ARMOR

50th Anniversary - 6th Armored Division

PB 17-92-1

January-February 1992

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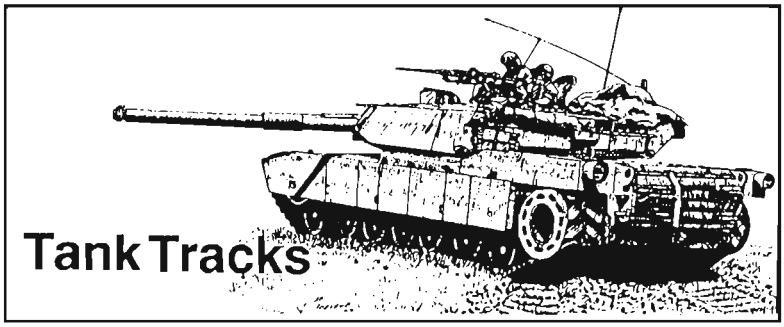

Tank Tracks

The "good-byes" are outnumbering the "welcomes."

Putting our reduction in force in perspective, Secretary of the Army Michael P.W. Stone said, "Over the next few years, the Department of Defense will reduce its work force by more workers than GM would if it closed down its entire U.S. operation." The specifics:

—cut about 250,000 soldiers, NCOs and officers by 1995

—cut about 100,000 civilians by 1995

—close 81 bases and 7 of 14 ammo plants in the U.S.

—Close or turn over some 160 sites overseas.

For the next couple years, tankers, and cavalrymen who have served proudly and with great devotion and professional acumen, will be among the hundreds of thousands who will return to civilian life. They are victims not of incompetence but of their own mission accomplishment. They and those who came before forced the end of monolithic Communism and thus wounded their own raison d'etre.

I can't think of a more difficult time to be a commander. All must counsel each and every man in the unit to help him make the choice to stay, retire, or strike camp. And some must case the unit colors for perhaps the last time. It is fitting that we salute the great units that have served our nation with distinction for many years, which have passed or will pass out of the Active Force but not out of the memories of those who wore their patches or unit insignia:

VII Corps	3d AD
8th ID	1-35 Armor
3-35 Armor	4-8 Cavalry
4-32 Armor	3-8 Cavalry
1-69 Armor	4-69 Armor
4-34 Armor	3-7 Cavalry
4-7 Cavalry	4-70 Armor
4-66 Armor	2-66 Armor
3-66 Armor	6-40 Armor
2d ACR	

We will miss these 13 tank battalions and five cavalry squadrons, but we will not forget them or what they have done.

For those who remain in uniform and in the Armor Force, the challenges will remain. It's a new world in which we must operate — one that we helped create, and it calls for quality leadership and top-notch people. Secretary of Defense Dick Cheney summed it up. "There will be good careers available for top quality people. It will be more competitive than it's ever been before, it will be tougher to get in, and there will be higher standards to stay."

This club has become more exclusive. Those who stay should feel proud of their accomplishments and more than a little lucky.

For those who go on to other things, you can take great pride in knowing that you made a difference. Your being here helped to change the world, and your large footprints attest to where you've been. You've mattered. You've counted. We've been proud to serve with you. Thank you and Godspeed.

—PJC

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

Milton H. Hamilton

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army

ARMOR

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Features

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LETTERS

Improving Reserve Training

Dear Sir:

In a recent letter to the editor of the *Army Times* (14 October 1991) I argued that there was a need to adopt a long-term plan for the development of qualified combined arms leaders in the Reserve Components. I suggested that, "Such a plan would pick up today with an emphasis on individual, crew and platoon proficiency and would culminate five years from now with each maneuver team starting a repetitive process that would see them undergo a two-week NTC-type experience at the company/team level." Thereafter, every three to five years, that company would repeat the process of train-up, followed by an intensive training evaluation at a company-level Reserve Component training center. In this manner, we would be requiring the company/team commander, through simulations, self and schoolhouse study, to learn to manage and lead the various combined arms elements of the combined arms teams."

The purpose of this effort is to:

—argue that the Armor School and Center should take the lead in the development, and then operation, of the proposed Reserve Component training center. As the proponent for mounted warfare, the Armor Center is the obvious choice for development of the requisite program of instruction and scenarios to train the Reserve Component maneuver warriors of the future.

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ARMOR HOTLINE — DSN 464-TANK

(The Armor Hotline is a 24-hour service to provide assistance with questions concerning doctrine, training, organizations, and equipment of the Armor Force.)

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TRADOC System Manager for Armored Gun System	(ATSB-TS)
COL Eugene D. Colgan	7955

Sequence of Events

Day	Platoons	Company HQ
Sat & Sun	Draw equipment Road march Occupy AA Pre-combat inspection	Prepare OPORD** & issue OPORD** LOGPAC
Mon	Passage of lines Hasty attack •Breach Actions on the Obj. AAR Reconstitution Receive & issue OPORD Hasty defense	Receive reports Observe training Attend AAR LOGPAC
Tue	Prepare defense •Fire plans •Range cards •PMCS •etc.	Develop company fire plan Observe platoons Synchronize Arty LOGPAC
Wed	Defend Reconstitution AAR Road march — react to ambush Occupy AA Troop leading procedures	LOGPAC
Thur	Repeat Monday	Issue OPORD**
Fri	Repeat Tuesday	Issue OPORD**
Sat (am)	Night defend AAR	
Sat (pm)	Revert to Company Control Occupy AA — PMCS & troop leading procedures	
Sun (am)	Passage of lines Hasty attack •Breach •Defile Drill Actions on the objective Reconstitution	
Sun (pm)	AAR Move to defense sector	
Mon	Hasty defense •Fire plans •Barrier plan •Flex plan	
Tue	Defend Decontaminate (1 Plt) Reconstitution AAR Road march to live fire area Receive FRAGO for attack Hasty defense •Upload ammo	
Wed (pm)	Live fire defense (offense for better units) Road march to MATES Begin turn-in	
Thur & Fri	Turn-in/Return to home station	

**AARs will be conducted and corrections made to the OPORDs before they are issued to platoons.

—suggest the elements that such a training program might include.

This is not to argue the merits of the issue of whether the Reserve Component (RC) leaders of today have the requisite skills to synchronize the maneuver battle of tomorrow. This assumes that there is a need, as noted above, to train the future leaders of RC armored and mechanized forces in the future, and that the company/team level is the most appropriate culmination level of a five-year training plan. Obviously, there are numerous other options that might be viable. If this brings those options out for discussion, then it has served one of its critical purposes. The key is that whatever training plan is adopted, it must result in the development of competent combined arms leaders.

The basic concept of the Reserve Component Training Center (RCTC) is to establish a facility with professional trainers and OPFOR, so that approximately every five years each maneuver platoon and company/troop would receive the intensive training that only such a center could provide.

The training cycle of a two-week Annual Training would consist of one week of platoon training and one week of company/team-level training, culminating with a combined arms live fire exercise (CALFEX). The sequence of events is shown at left.

There are several keys to making these two weeks of intensive training successful. The first key would be the quality of the observer-controllers and their ability to teach as well as critique. The second key is the train-up, not only of the platoons and companies, but also of the battalion and brigade staffs as they command and control/synchronize the entire process. The train-up cycle should consist of very specific tasks and drills that crews/squads/platoons should master during the preceding years. These critical tasks, by year, are shown below.

1st Year

-How to conduct a rehearsal/use a sandtable
-Troop leading procedures — set the standards
-Offense
  •Breach drills (demolitions)
  •Formations
  •Rules of engagement
  •Call for fire
  •Use of terrain
  •NBC skills
  •Spot reports
-MILES
-Reconstitution
  •First Aid — Combat Lifesaving
  •PMCS
  •Vehicle Recovery
  •Log Reports
-Other basic individual and crew skills

2d Year

-Defense
  •Obstacle plans and emplacement
  •Range cards
  •Fire plans
  •Plt fire commands
  •Fighting positions
  •Camouflage
  •React to air attack
  •NBC skills
  •MILES refresher

3d Year

-Gunnery
-Flex drills — how to react to changing situations and orders—from either the offense or defense
-Company-level sandtable drills
-LOGPAC operations

4th Year (Refresher)

-Fire plans and commands
-Basic formations
-Call for fire
-NBC skills to include actual decon
-MILES
-Live fire platoon defense
-Company-level maneuver training

Throughout these five years, there is a need to continue to use UCOFTs and other training devices to maintain individual and crew gunnery skills and also to integrate gunnery refresher training into each year's activities.

The focus on platoons and companies should allow all of the support units to be gainfully employed and trained if properly synchronized by the parent brigade headquarters. In this process, we would train these units and headquarters to perform their wartime tasks.

The challenge for the Armor Center is to take this idea and turn it into reality by refining the training plan, identifying a location for the RCTC, developing and costing the training resources necessary — equipment, personnel, targets, ammunition, etc. — and then selling the Total Army on the concept. To not evaluate this concept is to do a disservice to the RC leaders of tomorrow.

It is my hope that this letter will begin this process.

BRUCE B.G. CLARKE
COL, Armor
Carlisle, Pa.

Continued on Page 50

MG Thomas C. Foley
Commanding General
U.S. Army Armor Center

Myth and Reality

When I last spoke to you in this column, I said that we would examine our strategies for Combined Arms Training in the future. We do that in the article by Col. Joe Molinari and Mike Kelley (p. 33) that clearly lays out our CATS strategy as it applies to the Total Armor Force. But personnel and force structure, driven by the reduction in size of our Army, have moved to the front of everyone's minds, spawning myths and rumors about the future.

There should be no doubt in anyone's mind by now that we, in the Army in general and the Armor Force in particular, are entering a period of significant change. In the Army of the year 2000, the Total Armor Force will look significantly different and will be significantly smaller than it is today. Now is the time to separate myth and rumor from reality on downsizing the Army.

The reality is that a large portion of the Army is going away. Many units stationed in Europe and the United States have already deactivated, and many more will be deactivated in the next 12 months. For the Active Component of the Armor Force it means that we will have 14 fewer tank battalions and two fewer division cavalry squadrons in 1996 than we had in 1991. Most of these reductions will occur by the end of 1992. The myth is that the quality of our smaller Army and this smaller Armor Force will somehow be reduced. Not so! With a smaller force, for example, unit rotations to the Army's key training centers, such as the NTC at Fort Irwin and CMTC at Hohenfels, will continue and may become even more frequent and of longer duration. Opportunities to do the same tough, realistic training that paid off so handsomely during Operation DESERT STORM will continue, and soldiers and leaders at all levels will be challenged as never before.

There is a myth that the Army, and Armor Branch, are no longer viable alternatives for soldiers seeking a long, productive and fulfilling career of service to the nation. Not so! Command opportunity rates in our smaller Armor Force will be the same, if not better. Lieutenants entering active duty, and those currently in the force, can expect the same challenging assignments, career oportunities, and promotion rates as before. Branch qualification opportunity rates will remain high. This will be true for company grade and field grade officers as well as tank commanders, scout and cavalry squad leaders, and platoon sergeants. Tough, realistic training and assignments that will challenge you mentally and physically to the depths of your being will continue, and our smaller Army of the future will be an even better Army.

Improved technology will continue to benefit the Total Armor Force. The lessons of DESERT STORM are well understood. We are taking steps to solve the identification friend or foe problems that our forces faced. We are ensuring that our forces get inexpensive, but high quality navigation aids comparable to those used during DESERT STORM. The M1A2 tank, a fighting machine with great potential, is being run through a series of rigorous tests, and the competition among contractors to produce the new Armored Gun System for our light Armor and Cavalry units has already started and is sure to be intense. These are but a few of the technological improvements awaiting the Total Armor

Force. Rest assured that the quality of training and equipment in our smaller Army will remain high.

Another reality facing us is the very sensitive issue of personnel cuts. It is indeed sadly ironic that our victory during the Cold War is now forcing us to trim from our force so many of those who worked so hard to achieve victory. We project that the active Armor Force of the year 1996 will at most number 3,838 officers and 19,437 enlisted men, down from 5,409 and 25,909, respectively, in FY91. These reductions are significant. The hard reality is that in order to meet the FY96 goals, the Army has decided to hold a series of Selective Early Retirement Boards (SERB) and a Reduction in Force (RIF). The SERB will examine primarily the files of officers with more than 18 years of service who are not on a promotion list, and the files of sergeants major with basic active service dates between 31 Aug 63 and 31 Aug 67. These boards began 15 Jan 92. The RIF Board, which will meet 10 Mar 92, will examine the files of officers in Year Groups 1978 and 1982, primarily majors with a date of rank from 2 Jul 89 thru 1 Mar 91, and captains with a date of rank from 2 May 85 thru 1 Sep 86. We expect that Army-wide nearly 750 majors and 700 captains will not be selected for retention, and that Armor's share will be about 100 officers, or about 50 from each year group. It is important to note that restricted files will be included for examination by the board. Right now there are no other RIFs planned for other ranks during FY92. Reductions among more junior officers and enlisted soldiers will be accomplished through lieutenant retention boards, tougher reenlistment standards, normal attrition, and lower accession levels.

The FY91 lieutenant retention board considered officers primarily from Year Group 88. A total of 705 officers, including 59 Armor officers, were not selected for retention, and all of them should have been notified on or about 7 Nov 91. The FY92 board will convene in April or May of this year and will consider primarily officers in YG 89. Current plans are for another retention board in FY93 that will consider officers of YG 90. Although it is too early to be certain, we believe the non-select rates for these two boards to be about the same as the FY91 board.

