence of his work, an effort to identify the role of cities in future U.S. military operations. He correctly points out that cities can be taken two ways — internally and externally. He also correctly points out that asymmetry's career as a modern concept is indicative of the theoretical void in operational thought. Asymmetry is the quest for advantage of one's opponents, which is a timeless part of military history. Warfare and war are not, and never should be, a fair fight. Spiller hammers home the point that asymmetry is "an incompletely thought-out notion [that] degenerates rapidly to slogan." The association of asymmetry and urban warfare then is indicative of not enough serious thought on the role of urban combat in our future operations and doctrine. What are the implications of the city on future operational, theory, doctrine, and, most importantly, practice? Spiller outlines a path toward answers in his third part.

It is impossible to succinctly restate the concepts Spiller puts forth in the third section of his book. For me, it was the most heavily underlined, highlighted, and scribbled margin thoughts. The world is urbanizing and globalizing. Information travels at light speed. He offers what I will refer to as Spiller's maxim of soldiering in the cybernetic era of the 21st century, "*That which can be controlled, will be controlled.*" All of us should remember what White House Press Secretary Marlin Fitzwater said during a press conference on the first day of Operation Just Cause. When a reporter asked who had operational control, Fitzwater replied that operational control was in the Pentagon. We have the means of long-range command and control. We have repeatedly said in our own discussions that the seeing eye of the media's tactical actions can have immediate strategic impact. Can we balance that reality with our own theory of war? Spiller thinks we cannot, yet.

We must, before it's too late, begin to seriously think through the operational art required for successful warfare in the 21st century. To say that cities will be a part of any future campaign is not enough, because we do not seriously study cities in our doctrine, tactics, or practice. Spiller clearly outlines a path forward into this doctrinal void in the third part of his book. He explains that our doctrinal concepts are useful if we want to refight the Civil War, but are rapidly losing relevance in this century, and we do not have replacements for decisive and culmination points. What is the

continuing utility of the center of gravity? Spiller maintains that a center of gravity must be discovered, not designated. He also calls for us to seriously consider the positive effects offered by friction to the army that learns to control it. "The larger the city we face," Spiller writes, "the more friction can be used as an offensive tool in disrupting the city's rhythm, and as a means of extending our control over it — control being the real key to empowering an urban campaign."

Spiller also points out that military theory represents the best distilled thought at the time, and the time is now to start thinking about how we will fight in cities to our own advantage. We cannot afford to disregard this area or wish away the problem. We will not always have proxies to fight for us, augmented by Special Operations Forces with laser designators. Information operations, media relations, and humanitarian concerns will all be within the scope of the future campaign planner, as well as dealing with the information tools that will allow the Pentagon and the White House to increasingly exercise control over tactical formations and decisions — the president really might have to know about a squad action in the information age.

I am going back to the field and taking this book with me. When reviewing a book, the highest praise I offer is that it made me think. Spiller's book made me think, and I did not enjoy the conclusions I came to, but I will continue to think. We cannot know in advance what our future wars will look like, we can know with certainty that we cannot fail our Republic. Get this book, study this book, think, think, and think again. The use of force cannot preclude the use of intellect; indeed, in our age, the use of force *demand*s the use of intellect.

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Misguided Weapons – Technological Failure and Surprise on the Battlefield by Azriel Lorber, Brassey's Inc., Dulles, VA, 2002, 293 pp., \$26.95 (hardback).

"The instruments of battle are valuable only if one knows how to use them." — Charles Ardant du Picq (1870). Many books encourage the reader to question the writer's thought process. It is the rare book that inspires the reader to question his own. Dr. Azriel Lorber's *Misguided Weapons* is this kind of book. Recent *ARMOR* magazine discussions have been centered on different approaches to warfare — attrition, maneuver, or something else. Often overlooked in these debates are the technological changes in weaponry and equipment used by these differing approaches. Lorber argues that the proper understanding of technology may, in fact, be more critical than the tactics used.