For junior enlisted soldiers, reductions will come from tougher reenlistment standards, normal attrition, and lower accession levels. First-time drug offenders, for example, will be separated, as will Alcohol and Drug Abuse Prevention and Control Program failures. Soldiers on the overweight program and those who are recurring APFT failures will be barred from reenlistment. QMP zones for sergeant now begin at eight or more years of active federal service. Your reenlistment counselor or chain of command can tell you more about the specifics of these programs and others. Though these culling actions will be painful, the Armor branch strategy and expectation is to keep the very best leaders and soldiers on active duty. This goal is the responsibility of each of us.

Now, you must understand that the Army is providing a very generous package of benefits for those who separate either voluntarily or involuntarily. For example, separation pay is more generous than ever before. If you choose to leave the service rather than become selected to leave, there is a 50 percent kicker to your separation pay. See your chain of command to determine if it applies to you. Also, the Army has a program titled the Army Career and Alumni Program that, among other things, has a job assistance center. Furthermore, there are a variety of other separation benefits that your chain of command can discuss with you. The point is that every Armor soldier must go over his files with his chain of command to determine if he is at risk, and soldiers determined to be at risk must be counseled about their various options for both voluntary and involuntary separation. The fact is the Army, and we in Armor, are committed to treat all those separated, whether voluntarily or not, with care, concern, compassion and respect. Our soldiers, victors during the decades of the Cold War and DESERT STORM, deserve nothing less from Armor commanders.

Another reality facing the Armor Force is that we will have a greater reliance on a highly trained and ready Reserve Component and a greater percentage of our force quartered in CONUS. A smaller Active Component implies a greater reliance on Reserve units that are trained, equipped, and ready for any contingency anywhere in the world. Virtually every Armor leader will have as one of his top priorities to contribute to the peacetime training and mobilization readiness of the Reserve Component of the Total Armor Force. Armor today is already at the forefront of several new initiatives to enhance RC readiness to fight, and the continuing development of these initiatives will be one of the key tasks for the future. A greater percentage of our force quartered in CONUS will mean greater stability for you and your families, less frequent PCS moves, and a growing opportunity to approach a real regimental system. Morale, welfare, and recreation programs at Army installations still will be fully staffed and funded. Better on-post housing for married soldiers and enhanced barracks life and post activities for single soldiers continue to be of great concern to Armor commanders worldwide. The commitment to taking care of you, our great soldiers, and your families is a top priority.

I am personally committed to ensure that the quality of the future Total Armor Force remains high. You, the victors of the Cold War and Operation DESERT STORM, deserve nothing but the very best. There will be no more Task Force Smiths! FORGE THE THUNDERBOLT!

CSM Jake Fryer
Command Sergeant Major
U.S. Army Armor Center

Like Saying Goodbye To an Old Friend

I've been taught all my life that the Soviet Union, and Russians in general, are bad people with unwholesome values and selfish intent.

My entire military career has been focused on the Soviet threat, their equipment, soldiers, leaders, training, and doctrine. My institutional training, operational assignments, and self-development programs have always been orientated on Soviets, and they're the primary reason American Armor existed.

I vividly remember the evening of 9 November 1988 when the liberties in then East Germany were initiated. While serving as the regimental command sergeant major of the 11th ACR, the regimental commander, COL John Abrams, rang my doorbell and said, "There's something going on, and we need to get to headquarters quick." The events that occurred that evening and throughout the weekend authenticated to me significant change for a soldier who throughout his entire career carefully watched the "bad guys" through barbed wire and obstacles. We've all been skeptical of the historic events that have occurred since that date — it's almost like saying goodbye to an old friend.

As our Armored Force becomes smaller, we need to focus on different types of doctrine, training, leader development, organization, material, and soldiers to meet the challenge of our new threat. We need to be receptive to change — to new ideas and concepts. What we did 5, 10, 15 years ago won't necessarily be the way we need to do it now or in the future. On a recent visit to the National Training Center, I spent a day with the opposing forces of the 177th Regiment, exercising "Krasnavian" doctrine. When I queried a young scout serving as TC of a VISMOD M551 representing a BMP how it felt to be a Krasnavian, he summarized it by saying, "It's a changing world."

From the 19K Desk...

Armor Branch is seeking high-quality platoon sergeants for duty as observer-controllers at the National Training Center, Fort Irwin, Calif.

If selected, the soldier will be observer-controller qualified at team level in a performance-oriented environment. He will then become an armor or scout platoon trainer for training rotations that last 28 days, from equipment draw to turn-in, conducting about 12 rotations a year. After completing two years as an O/C, soldiers are eligible for selection for duty in the Project Warrior program, then moved to Fort Knox for instructor duty at the Armor Center.

Eligible NCOs must be SFCs in PMOS 19D/19K, 110 GT, 80 SQT, with a minimum of two years of successful platoon sergeant time, preferably immediately before assignment as an O/C. For more information, contact CSM Witte, Operations Group, NTC, at DSN 470-5096, or SFC Laney, Armor Branch, at DSN 221-9080.

6TH AD TANKS PASS COLUMN OF PRISONERS ON THE AUTOBAHN IN MARCH 1945.

50th Anniversary - 6th Armored Division

"Super Sixers" Were in Heavy Contact During Most of WWII Campaign in Europe

General Orders, Headquarters Armored Force, activated the 6th Armored Division at Fort Knox, Kentucky, on 15 February 1942. A few hundred officers and enlisted men from other armored units formed the core of the new unit. The 6th was organized under the original armored division table of organization, with two tank and one infantry regiments. In March 1942, the division moved to Camp Chaffee, Arkansas, where more men joined up, bringing the total strength to more than 15,000. The Unit Mobilization Training Program, along with USO shows and War Bond drives, filled the first months. But soon, the 6th took part in the VIII Corps Maneuvers in Louisiana. There, the "Super Sixth" received its first M4 medium tanks. In September 1942, the 6th returned to Camp Chaffee and picked up three artillery battalions. Early in October, the "Super Sixth" moved by rail to California's Mojave Desert. For five months, the division lived in the desert and trained, with an emphasis on offensive operations. The progressive training stressed fundamentals and included corps-level maneuvers.

World War II Campaigns

Normandy
Northern France
Rhineland
Ardennes-Alsace
Central Europe

In March 1943, the 6th moved to Camp Cooke, California, where training continued. MG Robert W. Grow took command of the 6th in May 1943, bringing his aggressive new ideas for the role of armor. He would command the "Super Sixth" for the remainder of its training and in combat. In September 1943, the 6th reorganized as a light armored division amid rumors of overseas deployment. Word came on 31 December 1943 that the 6th was headed to Europe. The division spent January 1944 loading and moving to Camp Shanks, New York. After processing and a pass in New York City, the men of the 6th loaded onto eight ships and sailed for England.

After an uneventful voyage, the "Super Sixth" arrived at Liverpool and Bristol, England, and Glasgow, Scotland in February 1944. Men and

MG ROBERT W. GROW

68th Tank Battalion Sherman enters Avranches, France.

equipment quickly moved by train to the Oxford-Stratford-Cheltenham area of England. Units spread out and billeted in the villages throughout the area. For five months, the division continued to train and draw equipment. In June 1944, the division went on alert, and in July loaded onto ships. On 18 July 1944, the first clements of the 6th landed across Utah Beach and assembled at Le Mesnil, France.

On 27 July 1944, the division attacked through the 8th Infantry Division to clear the heights near Le Bingard. Moving quickly, the "Super Sixth" crossed the Seine River, seized Granville, and linked up with the 4th Armored Division at Avranches. There, the division received orders to seize the port of Brest. Once an attack penetrated the enemy defense, the tankers exploited into Brittany. Bypassing strong resistance, the division swiftly moved to Brest, and Combat Command A invested the city. Unfortunately, logistical constraints held the 6th stationary in Brittany until September 1944. However, the "Super Sixth" had demonstrated the value of armor in a rapid advance.

In September 1944, the 6th joined LTG Patton's Third Army and relieved the 4th Armored Division in the Nancy-Luneville area. Immediately, the division fought a bitter action in the Gremecy Forest. MG Grow constantly sought to refine and improve his division. He increased his infantry strength by turning all 57mm anti-tank gunners into riflemen and all light machine gun squads into rifle squads. At the same time, the "Super Sixers" perfected close coordination in their attacks on strong prepared positions.

In November 1944, the division attacked as part of an army-wide offensive to occupy the west bank of the Rhine River. The German defenders were aided by the heavy rains and mud. Despite fierce resistance and determined local counterattacks, the "Super Sixth" crossed the Seille River and cleared out the Nomeny area. Then, the division advanced in four columns to establish a bridgehead across the Nied River. By December 1944, the 6th had reached Sarreguemines and adopted a defensive posture.

Late that month, LTG Patton ordered the "Super Sixth" north to help blunt the German Ardennes offensive. In two days, the division disengaged, moved north, and relieved elements of the 9th and 10th Armored Divisions on the south shoulder of the "Bulge." On New Year's Eve 1944, the 6th attacked on a broad front through the 101st Airborne Division at Bastogne, Belgium, to expand the Bastogne Pocket. However, the 6th attacked alone, and German resistance, combined with counterattacks, stalled the thrust after only limited gains. On 4 January 1945, the division pulled back to more defensible terrain to face renewed German attacks. Despite the harsh winter weather, the "Super Sixth" held its ground and slowly drove the Germans back. By 26 January 1945, the 6th had pushed the Germans back behind the Siegfried Line.

Although the 6th was overdue for a rest from combat, it remained in the line. MG Grow used a minimum of troops to secure the front and emphasized refitting. On 7 February 1945, the division attacked across the Our River and established a bridgehead. In two days, the engineers constructed a bridge, and armor crossed the river. Although the Germans had prepared strong static defenses, the "Super Sixth" continued east and penetrated the "West Wall" into Germany. By March 1945, it had forced a bridgehead across the Prum River.

During the the night of 3 March 1945, elements of the 90th Infantry Division relieved the 6th. After 221 days of consecutive combat, the "Super Sixth" became SHAEF Reserve. Then, on 8 March 1945, the 6th was assigned to LTG Patch's Seventh Army.

At about this time, the semi-monthly *Armored Attacker* made its debut. Many of the "Super Sixers" felt that *Stars and Stripes* overlooked their exploits, and they started their own newspaper.

World War II Commanders

MG Wm. H.H. Morris Jr.
February 42 - May 43

MG Robert W. Grow
May 43 - July 45

Sandbagged Sherman passes knocked-out German "88."

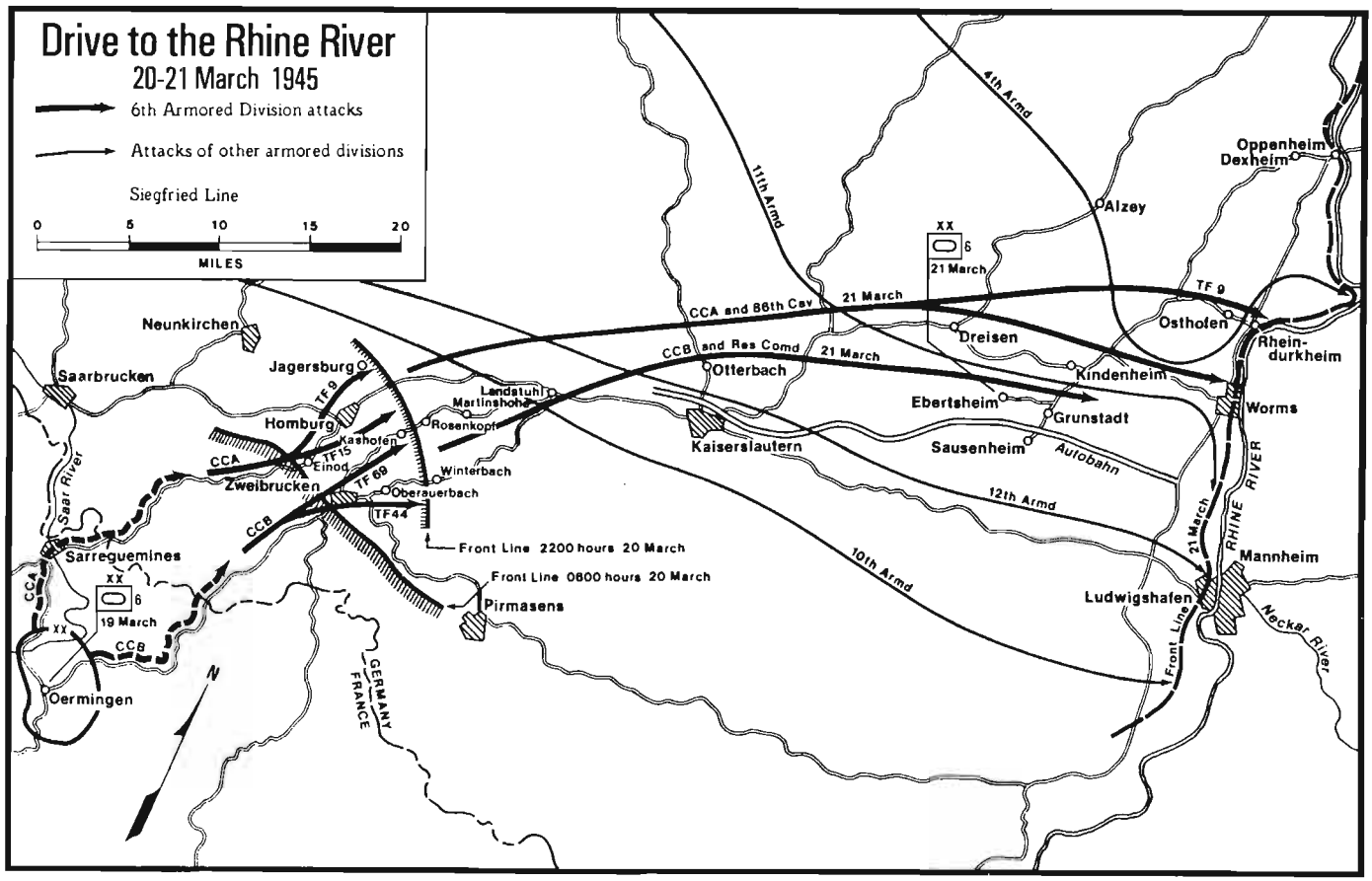
Medics rescue a wounded tanker near Oberdorla, Germany.

On 20 March 1945, the 6th passed through the 3rd and 45th Infantry Divisions and attacked northeast. The next day, it reached the Rhine River. The rapid allied advance caused the 10th Armored Division to become entangled with the 6th. To sort out their army boundaries, LTG Patton and LTG Patch simply switched divisions, and the 6th returned to the Third Army.

On 25 March 1945, the "Super Sixth" crossed the Rhine near Oppenheim, Germany, and passed through the 5th Infantry Division. Once again, the division used superior mobility to bypass resistance, and the 6th established a bridgehead across the Main River near Frankfurt. Then, the division turned north and reached the Fulda River by 2 April 1945. As the German resistance grew incoherent, the "Super Sixth" continued to advance. The 6th captured Langensalza, crossed the Saale River, and established a bridgehead across the Zwick Mulde at Rochlitz when hostilities ceased on 7 May 1945.

After the war, the point system rotated personnel in and out of the division. The 6th assumed the duty of occupation and military government. In September 1945, the division moved to a staging area near Le Havre, France. Soon after, units returned to the United States. On 18 September 1945, the 6th Armored Division was inactivated at Camp Shanks, New York. During its short life, the unit established an incredible record of successful sustained combat. Today, the spirit of the "Super Sixth" remains alive with the 6th Armored Division Association.

Captain John L. Buckheit prepared this unit history while temporarily assigned to ARMOR Magazine in summer, 1990.



Abrams Vehicle Fires: An Analysis of FY91

by Gregory M. Skaff

The lives lost and resources spent on accidents involving modern Army weapon systems are staggering. Accidents in the Armor Force are no exception. Although Abrams vehicle fires typically do not result in fatalities or injuries, the potential is always there. During the past three years, there have been ammunition and personnel heater fires within the crew compartment, which have resulted in at least three fatalities and serious injuries. Abrams fires do, however, tend to be very expensive in vehicle damage and repair. A very small fire lasting only a few minutes can result in thousands of dollars worth of damage (for example, the average cost of an Abrams fire during FY91 was over $130,000). Once a fire has occurred, investigation completed, and findings published, the bottom line usually is that the accident was caused by human error or maintenance oversights, and was preventable.

During FY91 there were 43 Abrams vehicle fires reported. Ten fires were reported in Southwest Asia, and 33 in various other locations. This total represents a slight increase over the FY90 total of 39 fires (Figure 1). The increase in Abrams fires can be explained by the increased operations and reserve component mobilization in support of Operation DESERT STORM/DESERT SHIELD. What catches the analyst's eye is that 28 of the 43 fires (65 percent) reported during FY91 were directly related to maintenance shortfalls and/or soldiers not following proper procedures. The following summary is an example of a costly fire caused by an oversight or poor vehicle maintenance:

M1IP Abrams tanks were conducting field training exercises at the National Training Center (NTC). The crew on one tank turned on its smoke generator system to create a smoke screen on the "battlefield." As the driver was backing out of position, he noticed fuel on the ground. He notified his TC, turned off the smoke generator, and stopped the vehicle. The crew heard a loud noise from the engine and flames were seen coming from the grill doors. The vehicle's automatic first shot fire extinguisher discharged, second shot was manually discharged, many hand-held extinguishers were expended, and the fire continued to burn. The local fire department finally extinguished the fire. The investigation revealed that the fuel line fitting, located between the smoke generator check valve and the T-fitting, was loose, and allowed fuel to leak onto the hot engine and ground. The cost of vehicle damage was estimated at more than $300,000.

A review of FY91 fire reports shows that the causes, by subsystem, are very similar to the trend established over the 11-year history of Abrams vehicle fires. Fuel and electrical fires continue to be the top two fire categories, followed by

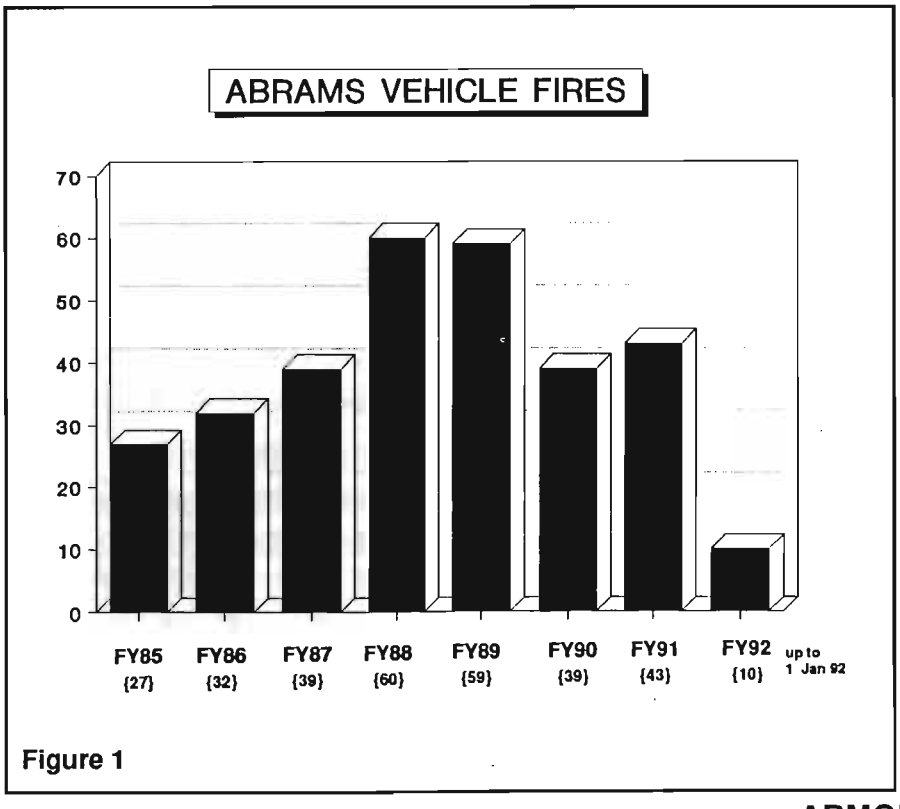
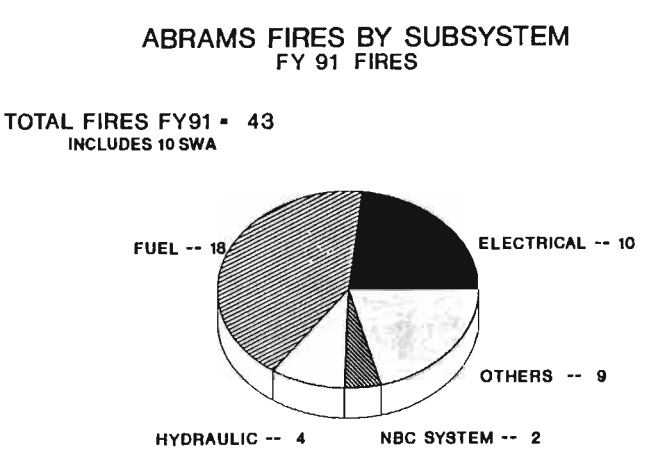


Figure 1



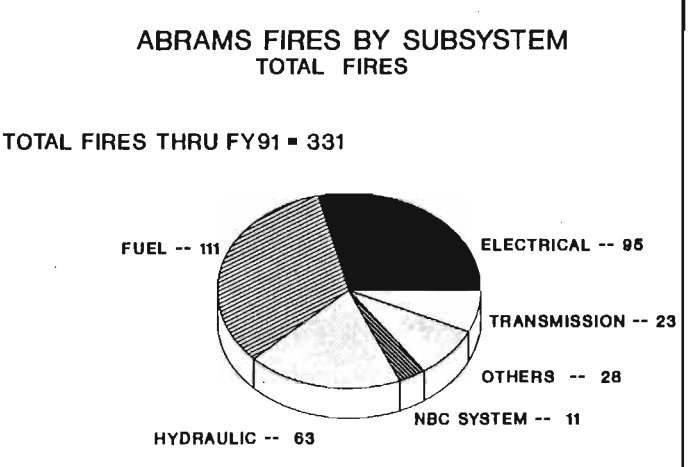


Figure 2

hydraulic fluid fires (Figure 2). However, one unusual occurrence surfaced during the fiscal year, which needs to be highlighted. There were seven smoke generator fires reported during FY91, compared to 18 reported from FY80 through FY90. All but one of the smoke generator fires occurred because of missing or improperly installed hardware. Other points of interest are highlighted in Figure 3.

The number of Abrams vehicle fires over the past few years has not increased significantly; however, the number of fires that continue to occur, which should have been prevented, is alarming. There have been many hardware retrofits and operator/maintainer manual changes made, which should correct hardware deficiencies and alert crewmen/maintainers to problem areas. Additionally, films have been made and distributed, Chief of Armor messages and safety-of-use-messages transmitted, and "hip-pocket" checklists distributed to alert the force about Abrams fires and what soldiers should and should not do to prevent vehicle fires. These fire prevention efforts were aimed at warning everyone of potential fire hazards and hardware changes that need immediate and continual attention. Our efforts have been rewarded, and Abrams fire numbers are holding steady. However, we cannot be comfortable with these results and turn our attention elsewhere, because battery bus bar retainer bolts are still found missing, spray cans are still placed in the turret on the personnel heaters, fuel/hydraulic hoses are found loose, and other seemingly minor oversights are occurring in the field that will lead to vehicle fires and possible catastrophes.

This summary of FY91 Abrams vehicle fires should serve as a reminder of the extreme dangers vehicle fires pose to the Armor Force. In addition to the hazards fires pose, they are extremely costly to the force as a whole in this era of diminishing resources. Abrams vehicle fires can and must be further minimized and controlled by continuous attention and supervision of operations and maintenance.

Abrams Vehicle Fires FY91

Key Highlights:

- Ten of the Abrams fires occurred in SW Asia.
- There were seven smoke generator fires in FY91, compared to 18 in the 10 previous years.
- Ten of the fires involved National Guard units.
- Four of the fires occurred at test sites.
- Damage from the 10 SW Asia fires cost more than $5 million.
- Damage from the remainder of the fires cost $1.7 million, an average of $52,798.
- Five fires caused no reported damage
- Twenty of the fires resulted in costs below $10,000.

Figure 3

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The 823d at Mortain: Heroes All

by Dr. Charles M. Baily and Mr. Jay Karamales

Force comparisons usually result in "beancounts" of men and weapons. However, one important factor, courage, usually cannot be quantified by the models used to compare forces. But bravery counts, and at Mortain, France, in 1944 it overcame both technology and numbers when Americans stopped an enemy attempt to salvage German fortunes on the Western front.[1]

At Mortain, the "beancount" was particularly bad for U.S. forces. The 25,500 attacking Germans outnumbered the 6,000 men in the regiments of the defending 30th Infantry Division, and XLVII Panzer Corps had about four times as many tanks.[2] Further, American units were at a distinct technological disadvantage because neither the infantry's organic antitank weapons nor the guns of attached tank and tank destroyer (TD) battalions could penetrate the front of the German Panther's hull.[3]

For nearly six weeks following D-Day, the Germans had confined the allies to a narrow lodgement area and grinding attrition warfare. But on 25 July, the Americans broke out at St. Lo.[4] For the Germans, the situation was disastrous. In static defense, the Germans had been able to hold their own. Largely horse-drawn and with their movements exposed to allied air supremacy, the German Army could not compete in mobile warfare. To restore the situation, the Germans desperately assembled forces to counterattack toward Avranches and cut the Americans' only supply route. German field commanders hoped to reach Avranches and establish a defense along the See River, cutting off the forces exploiting to the south,

Neither the Infantry's organic antitank weapons nor the guns of attached tank and tank destroyer battalions could penetrate the front of the Panther's hull.

while Hitler optimistically dreamed of sweeping the Americans into the sea.