Lorber is a retired Israeli officer and aerospace engineer. He has explored the impact of technological changes on warfare from the

Middle Ages through the Persian Gulf War. More importantly, he investigates how the failure to comprehend technological change has led to either defeat or a higher cost of victory. Additionally, he analyzes why these changes were missed despite readily known evidence of their existence.

The author sites the Battle of Crecy as an early example of failing to understand technological change. Despite having knowledge of and suffering defeat at the hands of the English soldier's longbow, the French knights charged headlong into the volley firing the longbow and were massacred. In fact, this lesson was ignored repeatedly and the French lost again at Poitiers and at Agincourt.

Other historical examples include the refusal to adopt the Gatling gun during the Civil War, the German's radar detection shortcomings during World War II, the American's failure to adopt the 17-pound British gun for the Sherman tank, and the Israeli's ignorance of the effectiveness of anti-tank guided missiles during the 1973 October War. The examples cited are not limited to those of past history; the book also discusses more recent deficiencies such as those of the Patriot missile against Iraqi modified scuds.

More than just listing these historical failures, Lorber probes into the psychological reasons why individuals are unable or unwilling to adapt to changing technology. Some of these reasons include preconceived ideas, overconfidence, political meddling, and the not-invented-here attitude. When looking at the psychological failures of others, a reader is forced to look within and wonder what changes he is missing today due to similar preconceptions.

I highly recommend this book to all military personnel and the politicians who have influence over military development. By the end of the book, the reader's well-thought-out positions may be subject to question. This tome is not only thought provoking and interesting, but it is well written. It is a welcome addition to any military professional's library.

MAJ DEREK C. SCHNEIDER
Owensboro, KY

The Two O' Clock: The 1973 Yom Kippur Conflict and the Airlift that Saved Israel by Walter J. Boyne, St. Martin's Press, New York, 334 pp., 2002.

Retired U.S. Air Force Colonel Walter Boyne, served as the Director of the National Air and Space Museum from 1983 and 1986. He is the author of several books, including *Weapons of the Gulf War*. His latest book should be of interest to those involved in mechanized infantry and armor tactics for it gives a day by day detailed account of the 1973 Yom Kippur War. Its focus is on the impact the United States airlift had on the course of the battle and takes readers from armor engagements in the Sinai and Golan Heights back to the flight line at Lod Airport in Tel Aviv.

The author vividly describes how the Egyptians employed the use of the Sagger anti-

tank missile and the RPG to counter Israeli armor. After massive losses, the Israelis improvised tactics in which armored personnel carriers, known as Zeldas in Israeli lingo, to close in on Egyptian infantry laying down concentrated machine gun fire. Boyne also discusses how the Israeli focus on tanks without an investment in artillery and APCs caused problems on the battlefield. The first 3 days on the northern front saw Syrian T-62s and T-55s attack Israel in three prongs in which wave upon wave of armor went against Israeli defenses. To the surprise of the Israelis, Syrian armor units had mastered night-time operations, using night vision equipment that hampered the qualitative edge of Israeli antitank units. Israelis were so desperate for equipment that they cobbled together a tank made up of captured T-54 and T-55 tanks mounted with a 105mm gun with an added U.S. engine and redesignated T-67S and sent them to reinforce the line.

The 1973 Yom Kippur War heavily influenced the transformation of the U.S. Armed Forces and this book should be of interest to readers of *ARMOR* Magazine.

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Editor's Note: LCDR Aboul-Enein is a Middle East Foreign Area Officer serving in the Pentagon.

The Soviet-Afghan War: How a Superpower Fought and Lost by The Russian General Staff, translated and edited by Lester W. Grau and Michael A. Gress University of Kansas Press, Lawrence, KS, 2002, 364 pp., \$17.95.

The Soviet-Afghan War: How a Superpower Fought and Lost is an analysis of the Soviet conflict in Afghanistan from a Russian point of view. Compiled by the Russian General Staff on the Soviet Military experiences in Afghanistan, it is an after-action review put together by several Russian military authors covering what went right and what went wrong. As one would expect, this book includes a history of the conflict, a Soviet order of battle, and the Soviet Union's perception of Afghan organization and capabilities. The authors cover Soviet operational art, as well as how the war was waged by the different branches of service, including combat arms, combat support, and combat service support.