The Battle of Mortain

For the attack, the Germans assembled four Panzer divisions: 1st SS Panzer, 2nd SS Panzer, 2nd Panzer, and 116th Panzer. Altogether, these divisions had 120 to 190 tanks, about half of them Panthers. Leading the main attack, 2nd Panzer was to attack along the Barthelemy-Juvigny road, followed by 1st SS, which would exploit and capture Avranches. The 116th Panzer was to cover the northern flank, while 2nd SS protected the south and captured Hill 314, tactically vital because it offered observation of all American forces south of Avranches (Fig. 1). At H-hour, midnight of 6 August, only the 30th Infantry Division and its attached tank destroyer battalion, the 823rd, stood in the way.[5]

On the morning of 6 August, the 30th Infantry moved south to relieve the 1st Infantry Division at Mortain. Hampered by traffic snarls, it took the division all day to move into position, not closing until 2000, only four hours before the attack was to begin. The 117th regiment protected St. Barthelemy, the 120th occupied Mortain and Hill 314, while the 119th stayed in reserve. Lack of time forced a hasty occupation of the 1st ID's positions, intended only for protection during a temporary halt. Later, the 30th ID concluded that the inability to prepare its own defensive positions was its major difficulty in defending Mortain.[6]

Delayed by their own traffic snarls, the Germans were not able to get their attack underway until about 0600.[7] In the south, the 2nd SS launched a two-pronged drive around Hill 314. The southern drive overran the American defenders, captured Mortain, and penetrated about five miles to the southwest, but the roadblock at L'Abbaye-Blanche stopped the northern thrust dead in its tracks. Second Panzer, bypassing resistance at St. Barthelemy, managed to advance as far as le Mesnil Adelee. But the main attack bogged down by noon of 7 August, more than ten miles from its objective (Fig. 1). Overall, the German attack at Mortain was a harbinger of the later

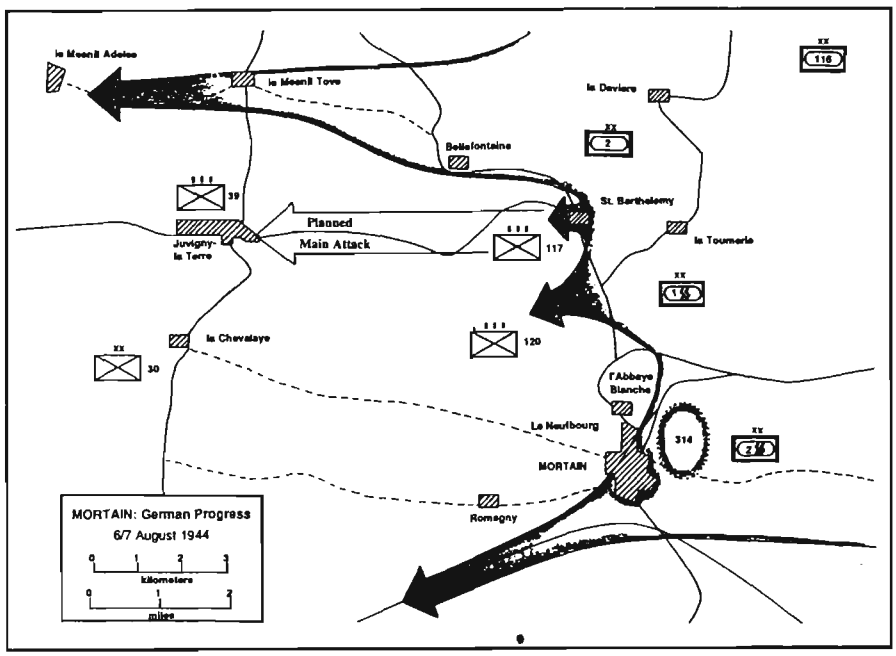

Figure 1.

offensive at the Ardennes; the main attack went nowhere, while secondary efforts made frighteningly deep advances, but in operationally pointless directions.

Even though Mortain and St. Barthelemy fell, the 30th Infantry Division, with heavy losses, stopped the advance down the Juvigny road and held Hill 314.[8] In their writings after the war, German authors were loath to give any credit to the tactical skill or courage of American soldiers when they explain their reverses on the battlefield, usually ascribing defeat to Allied air power and lavish expenditure of materiel. Writing about Mortain, one German author described it as the "first attack stopped totally by air power."[9] But this description does not explain why the Germans' main attack bogged down by noon on the first day, before the fog lifted and air could play a role. The explanation for the defeat of the German attack is found in the actions of the defenders. This account focuses on the men of the 823d TD battalion.

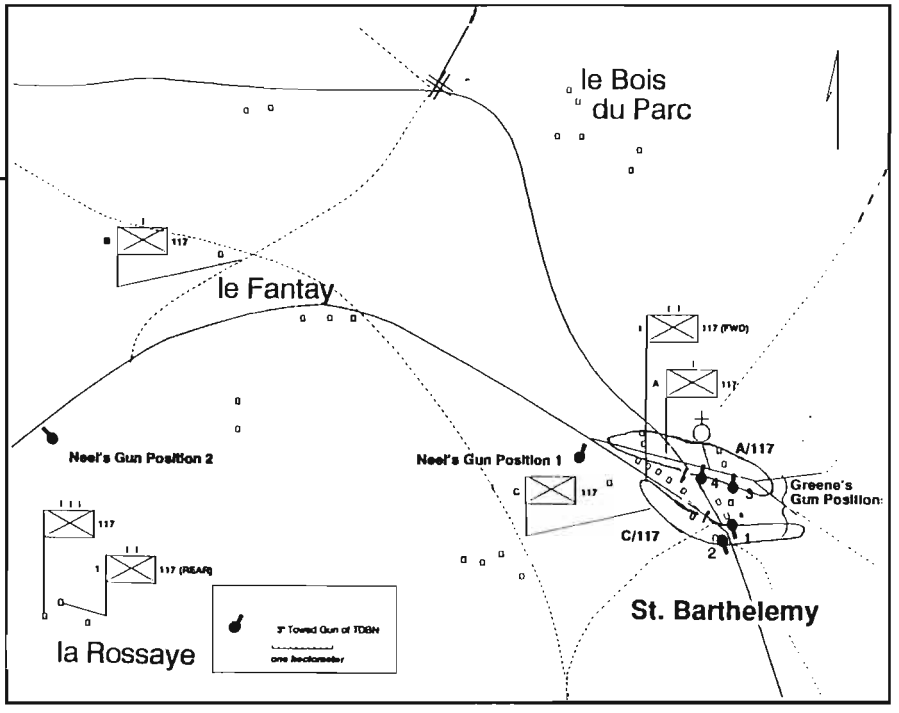

Figure 2. **U.S. positions are seen in greater detail in Figure 4, page 17.**

The Fight of the 823d

One of these men, Lieutenant George Greene, Third Platoon leader, B Co., arrived at St. Barthelemy just before sunset on 6 August[10] (Fig. 2). Directed by the infantry to occupy former positions of the self-propelled tank destroyers supporting the 1st ID, Greene found the sites to be very poor ones for his towed guns, but in the dark he had no opportunity to find new ones. Further, there was no opportunity to coordinate with the infantry; Greene had no idea where they were deployed. Dense fog began settling over the Mortain area during the night. At about 0500, German artillery fire began in earnest but did little damage to the defenders of St. Barthelemy. Recognizing the barrage as the prelude to an attack, the Americans were now fully alert. When the barrage lifted at about 0615, the men of 3rd Platoon stood to their guns.

Soon, the tank destroyer men heard shouts and German voices "jabbering like monkeys." The Germans were from 1st SS Panzer, who expected that St. Barthelemy had been cleared by 2nd Panzer, and a Panther led their advance. Apparently alerted to the unexpected presence of Americans, the tank advanced slowly while spraying the sides of the road with its hull-mounted machine gun. Crouched behind the thin shield of gun number one, Platoon Sergeant Martin waited tensely while listening to the unmistakable metallic squeal and clank of tank tracks approaching. Finally, he could see muzzle flashes from the machine gun. He ordered his gunner to aim at the muzzle flashes and fire. The gun's muzzle blast broke the fog and revealed that one 3-inch round at less than 50 yards range had set the tank on fire and caused it to slew sideways, blocking the road.[11] Protected by the fog, the Germans struggled for nearly an hour to clear the road while pouring small arms fire at the Americans. Finally clearing the Panther from the road, the Germans sent another one its way. At a range of about 30 yards, Sergeant Martin repeated his earlier performance and another Panther burned. For the time being, the German advance up the road from Mortain was stalled.

Meanwhile, the Germans were attacking St. Barthelemy from several directions, and fighting was becoming intense. By 0800, the fog was becoming patchy, rising and falling like a curtain. Elements of 2nd Panzer attacked from the northeast, and 3rd Platoon's number three gun killed one of its tanks at 50 yards. At about the same time, the crew of gun number two to the south spotted a Panther trying to cross the field to the southeast less than a 100 yards away. Two AP rounds into the side of the tank stopped it.

Fighting in St. Barthelemy was becoming more bitter and confused as Germans continued to assault the outnumbered American infantry and infiltrate through the town. During the next couple of hours the situation deteriorated as Americans were killed or driven from their positions and small arms fire cracked around Greene's men. By about 1000, higher headquar-

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ters was convinced that St. Barthelemy had been overrun. During this period, it would have been easy for lesser men than those of 3rd Platoon to convince themselves that they had done enough and should withdraw. But courage prevailed in this small unit; the men stayed at their guns.

About 1000, the lifting fog revealed another tank to the crew of number three about 100 yards away. Two quick AP rounds destroyed it. Shortly afterward, the Germans eliminated the troublesome gun. Similarly, to the south the lifting fog exposed the number one gun to a German tank, which destroyed it. To replace the gun, Greene decided to reposition number four, which had not fired all morning because of bad fields of fire. In addition, German half-tracks and infantry, protected by a hedgerow, were beginning to move up a sunken trail southwest of gun two. Under a hail of small arms fire, Greene tried two different positions for number four, even digging a gap in the hedge in the last effort, but the gun could not be depressed enough to engage the half-tracks. Ultimately, the crew had to pull the firing pin and abandon the gun.

About the same time, between 1030 and 1100, the last remaining gun, number two, spotted a Panther moving up the Mortain road through a gap in the hedgerow that had prevented the gun from hitting the tanks engaged earlier by Sergeant Martin. The tank destroyer men put a round into the side of the tank, but it continued to roll into the town where it stopped and began to burn. Shortly afterward, another German tank spotted the gun and hit it with a round of HE, injuring some of the crew and forcing them to abandon the now useless gun.

By this time, it was clear to Greene that it was time to get what was left of his platoon out of St. Barthelemy. Before he could act, an infantry sergeant ran into his CP begging for a machine gun to prevent his unit from being overrun. Taking a machine gun from one of the half-tracks, Greene and the sergeant set off for the infantry's position. A Panther put a round into the hedgerow next to them, killing the infantryman. Greene sprayed the hedgerows to keep the Germans at bay until he ran out of ammunition.[12] Unarmed, he ran into a German and had no choice but to surrender. Most of his men met the same fate or were killed; only a few made it back to the battalion.

In hindsight, the action was a tactical defeat for the 3rd Platoon, but it was part of a larger victory. The stout defense of St. Barthelemy by the men of the 30th ID and the 823d cost the Germans over six hours at a place they had expected to move through quickly. If either the infantrymen or TD crews had abandoned their positions when it became obvious they were outmatched, certainly by about 0900, the Germans might have had a chance to cover the 10 miles to Avranches while still protected by fog. By the time they could begin moving through the town, the fog was gone. Allied fighters filled the sky and ruthlessly strafed and rocketed any German trying to move down the Juvigny road. For his part, Greene received no decoration for his actions. Instead, he was rewarded with eight months as a POW, including a grueling mid-winter march through Germany that should have killed him.

Before Greene's platoon succumbed, the infantry had already begun to reinforce St. Barthelemy. About 0900, the commander of the 117th Infantry ordered Lt. L. Lawson Neel, First Platoon leader, B. Co., to move to St. Barthelemy to reinforce the beleaguered defenders.[13] Reconnoitering for a gun position, Neel reached the town and found Germans everywhere, and he assumed the infantry had been overrun.[14] By 0930, he had returned to the town with a gun (Fig. 2). The crew had barely finished emplacing the gun when a Panther, accompanied by infantry, emerged from behind a house. The tank commander spotted the gun, and Neel, from only 20 yards away, could hear the tank commander barking fire commands. "Damn it, shoot," yelled Neel, and a 3-inch round slammed through the side of the tank. Its crew bailed out, and the German advance halted. Almost immediately, small arms fire from the German infantry began hitting the gun shield "like water from a hose," and the Germans were close enough to try rolling grenades under the shield. After removing the firing pin, the crew abandoned the gun and half-track. One of the men asked Neel if this meant that they were running; the lieutenant assured him they were only relocating.

As Neel walked down the road to his platoon's position, he encountered a jeep carrying an unknown senior officer. This man, seeing what must have appeared to be an officer fleeing the battle, angrily demanded, "Where are you going, Lieutenant?" Neel responded tersely, "To get another gun." The officer drove away.