Mr. Grau adds his editorial insight at the end of each chapter or section of the book, providing additional context or facts overlooked or left out by the Soviet study. Numerous endnotes assist the reader in understanding Soviet military terms, and provide more background on certain topics. Several hand-drawn maps are included to help visualize the tactical vignettes. For the reader who is not familiar with Soviet map symbols, there is a key in the back of the book.

As a reference, one must keep in mind that this is a translation of a Russian work. There

are inaccuracies based on the Russian authors' research and their methods of trying to explain different events, occurrences, or organizations. As an example, the Soviets seem to be off the mark on how they believed the Mujahideen to be organized. Mr. Grau explains this was an effect of the Russian's Marxist Leninist doctrine causing them to see organization where there was perhaps little or none. The Russians believed that the Afghans were divided into seven brigades with a clear military chain of command. In actuality, these groups were much less organized than the Soviets gave them credit for, which caused to Soviets to plan to fight an enemy that was not there.

Since the work is a translation of a Russian study, it is at times difficult to read. Russian terminology sometimes does not translate well and the reader must understand the usage of certain direct translations from Russian. The book is full of factual information backed up by tactical vignettes. Unlike Grau's other works, *The Bear Went Over The Mountain* and *The Other Side Of The Mountain*, where vignettes are the primary focus of the books, the vignettes in *The Soviet-Afghan War* are added to illustrate a particular point. This causes the book to read like a field manual at times, very full of facts and difficult to digest on the first take.

As a Russian foreign area officer, this book is useful to me, but I would not recommend this book to Armor leaders who do not have a specific interest in Soviet military history. This book is not a how-to manual for mechanized operations in Afghanistan. It is a detailed analysis of how the Soviets applied their doctrine, sometimes regardless of the terrain or situation, and tried to fight the enemy they wanted to fight. While there is a lot of information in the book, most of it applies specifically to the Soviet experience in Afghanistan. Take this book for what it is, an AAR of the Soviet experience in Afghanistan.

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General Patton: A Soldier's Life by Stanley P. Hirshson, Harper Collins Publishers, New York, 2002, 688 pp., \$34.95.

General George S. Patton Jr., an inspirational leader and outstanding tactician, has intrigued and confounded his biographers for more than a half-century. Now, using untapped archival materials from both the United States and Britain, government documents, family papers, and oral histories, Stanley P. Hirshson, a City University of New York history professor, creates a portrait of Patton that provokes some very mixed reactions to the author's interpretation of well charted territories of knowledge concerning Patton.

Like many reappraisals of controversial figures that typically challenge traditional views through new evidence or by highlighting a

less considered perspective, the author has failed to avoid the passion of any discussion of George S. Patton Jr. He sets the book's tone in the preface by rejecting the work of previous Patton biographers, asserting their research was incomplete and even questionable. Hirshson fails to identify the scholars he claims to challenge.

Hirshson's *Patton* has a longer rap sheet than usual. The book opens with a recount of atrocities committed in Sicily by troops under Patton's 7th Army Command. He blames Patton's fire-eating oratory to his troops for creating a mindset among his men that allegedly facilitated such acts. He traces Patton's childhood, hard-won West Point education, performance in the 1912 Olympics, an influential marriage, affairs, and flirtations, and tireless social climbing — all tilled ground by other military historians.

The heart of the book focuses on the Patton's World War II career and accomplishments, revealing the driving ability behind his greatest triumphs and failures. Patton's popular image as a giant of armored combat, for instance, is tempered by the revelation that he expressed some doubts about tank warfare prior to the battle for France in 1944. There is also plenty of material concerning Patton's turbulent relationships with other allied commanders.

The author contradicts the charge, perpetuated by the 1970 movie starring George C. Scott, that Patton was relieved as 3d Army Commander for politically insensitive remarks about the Soviets. In fact, Hirshson argues Patton's refusal to dismiss former Nazis from government positions in post-war Bavaria culminated in his removal. The incredible implication is that Patton was pro-Nazi. There is little doubt that failure to remove Nazis was a factor in Patton's relief from duty. However, documented evidence also notes that anti-Soviet remarks, as well as Patton's comments to the press that "Nazis were about the same as democrats and republicans," summed up to a combination of reasons for Patton's transfer to 15th Army.

This book is not going to change anyone's mind about General Patton. While many of the arguments the author makes are thought provoking, they often appear to be based on emotional judgment, such as "after he married Beatrice Ayer, daughter of a wealthy patrician family, Patton gradually embraced the Ayer's attitude toward labor, race, and ethnicity." He supports his assumptions drawing on insignificant comments that today appear to be politically incorrect.

The book has some flaws that better editing might have avoided. Gander Airfield is located in New Foundland, not Nova Scotia. Robert L. Thompson was the driver of a two-and-a-half-ton truck not a quarter-ton truck. In addition, it is regrettable that more research was not paid to Patton's accident and subsequent death. The author would have benefited from consulting with Horace "Woody" Woodring, Patton's driver, who is still alive, and Robert L.

Thompson, the driver of the truck who died in June 1994. Woodring's account of the accident has remained essentially unchanged for nearly 60 years. Eyewitness descriptions from two of the four participants in the accident would have produced a more complete understanding of the collision, which caused the death of the ranking American general in the European Command.

This is a well-written and interesting book whose virtues are obscured by its unbalanced summary of Patton's human foibles. However, faults and failings cannot obscure the strengths of the most unique American soldier of this or any other century.

DENVER FUGATE
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The Battle of Alamein: Turning Point, World War II by John Bierman and Colin Smith, Penguin Putnam Inc., New York, 2002, 478 pp., \$32.95.

Americans date the beginning of World War II as 7 December 1941 when the Japanese attacked Pearl Harbor. That is the official date of the United States' entry into the war, prior instances of American involvement notwithstanding. We sometimes forget that for over 2 years before our "Day of Infamy," Europeans and Asians were waging war against the Axis. This book reminds us that much of that war occurred in the deserts of Libya and Egypt. This book covers those battles, culminating in the Battle of Alamein that the authors call the turning point of the war.

The story of the Afrika Korps, consisting of Germans and Italians, versus the British Eighth Army, consisting of Brits, South Africans, Indians, Australians, and others of the empire, is well presented in a narrative that will hold the reader spellbound from beginning to end. The authors thread together countless stories of individual and unit heroism without losing focus on the political, strategic, and tactical story. They explain how Alamein was the first significant battle in which the Germans were defeated. It was the beginning of a string of battles that would culminate in the fall of Berlin nearly 3 years later. The seamless nature of the text is a testament to the authors' experience and skill as writers and historians. Readers will learn of diverse subjects, such as the true story of *The English Patient*, the spying activities of Egypt's future president Anwar Sadat, and how Bernard Montgomery came to wear his trademark beret. At the same time, they will become fully cognizant of the strategic and tactical issues dealt with in London, Washington, and Berlin.

Personalities come to life on these pages making Churchill, Hitler, Mussolini, Rommel, Alexander, and Montgomery more than historical figures. Here they are real men fighting a real war. The characterizations are accurate and believable. Other than Hitler and Mussolini, all are made of the usual combination of qualities and flaws that can be found in just about anyone. Rommel continues to enjoy his perch atop a pedestal made of tragic myth. In

American military history, only Robert E. Lee compares in his treatment by historians. Only passing references to Rommel's Nazi sympathies may dull the shine of Rommel's reputation. In this book, he is a hero thrust into impossible situations without support of his superiors or hope of success.

Tankers should find the book most interesting since the bulk of the battles were armor affairs. The inspiring stories of Rommel's Panzers going up against Alexander's and Montgomery's Shermans, Grants, Lees, and Matildas will keep the pages turning. If the stories were just about tanks, they would be routine, perhaps even boring. It is the soldiers and their stories that make this a good book. The authors have researched the personal and military lives of countless participants and painted a detailed picture of the desert soldier. Veterans of our recent desert battles are sure to empathize with them. The authors begin the book at a recent soldiers' reunion, describe battles in brilliant detail, and end in the German, Italian, and British cemeteries where those killed now rest. The transitions that take soldiers from being bitter enemies to nostalgic comrades flow smoothly throughout the narrative.