Nobody ordered Neel to return to the fight. In the tradition of other brave soldiers, Neel rearmed himself and marched to the sound of the guns. By 1100, Neel and another gun crew found a position about 800 yards west of St. Barthelemy along the road to Juvigny. The west side of a hedgerow that ran perpendicular to the road offered concealment from the advancing

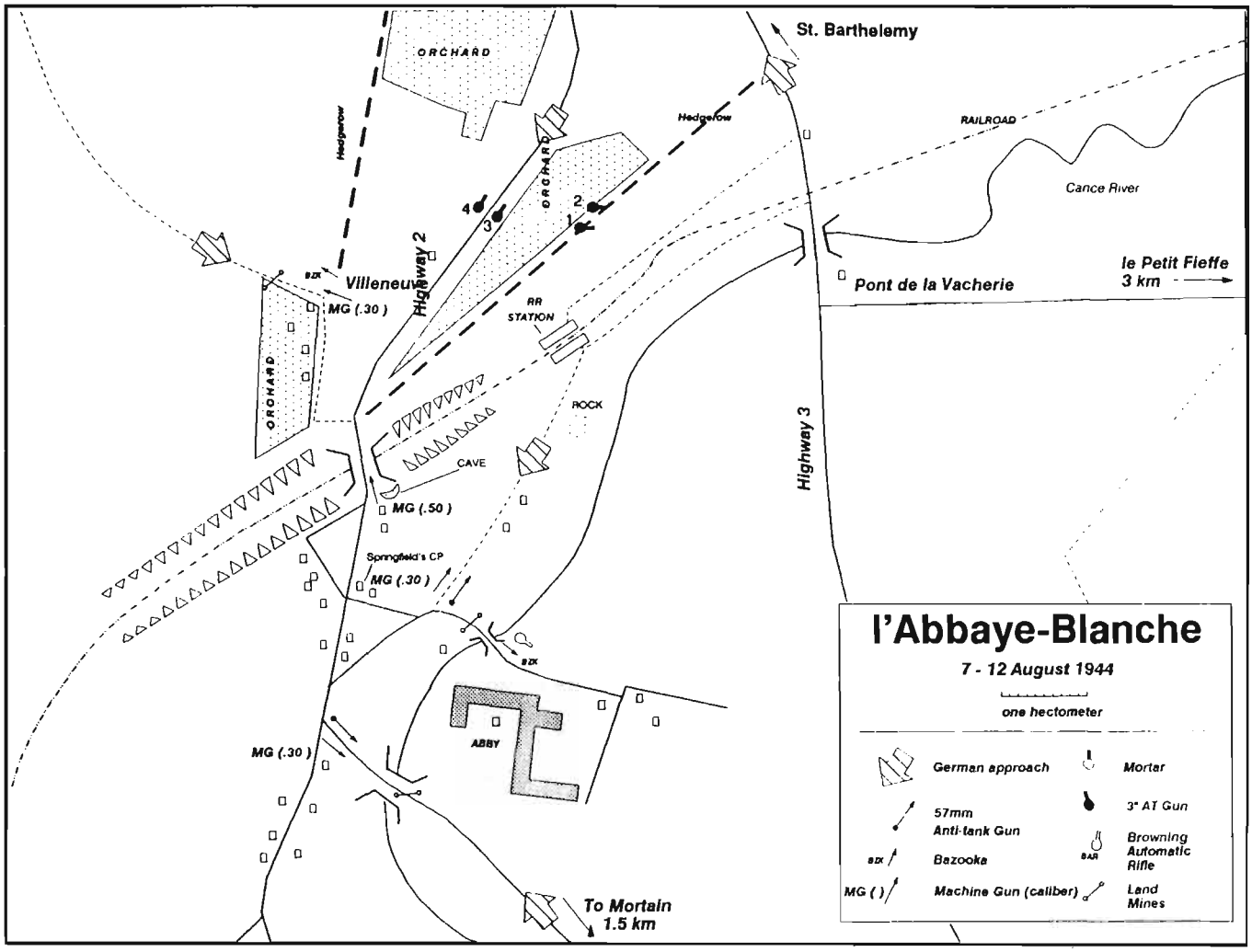

Figure 3.

Germans. About noon, the crew could see the muzzle brake of a Panther emerging from around the hedgerow, bouncing up and down as the tank crept forward fitfully. "After a thousand forevers," the gun tube and then the tank finally appeared 50 yards in front of the tensely waiting gun crew. Neel's gun sent a round into its flank. After the crew bailed out, Neel spurred their flight with a round of HE. An overwatching German tank fired a round of explosive into the hedgerow, spraying the crew with dirt and hot fragments. Abandoning the gun, the TD men joined infantry defending the next hedgerow to the west. The abandoned Panther blocked the road to Juvigny and became the high water mark of the Germans' main attack. Again, American ground forces had effectively stopped a German advance before air power entered the equation.

South of St. Barthelemy, the defenders of Abbaye Blanche were also contributing to the Germans' defeat. During the afternoon of 6 August, infantrymen from the 30th Division and a TD platoon began establishing a perimeter around the village.[15] The infantry unit was a platoon from the 120th Infantry Regiment, reinforced by the regimental antitank company. But defense against tanks depended chiefly on Lt. Tom Springfield's platoon from B Company, 823d. In contrast to Greene's experience, the two lieutenants, with Springfield in command, established a coordinated defense to cover the northern approaches to Mortain.

When he arrived at Abbaye Blanche at about 1700 on the 6th, Springfield had orders to occupy the 1st Infantry's former positions. Like Greene, he judged the positions to be thoroughly unsuitable, but in his case he had time to find better positions on a ridge about 200 yards to the north (Fig. 3). He emplaced two guns behind a hedgerow where they could cover Highway 3, about 400 yards to the east. He positioned the other two guns on each side of Highway 2 to protect that avenue of advance. By the time darkness fell, the crews had dug in their guns. During the night, soldiers of 2nd SS Panzer division advanced to launch a two-pronged attack around Hill 314. South of Mortain, the Germans struck at about 0100, quickly overrunning the American roadblocks and entering the town. The northern attack did not begin until about 0500. A reconnaissance

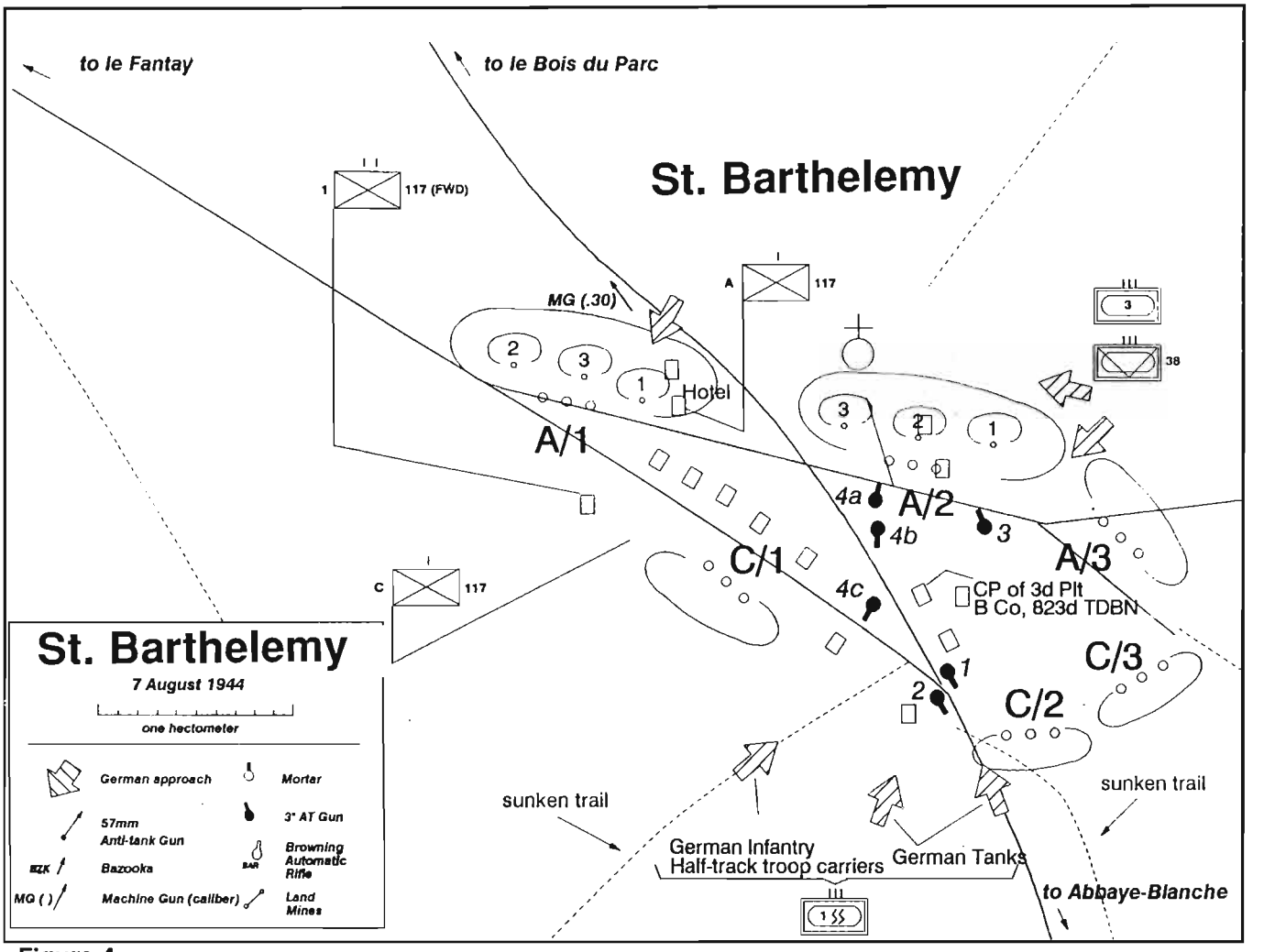

Figure 4.

unit with an armored car made first contact as it advanced down a trail toward an infantry roadblock. At close range, the Americans knocked out the armored car with a 57-mm gun. Machine gun fire took care of the other vehicles and killed most of the Germans.

As it became light, the crews of Springfield's one and two guns could see, through patchy fog, German vehicles moving north on Highway 3. The highway climbed a hill in front of the guns, which forced the vehicles to slow down and provided easy targets. Opening fire, they quickly destroyed a tank, three half-tracks, and an ammunition truck — the latter identified by a gratifying secondary explosion.

An hour later, about 0600, the Germans attacked down Highway 2 toward guns three and four. Infantry accompanied by two half-tracks, one mounting a 75-mm gun, made the attack. The two 3-inch guns quickly killed the half-tracks, and infantrymen drove off the remaining Germans. Except for heavy and continuous German artillery fire, most of which overshot the ridge line, this 15-minute skirmish was to be the last attack on the Abbaye Blanche roadblock on 7 August. But the defenders had more than artillery to keep them busy.

Inexplicably, or perhaps just stupidly, the Germans kept trying to push vehicles up Highway 3 toward St. Barthelemy all day on the 7th and 8th of August. As the vehicles slowed to climb the road, they provided a shooting gallery for the crews on guns one and two. As Springfield later recalled, "For two days, we fired all day." Not bothering to keep score at the time, he later estimated that his guns killed about 30 vehicles during the battle, including at least 10 tanks.

During the night of 7-8 August, the Germans pounded the roadblock with heavy Nebelwerfer rockets, wounding about four defenders. At dawn, the SS renewed their attack on the roadblock. About 0500, German infantry sallied from the orchard northwest of guns three and four, but the Americans drove them off. Simultaneously, a patrol attacked the outpost at Villeneuve, and infantry defeated this attack also. Soon after, the Germans struck the two guns with tanks and infantry. The gun crews quickly killed two tanks and four half-tracks, but the German infantry, reinforced by a flamethrower, continued the attack dismounted. Led by Springfield, a "strike squad" repulsed the attack, dispatch-

ing the flame-thrower operator in a ball of fire.

During the following days, pressure decreased on the roadblock as heavy American reinforcements moved into the Mortain area and shifted to the offensive. On the 10th, the Germans launched a final attack on the roadblock, but the defenders repulsed them with heavy losses. That night, as a fitting end to the battle, a lost and confused German half-track loaded with wounded rolled up to Springfield's CP. Looking from a second floor window, he announced to the Germans that they were now prisoners of war. The battle of Mortain was over. On the 12th, the 30th Infantry Division and the 823d joined the massive Allied pursuit toward Germany.

The stories of these three platoons are, of course, an incomplete account of the Battle of Mortain. But their experience illustrates the courage and competence that American soldiers brought to the battlefields of Northwest Europe during World War II. Numbers would have amounted to little without their devotion and skill. And, in passing, it should be noted that none of the three platoon leaders was a professional soldier. These men were citizens answering their country's call in wartime. America will need to have men such as these in the future.

As a more practical lesson for today's soldiers, the value of coordination between units is demonstrated by these actions. Although the odds against Greene were probably too heavy for a successful defense of his position, the contrast between the chaos at St. Barthelemy and the successful defense of Abbaye Blanche is illustrative.

Notes

[1]Authors' Note. This article is made possible by a study sponsored by the U.S. Army Concepts Analysis Agency and conducted by Science Applications International Corporation. Other members of the SAIC research team were: Victoria Young, Albert McJoynt, and Joyce Boykin. The team conducted intensive research into unit records at the National Archives and available materials at the Infantry and Armor Schools, uncovering data that has not been published previously. But most important, interviews with the three platoon leaders described in this article, L. Lawson Neel, Thomas Springfield, and George Greene, uncovered information that had remained untapped by historians.

[2]Figures for American units are from G-1 Journal and File, 30th Infantry Division, August 1944, Record Group 407, National Archives, Suitland, MD. The 117th Regiment had 2,534 men, and the 120th had 3,008. Approximately 300 men from the tank destroyer battalion reinforced the regiments. The total was rounded up to account for other attachments. German figures are from Gersdorff, General Freiherr von, *The Campaign in Northern France*, Volume IV, Chapter 4, "The German Counterattack Against Avranches," unpublished manuscript, MS B-725, Foreign Military Studies, National Archives, Washington, D.C.

[3]In July 1944, First Army conducted tests against captured Panthers to determine the effectiveness of U.S. weapons. The results were discouraging. Neither the organic antitank weapons of the infantry divisions, the 57-mm antitank gun and 2.36-inch rocket launcher (Bazooka), or the 3-inch guns of reinforcing tank destroyer battalions could penetrate the front of the Panther's sturdy hull at any range. At close range, 200 yards, the 3-inch gun only had a chance of penetrating the turret's front. But identifying the problem did not rectify it. Later arrival of more powerful 90-mm guns only partly alleviated the problem. For a more complete account of the effectiveness of American antitank weapons see Charles M. Baily, *Faint Praise: American Tanks and Tank Destroyers in World War II*, (Hamden, Conn., Shoe String Press, 1983), pp. 106-110. The results of the First Army test are in Records of the Armored Fighting Vehicles and Weapons Section, European Theater of Operations, Record Group 338, National Archives, Suitland, Md.

[4]The general account of the battle is compiled from several sources but the most important were: Martin Blumenson, *Breakout and Pursuit*, (Washington, D.C., OCMH, 1984) and Robert L Hewitt, *Workhorse of the Western Front - The Story of the 30th Infantry Division*, (Washington, D.C., Infantry Journal Press, 1946).