The Battle of Alamein is thoroughly enjoyable. Anyone interested in armor or desert warfare, or World War II, should add this book to their reading list.

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On the German Art of War: Truppenführung, edited and translated by Bruce Condell and David T. Zabecki, Lynne Rienner Publishers, Boulder, CO, 2001, 304 pp., \$57.00.

Historians and professional soldiers have long debated the reasons for German military success during the opening years of World War II. While there are many contending perspectives on this question, few can argue the soundness of German military doctrine used in achieving their early victories; this doctrine was striking in its unique ability to encapsulate the essence of combined arms operations. Bruce Condell and David Zabecki have provided an excellent translation of this groundbreaking doctrinal document in *On the German Art of War: Truppenführung*. This translation, the first to include both the 1933 and 1934 components of the German manual, gives the reader a glimpse into the doctrinal foundations of the German army during World War II.

It is very interesting that modern military professionals can study German concepts written over 6 decades ago and still find many models similar to those still used in the modern U.S. Army. These theories include not only the relatively well-known foundations of offensive and defensive maneuver, but also less prominent themes, such as the different types of smokescreens that units can employ, which

corresponds closely to the current U.S. doctrine on using smoke. Additionally, the manual includes a section on the conduct of fighting in urban areas, a form of combat that few studied seriously prior to World War II. The German authors demonstrate remarkable forethought in emphasizing this key form of combat.

Perhaps even more valuable to the military professional are the essays the German authors include in this work. The "Editors' Introduction" can stand alone as an excellent secondary reference to the value and purpose of *Truppenführung*, both from the historical perspective of 1933 and from the current, 21st-century perspective. In their introductory comments, the editors highlight many of the key elements in this translation, including areas about which German military leaders were most concerned. For instance, Condell and Zabecki stress the fact that German military leaders were not attempting to introduce a system that provided set formulas for success. Instead, the German authors envisioned a structure that would provide "a set of intellectual tools to be applied to complex and ever-unique warfighting situations." The many contributions of this nature, underscored by Condell and Zabecki, demonstrate the full value of *Truppenführung* to modern study.

A second insightful inclusion into this edition is the final "Appendix," consisting of a German review of the 1944 edition of U.S. Army Field Manual 100-5, *Operations*. The short review, written in 1953 by a panel of former officers, led by Colonel General Franz Halder, does an excellent job of putting the United States' World War II military doctrine in context with that of its German antagonist. Additionally, for those who have a serious interest in the historical development of the United States' post-World War II doctrine, this essay provides a provocative start point for research by emphasizing the similarities of the two approaches — and by implication, the assumption of many German ideas by the Americans based on "unchanging principles of war."

This book will prove greatly beneficial for those studying the development of doctrine from many different angles in the past century. First, the basic tenets laid forth in 1933 paved the way for, in the short term, the way in which the German Wehrmacht fought World War II, or at least the opening years of the war. Second, the manual also set the standard for other militaries and the search for feasible doctrine during the tumultuous years following 1933; many of *Truppenführung's* unproven tenets were vindicated during the war. Third, by having an impact on the development of U.S. Army doctrine at this crucial time, specifically in its impact on writing FM 100-5, the tertiary and subsequent affects can be traced to present debate on U.S. military doctrine. In light of the recent adaptation of FM 3-0, *Operations*, and the accompanying debate, there is much more stimulus to go back and take a look at the *Truppenführung*.

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The Mounted Warrior and Tomorrow's NBC Protection

by Sergeant First Class Chuck Marlak, U.S. Army, Retired

Every soldier has worn chemical protective gear. Even new recruits appreciate how the mask works to save lives, especially after they remove it in a gas chamber. Trust and confidence in your equipment takes on a whole new meaning with the first whiff of tear (CS) gas.

Military and civilian combat developers at the Armor Center and a number of other agencies are working to provide future Mounted Warriors with improved nuclear, biological, and chemical (NBC) equipment.

Currently, Armor and Cavalry soldiers are issued the M42 series protective mask. It protects the head, eyes, and respiratory system from becoming exposed to chemical-biological (CB) agents in the air. The next generation protective mask for combat vehicle crewmen (CVC) is the M51 Joint Service General Purpose Mask (JSGPM).

Lighter than the M42 and weighing approximately one-and-a-half pounds, the JSGPM provides the soldier with enhanced protection from CB agents. It is also equipped with two additional filters to equalize toxic industrial materials, which is a major concern for the future battlefield. One of the many unique features of this new mask is the ability to change filters in a contaminated environment, giving the soldier the ability to put new filters on the mask during decontamination operations without exposing the face to open air. The new filters are smaller, lighter, and provide the user with a method to determine if the filter is serviceable.

The mask has a flexible, soft single lens that provides the wearer with increased peripheral vision and the enhanced capability to look through vehicle weapons sights and periscopes. This ability also allows the use of night vision goggles while in MOPP IV and provides for increased situational awareness.

The JSGPM decreases the pressure and thermal burden on the face and is easier to breath through. Two mask filters allow up to 50 liters of air per minute to pass through with ease. This lessens the difficulty in breathing and decreases soldier fatigue. The old butyl rubber hood has been replaced with a flame resistant material to protect against a vehicle fire and a new drinking system, which increases hydration capacity.



The JSGPM provides the Mounted Warrior with the capability to continue to use the vehicle filtration system. When disconnected, the hose can remain in the vehicle due to the lightweight filters on the mask. This reduces the weight and bulk when compared to the protective mask currently used by CVC. The mask has a removable communications cord that allows the dismounted soldier to work without concern for attached hardware hanging from the mask.

For CB protection below the neck, the battle dress overgarment and joint service lightweight integrated suit technology protects the body against all CB agents. Advancing technology has provided all ground soldiers with a lightweight CB garment, but still requires the Mounted Warrior and aviators to wear the Nomex coverall to protect against flame hazards. Both aviators and mounted crewmen require a flame resistant garment. In aircraft cockpits, as in armored vehicles, workspace is limited. Wearing one layer for CB protection and one for flame protection impedes personal mobility and increases fatigue.

The new joint protective aircrew ensemble (JPACE) will provide both CB and flame resistant protection with one layer. JPACE is currently being adopted for the CVC community to increase the soldier's capability. Many design changes have been adapted to increase the garment's function.

The JPACE garment is a one-piece coverall that looks similar to the current flight suit. It will be available in both desert tan and woodland camouflage patterns, and has both CB and flame resis-



tant qualities. The one-piece design helps prevent flames from traveling up the back of the shirt.

Two pockets on the upper arm sleeves, one small and one large, provide space for needed items. JPACE also offers two pockets on the lower legs, which provide easy access in the sitting position. Velcro patches on the upper arms will allow for the attachment of the American flag, unit patches, or reflective tape. There is also velcro on the chest to attach an aviator-style leather nametag. A full-length zipper, from the front to the rear of the suit, allows for quick and easy removal.

Each suit comes with a repair kit, which enables the soldier to repair small holes or tears. The patches are made of the same protective material and have an adhesive backing for quick field repairs. To ensure that the suit protects against wind-driven and dusty agents, the fabric developers are conducting rotor-wash and wind tests.

The JSGPM and JPACE are both joint programs with participation from all services. This will ease the logistical burden by ensuring the availability of replacement CB garments is in the system anywhere the warfighter goes. With full-rate production, these new items should be issued to soldiers by fiscal year 2007. While developmental testing, operational testing, and user evaluations are ongoing, the Armor Center is striving to ensure that all Mounted Warriors receive the best NBC equipment for the future battlefield.





***“An offensive war requires above all a quick irresistible decision...
Any kind of interruption, pause, or suspension of activity
is inconsistent with the nature of offensive war.”***

— Clausewitz, On War

Photo: Warren Zinn, Army Times

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