[5]The 823d was a towed battalion; each of its three gun companies had 12 guns and used half-tracks as prime movers. About half the TD battalions in the theater were towed. The others were self-propelled and equipped with M-10s (3-inch gun) or M-18s (76-mm gun). The more effective M-36 (90-mm gun) did not begin arriving in the theater until September.

[6]G-3 Journal and File, 30th Infantry Division, 6-7 August 1944, Record Group 407, National Archives, Suitland, Md., and Hewitt, *Workhorse*, pp. 56-77.

[7]Stoeber, Hans, *Die Sturmflut und das Ende* (Osnabruek, Mumin Verlag GMBH, 1976), p. 243 (informal translation).

[8]G-1 Journal and File, 30th Infantry Division; 117th-317, 119th-23, and 120th-217. After Action Report, 823d TD Battalion, Record Group 407, National Archives reports 109 men lost.

[9]Stoeber, *Die Sturmflut*, p. 245.

[10]The detailed account of the action relies primarily on four sources: (1) "30th Infantry Division, Mortain," Folder 96, ETO *Combat Interviews*, Record Group 407, National Archives, Suitland, Md. (hereafter cited as *Combat Interviews;* this collection is a series of interviews conducted by ETO's Historical Section shortly after the battle, and this folder has detailed map overlays of units down to squad level.), (2) After Action Report, 823d Tank Destroyer Battalion, Record Group 407, (3) Committee 24, Officer's Advanced Course, The Armored School, *Employment of Four Tank Destroyer Battalions in the ETO*, (Fort Knox, Ky., May 1950, and (4) interview of George Greene, 25 January 1990, McLean, Va.

[11]Greene, Interview.

[12]Greene, Interview, and the 823d AAR reports that Greene was last seen firing a 30-caliber machine gun from the hip.

[13]*Combat Interviews*, and Interview with Mr. L. Lawson Neel, 1 December 1989, Thomasville, Ga.

[14]Figure is from map overlay in *Combat Interviews*. The account is primarily based on Neel, Interview.

[15]*Combat Interviews* and interview with Thomas Springfield, 24 January 1990, McLean, Va.

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The Mounted Breach — "Making It Work"

by Captain Walter A. Ware (Scorpion 15)

We should congratulate ourselves. We can now breach complex obstacles without relying on manual techniques. With the fielding of plows and rollers, we not only enhanced our breaching capability, but began a process to develop quickly the expertise needed to use these assets. The National Training Center's heightened emphasis on breach operations enabled task forces to acquire the expertise and develop standardized techniques. The basic philosophy was execution with minimal soldier exposure to fires. Buttoned up was the norm for protection. Recent rotations validated this philosophy, but also brought to bear the complexity of "making it work."

This article addresses many of the techniques employed, problems encountered, and solutions developed during these rotations.

The Threat

The Samaran doctrine used by NTC's OPFOR portrayed a generic Southwest Asia threat. The standard platoon deliberate defense shown in Figure 1 is discussed in detail in NTC ST 91-2. The complexity and depth of the obstacle posed a significant challenge to attacking task forces. The minefields consisted of buried AT and AP mines (3 to 1 mix). The tank ditches were two meters deep, four meters wide, and had an enemy side berm two to three meters high.

Intelligence

Breach planning placed a stringent requirement on gathering enemy obstacle intelligence. A comprehensive and detailed reconnaissance and security plan was required to confirm or deny the enemy obstacle template. Although the above should not be new to anyone, the R&S plan was usually where the breakdown occurred. Too many times, units crossed the LD without any more information than that included on the original template. Some noted problems include:

- R&S plans lacked the detail required for elements to fully understand what they were looking for and thus, what to report, such as type of wire, type of mines and mix, presence of booby traps, enemy patrol strength, etc. One technique was to augment the scouts with an engineer section or squad. This should be a habitual relationship.
- Lack of emphasis on tracking the execution after R&S responsibilities were issued.
- Little or no lateral coordination of assets: sapper teams, scouts, and dismounted patrols.
- Information that was gathered did not get to the S2.
- When the S2 did receive information, he issued a raw information dump to subordinate units without analyzing and refining his template.
- Too much emphasis on confirming templated obstacles as opposed to confirming that the axis up to the templated/known obstacles was, in fact, clear. Both areas require equal emphasis. Units often wasted valuable time breaching nonexistent obstacles or encountering unexpected obstacles.

•Not clearly identifying the commander's expected outcome of the R&S effort. What information does he want by LD?

•Attempting to execute R&S and covert breach plans, simultaneously. We should not commit covert breach forces until the results of the R&S plan are in and analyzed. Pre-commitment often compromised R&S assets before their mission was complete. Use the information gathered to plan the covert breach.

FM 34-2-1 and FM 90-13-1 are excellent tools for R&S plan development.

Breach Force and Mobility Reserve

The breach force base was normally an armor company team with a minimum of one engineer platoon attached. The two tank platoons were augmented with additional plows and rollers, to a minimum of two plows and one roller per platoon. The engineer platoon was augmented with two AVLBs, two CEVs/ACEs, and an additional MICLIC (total of two MICLICs in the platoon).

The engineer company (-) formed the base for the mobility reserve. The mobility reserve moved in support of the breach force, providing quick replacement of disabled forward breach assets or reopening blocked lanes. Once at the breach site, uncommitted plows remained on the friendly side under the command and control of the engineer company commander.

Breach Sequence

Units soon realized that the order or sequence of breach equipment determined success or failure. Using gathered intelligence and enemy doctrine, the S2 and TF engineer graphically portrayed the anticipated or known enemy obstacles by type and order (see Figure 1). The staff analyzed the graphic display and carefully determined what breach assets were avail-

Standard Platoon Deliberate Defense

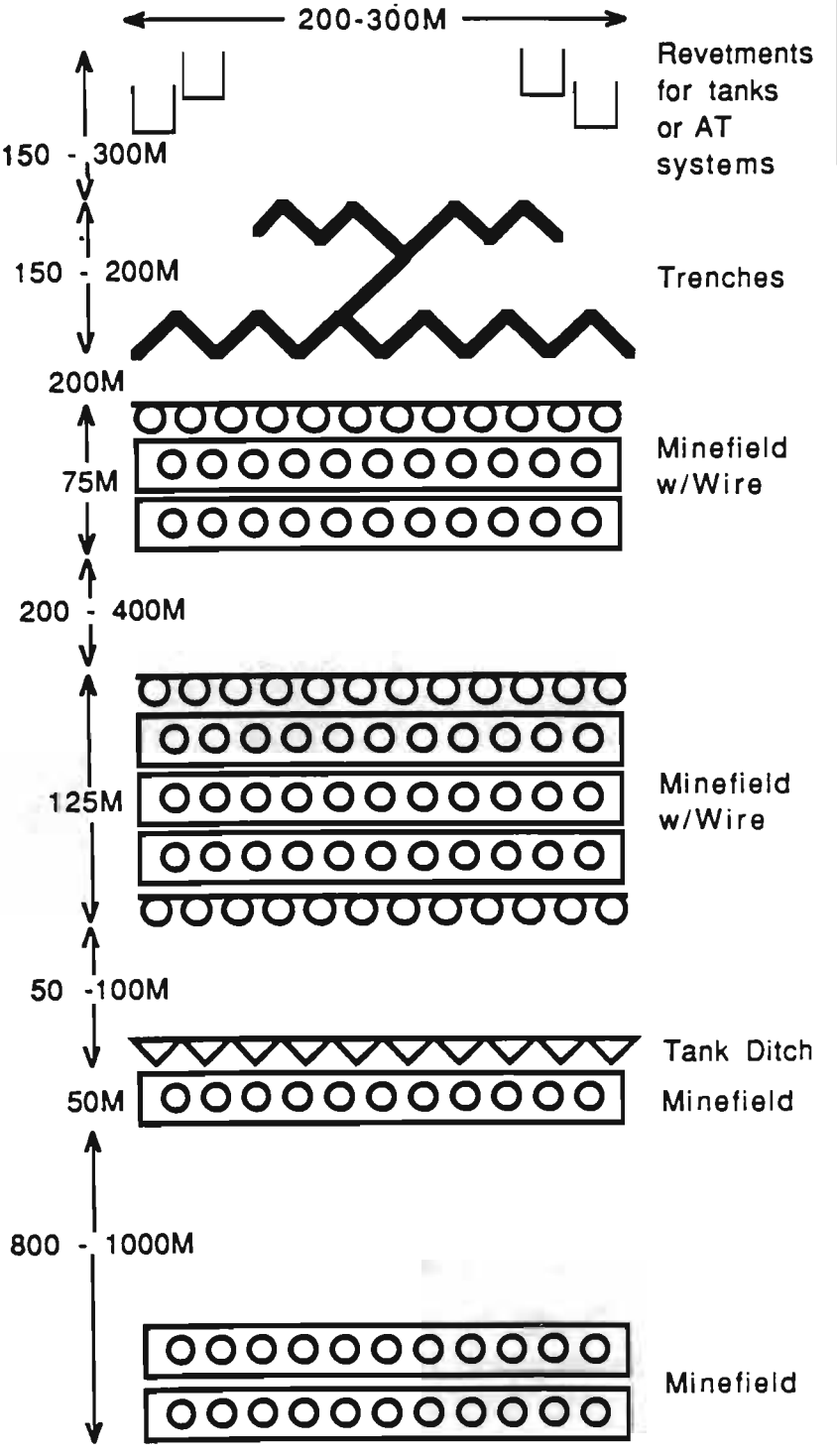


Figure 1

Breach Sequence Graphic Display

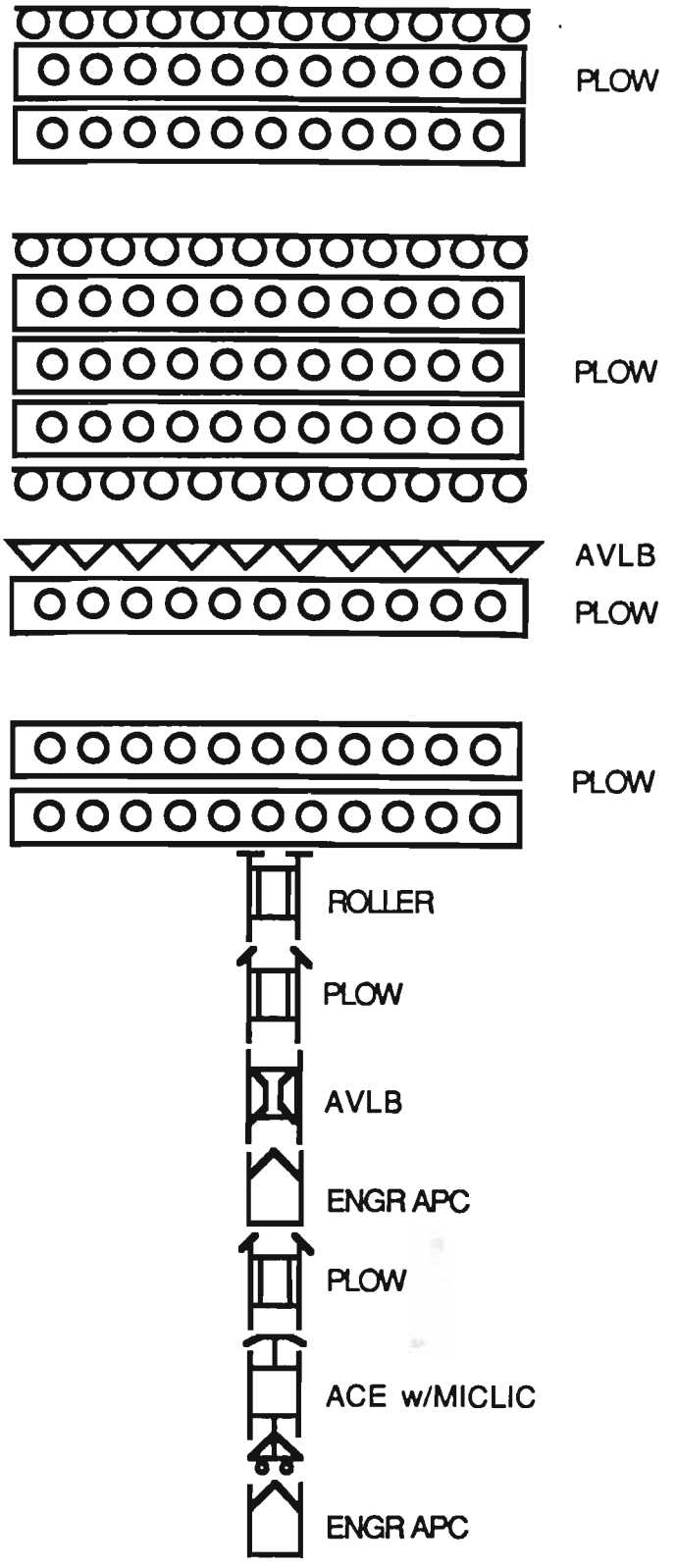


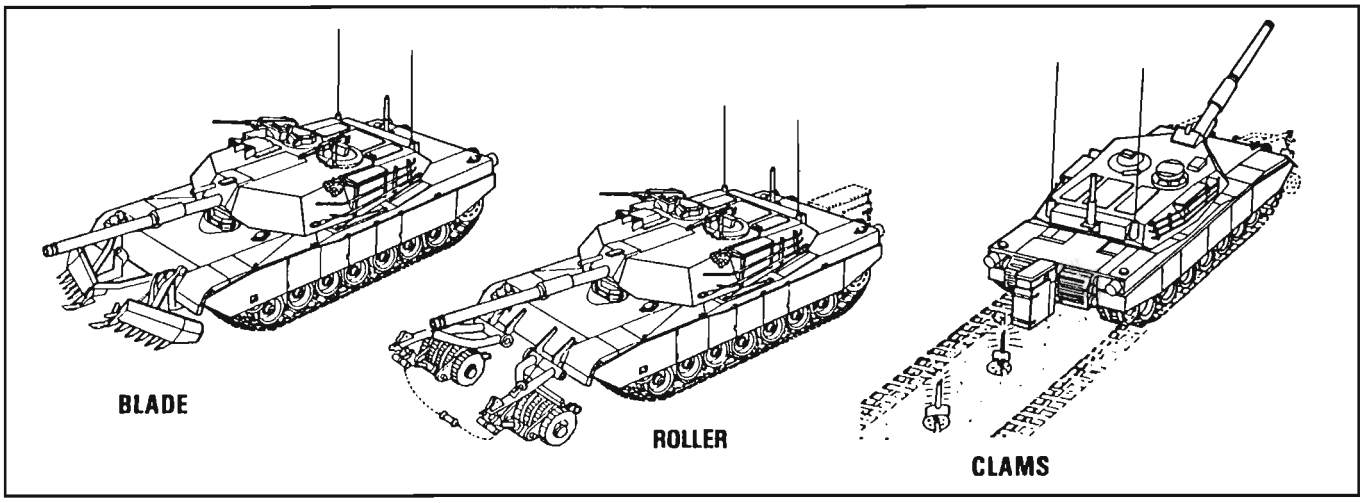
Figure 2

able to breach each type obstacle. This determination showed how best to sequence the equipment. If buried mines were suspected, and the leading edge of the initial or second minefield was not identified, a roller was incorporated into the sequence. Other vehicles incorporated into the sequence were engineer APCs for marking. Another plow, ACE or AVLB, and MICLIC were added for redundancy. Any planned sequence was based on available assets. For example: Given the complex obstacle in Figure 1 and assuming the leading edges of the minefields were not identified, a possible obstacle solution is minefield - minefield - tank ditch - minefield - minefield, thus dictating the vehicle sequence as roller - plow - AVLB - Engr APC - plow - ACE w/MICLIC - Engr APC.

A graphic display of this solution is depicted in Figure 2.

Steps

1. The roller detects the leading edge of first minefield.
2. The plow clears the lane.
3. The first engineer APC marks the lane.
4. The second engineer APC places the far, intermediate, and funnel guide markers.
5. The roller regains the lead, followed by original sequence.
6. The roller detects the leading edge of second minefield.
7. The plow clears the lane to tank ditch, backs up and moves off the lane to the side (clearing a path).
8. The AVLB moves forward, bridges the tank ditch, and backs up to allow the plow back onto the lane.
9. As the plow moves over the bridge, the AVLB launcher occupies the cleared side path vacated by the plow.
10. The first engineer APC follows the plow and marks the lane.
11. The second engineer APC places the far, intermediate, and funnel guide markers, but remains on the friendly side of the lane. Upon completion,



they fall under the command and control of the mobility reserve.

The remaining plows and ACEs stay on the friendly side of the second minefield ready to react if a forward plow or AVLB is disabled. If they are not committed by the time the lane is completed, they fall under the command and control of the mobility reserve.

Breach Location

If possible, breaching was conducted on an assailable flank. However, in desert operations the wide open terrain and boundless linear obstacles usually required frontal assaults. Selecting the point of breach depended on several factors, including: a determined weakness in the defense (likely unit boundaries), location where terrain best concealed breach, location of a suitable support by fire position, and trafficability. Two lanes per task force was the standard. The purpose for planning two lanes was not only to facilitate passage, but also to provide redundancy if problems arose clearing one of the lanes. As forces were committed to the first open lane, efforts to complete the second lane did not cease. Vehicles were often disabled in the initial lane, or the lane was blocked by enemy FASCAM. A completed second lane allowed quick transition and a sustained assault on the objective. As soon as the situation permitted, two-way traffic was established to allow evacuation.

Planned spacing between lanes was a minimum of 100 meters. Lanes closer than 100 meters were too easily targeted by direct and indirect fires. As the distance increased, there was a trade-off of command and control in favor of dispersion.

Assault Lane Marking

The assault marking of lanes was accomplished by a variety of techniques. Some task forces used Tippy Toms and VS-17 panels.

Tippy Toms are lane markers about five feet high, weighted at the bottom, with a glass fiber mast and marker panel at the top.

When they are thrown out the back of the APC, the weight causes them to right themselves.

Others relied on little other than CLAMS and the plowed path left by the breach vehicles. The latter method proved acceptable for lead vehicles, but follow-on vehicles and units had difficulty identifying the location of the lane. If the location was found, vehicles could not clearly identify the lane itself and often veered off into minefields. CLAMS proved difficult to guide on after several vehicles had passed through the lane.

The most successful technique used VS-17 panels or highway markers to provide far, intermediate, and funnel guide markers and Tippy Toms to mark the actual lane. Tippy Toms significantly increased the speed of marking and limited the exposure of soldiers. Tippy Toms were stored on the inside of the APC. They were then lobbed out of the open hatch at 20-25 meter intervals on the left-hand side of the lane. The entrance and exit of the lane were designated by an additional Tippy Tom on the right hand side.

Logistical and time constraints required two dedicated engineer APCs per lane. A typical lane marking package included 30-40 Tippy Toms and 8-12 VS-17 panels/highway markers. The first APC, with Tippy Toms, was responsible for marking the lane, and the second APC placed the initial recognition markers. If possible, a backup marking team, with identical assets, moved with the mobility reserve. A critical part of the lane marking APC's mission was to maintain its position within the breach sequence. Assigning the entire marking mission to only one engineer APC proved too demanding a task.

Appendix F of FM 5-71-100 (Feb 91, Coordinating Draft) describes available lane markers and examples of lane marking systems.

Contingency Planning

Planning for contingencies was an integral part of the breach operation. Successful task forces designated breach assets for contingency operations and organized a mobility reserve to control these assets. Situations requiring this reserve frequently oc-

curred and detailed planning was essential for timely resolution.

The mobility reserve should stay on the friendly side of the obstacle until all key elements have cleared the lanes. This requires that the mobility reserve's command and control also stay on the friendly side of the obstacle. The best technique was to designate the engineer company commander as the breach site/mobility reserve commander. He already was responsible for marking the lanes and for assisting with the passage of follow-on elements. As breach site commander, he incurred the additional responsibility of maintaining traffic flow through the lanes and authority to commit mobility reserve assets.

If all the mobility reserve assets are not under the engineer commander's control during movement, then established criteria implement turnover of command and control.

FASCAM

Planning locations and criteria for execution of FASCAM were major considerations during breach planning. Task forces developed five basic steps for success.

1. Evaluate possible conflicts with friendly movement before finalizing any plan.
2. Determine weaknesses in flank security and suitability for FASCAM.
3. Anticipate enemy repositioning and counterattack avenues and determine need for FASCAM in delaying or deterring these enemy movements.
4. Ensure execution criteria were established before committing this limited and valuable asset. Determine decision points (DPs) and assign surveillance responsibilities to verify criteria are met. Keep in mind the time required to deliver the FASCAM on target, its duration, and impact on availability of other fires during FASCAM firing.
5. Plan FASCAM targets in excess of your allocation. Prioritize and execute FASCAM targets as the criteria are met. Know where the brigade controlled FASCAMs are targeted and their criteria for execution.

Rehearsals

To conduct a full-up combined arms rehearsal was not a last minute, check the block, requirement. It was the critical activity in preparation for the breach. Planning for the rehearsal involved not only setting aside sufficient time, but also early detailing of the engineers to construct a model of the anticipated enemy obstacle.

Successful task forces did not just talk their way through the breach. They assembled the actual personnel and vehicles involved and executed the breach, as many times as necessary. They discussed contingency operations and practiced them. Involvement of support and assault forces was essential.

As the complexity of this battle drill was simplified through repetitious rehearsals, an additional benefit emerged. Company/teams could now use a variation of this same drill to execute in-stride breaches quickly, through less complex obstacles with organic assets. This new found ability proved significant during missions for which the enemy situation was not as clear. Good rehearsals have enabled otherwise doomed operations to achieve success.

Conclusion

The lessons learned at NTC and during Operation DESERT STORM are shaping the future of breach operations. As advancements in technology and techniques are implemented, our ability to "make it work" can only improve.

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A Leap of Faith

by Colonel Lon E. Maggart

"The real subject of this article is cohesion. Cohesion allowed the leaders of this brigade to attack and destroy substantial Iraqi forces and equipment under the most difficult of conditions decisively and without hesitation."

"Devil 6, This is Dreadnought 6... I have some concerns about this attack. If I am alive tomorrow morning, I would like to talk to you about this operation!" "Devil 6, This is Demon 6... If I'm alive in the morning, include me in the discussion too!" "Dreadnought 6, Demon 6, This is Devil 6. If I'm alive tomorrow, I will be more than happy to discuss this operation with you both!"

This somber radio conversation took place late on the night of 26 February 1991 in eastern Iraq, just before the 1st Brigade, 1st Infantry Division was to conduct a forward passage of lines through the 2d Armored Cavalry Regiment to attack and destroy what remained of the Tawakalna Division of the Republican Guards. The events which lead to this moment in time included the deliberate breach and destruction of the 110th Infantry Brigade, 26th Iraqi Division, over the previous two days and an approach march of some 125 kilometers through rain, high winds, and blowing dust that had begun at 0530 that morning. The night attack and subsequent operations described in this article are both important and interesting from a historical viewpoint. However, the real subject of this article is cohesion. Cohesion allowed the leaders of this brigade to attack and destroy substantial Iraqi forces and equipment under the most difficult conditions decisively and without hesitation. What follows is the story of a cohesive unit in combat and what made it that way.

Figures 1 and 2 graphically depict the operation and can be used to reference specific information found in the text.

The morning of 26 February started with the brigade moving in column behind an advance guard provided by the 1-4 Cavalry through a seven-kilometer corridor between the 3d Armored Division on the north and the 1st (UK) Armoured Division to the south. The division mission was to establish a corps directed reserve position 85 kilometers to the northeast by early afternoon. However, as the day wore on, the location of the reserve position began to shift farther eastward. Eventually, the mission changed as well. When the brigade halted at mid-afternoon for refueling, the division commander issued a change of mission over the radio for the 1st and 3d Brigades to attack east to destroy the Tawakalna Division, which the 2d Armored Cavalry Regiment had fixed in place 40 kilometers to the east. He set the start point time for 1730 hours, just as night was falling.

There was time only to review quickly a three-week-old intelligence overprint of the Tawakalna Division's location and disposition and to produce a rudimentary operations order.

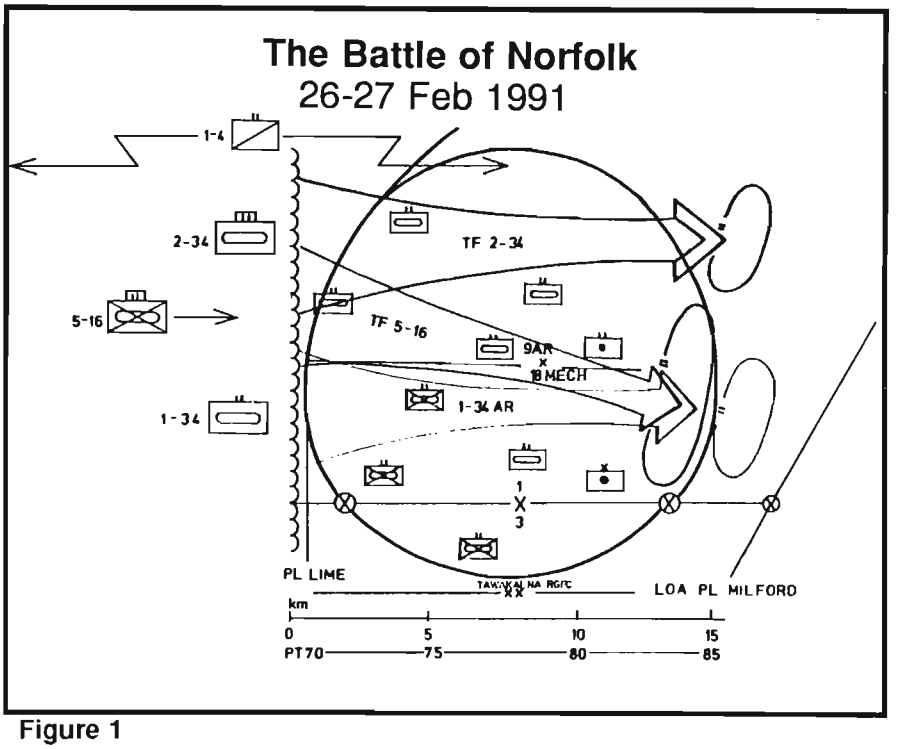


Figure 1

"The brigade continued to move relentlessly toward a collision with the Tawakalna Division."

In reality, the order gave only a mission, a series of way points that defined the direction of attack, three objectives, and a limit of advance called Phase Line Milford. The brigade moved out promptly at 1730 with the first order of business to simplify command and control by closing the two lead battalions together. This action massed the brigade and eliminated the possibility of fratricide between organic units. During the first minutes of the move, lead battalions also had to mark their vehicles with chemlights for identification during the rapidly falling darkness. All of this was no small task because the lead battalions were separated by six to seven kilometers, and all necessary coordination had to be made over the radio while the brigade was moving. To further complicate the operation, the trailing battalion, TF 5-16 Infantry, had closed on the refuel point only moments before the two lead battalions began moving to the east.

Navigation in the desert was difficult, even with the Magellan global positioning system. However, the most consistently difficult aspect of this approach march was to keep the two lead battalions aligned. One battalion attacked using a box, while the other used a diamond. Considerable cross-talk was necessary to keep everything generally aligned to prevent fratricide.

During the course of the move, the division commander provided several additional instructions. The first was a change in the passage of lines through the 2d ACR. In the original concept, the brigade was to pass through the 1-4 Cavalry, then, approximately ten kilometers farther to the east, pass through the 2d ACR in zone to attack and destroy the Tawakalna Division that was defending from prepared defensive positions. The area between the line of departure and Phase Line Milford, the limit of advance, was Objective Norfolk. As a result, this battle became known as the Battle of Norfolk.

As the brigade moved rapidly toward the enemy, the division commander issued a second fragmentary order that required the brigade to conduct the passage through the 2d ACR along a specific ten-kilometer zone identified by two sets of grid coordinates. In addition, he gave a radio frequency and the call sign "Cougar" to enable the brigade to contact the 2d ACR to coordinate the passage. This frago necessitated a complete change in direction for the brigade. It is difficult to describe how complicated it was to redefine the direction of attack and to change formations while bouncing across the desert in the dead of night at high speed using a 1:250,000 scale map. Even with the Magellan, this was an incredibly difficult undertaking. Notwithstanding the problems of changing the plan enroute, the brigade modified the zone of action and continued toward the passage point.

The brigade continued to move relentlessly toward a collision with the Tawakalna Division when the division commander called once again to direct that a brigade representative make physical contact with the 2d ACR to coordinate the passage. I decided that this meeting would occur only after the brigade was closer to the regiment.

As the brigade closed on the 2d ACR, it was apparent that a pitched battle was in progress. Green and red tracers filled the air along with bursts of light from tank cannon fire, MLRS, and conventional tube artillery. Fires from destroyed enemy vehicles were burning fiercely on the horizon. It was

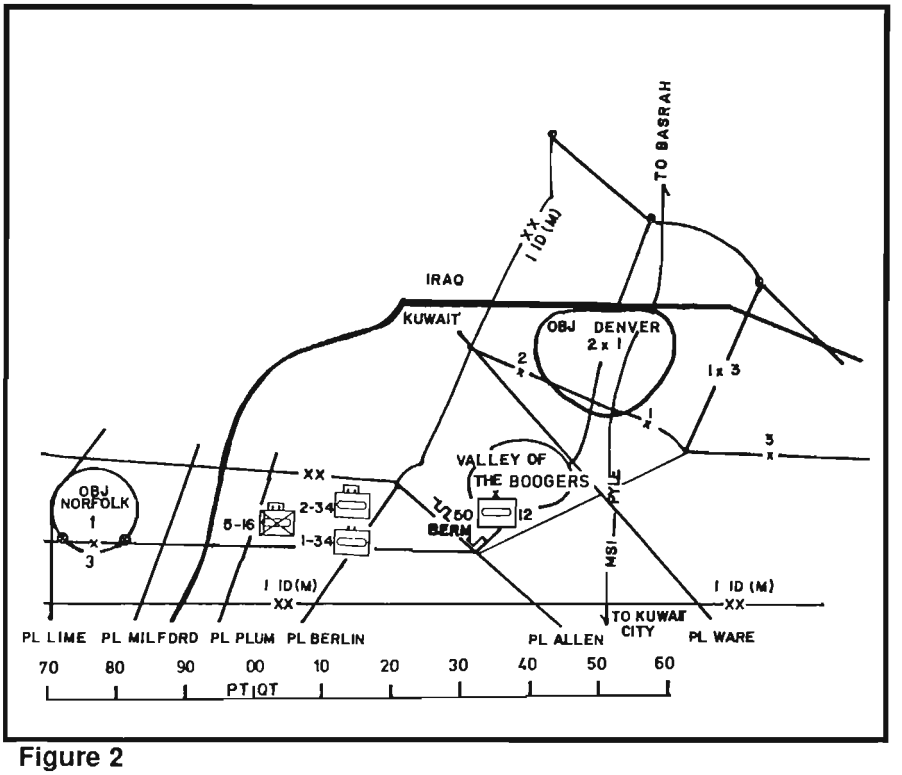
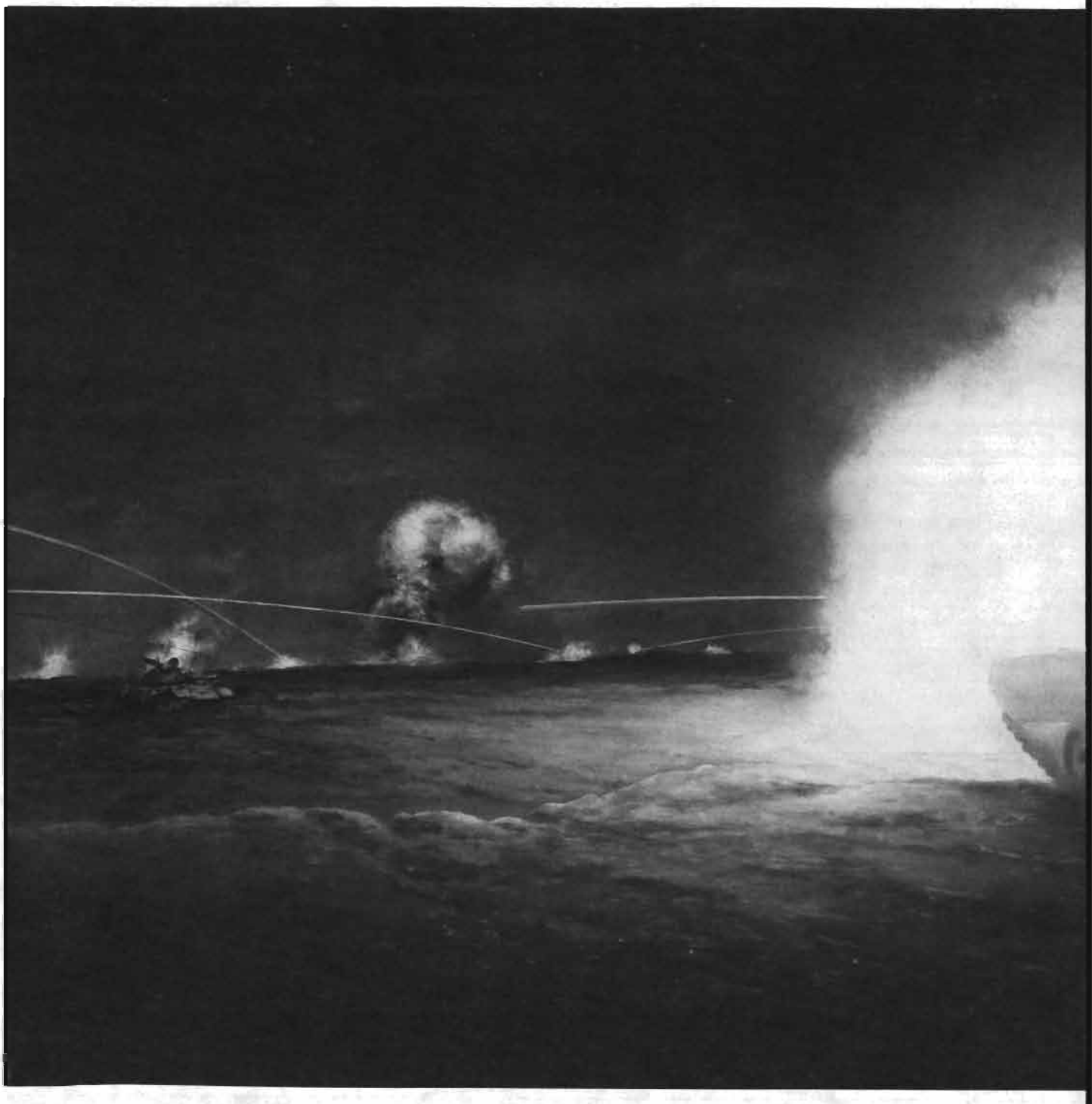


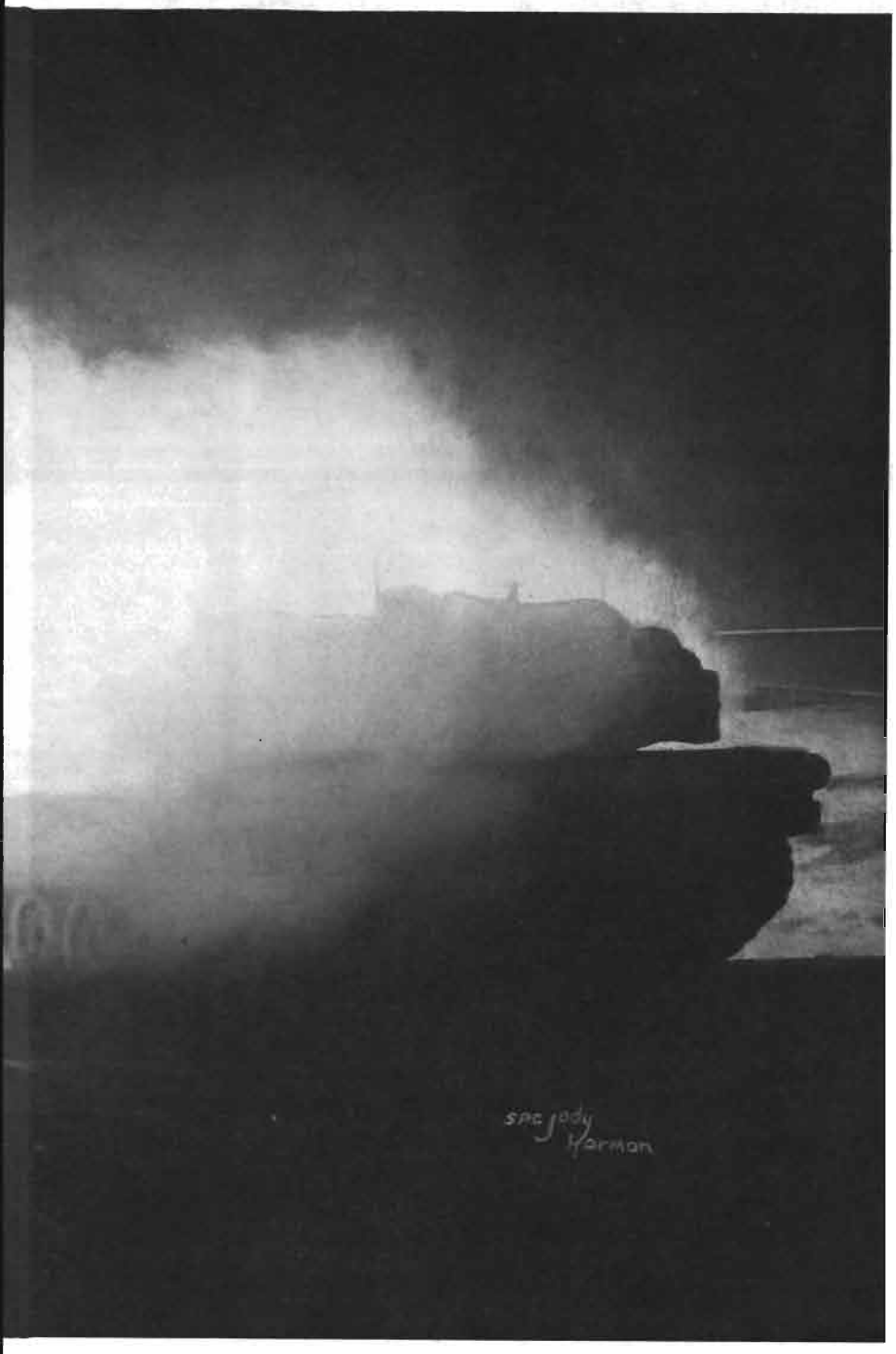
Figure 2



like a scene from an old war movie. The members of the brigade knew they were about to become part of a great battle.

Just short of the line defended by the 2d ACR, the brigade halted long enough to permit the S3 to move forward and coordinate the passage of lines. The halt allowed the brigade to reposition artillery, to define fire support relationships, to do fire planning, and perhaps, most important, to reorganize after a long and difficult approach march. Further, this short lull allowed TF 5-16 to close on the main body.

The meeting between the brigade S3 and the 2d ACR yielded little information that would help in the passage. We did find out that the brigade would pass through two different squadrons. Therefore, each of the two lead battalions, TF 2-34 in the north and 1-34 Armor in the south, would



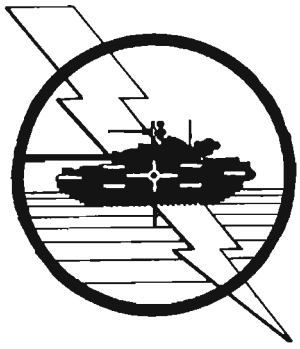
"The passage into enemy held territory was an eerie, almost surreal experience. The night sky was filled with catastrophic explosions and raging fires the likes of which I had never seen before. ...Horrible fires roared from the turrets of Iraqi tanks with flames shooting high into the night air."

have to coordinate with a different squadron at the point of passage. This was to cause some difficulty in controlling the fight later.

At 2230 hours, the brigade began the passage of lines through the 2d ACR. Coordination between 1-34 Armor and the squadron through which it was to pass occurred quickly and efficiently. Enemy locations and, more important, the specific locations of the squadron, were available to the commander of 1-34 Armor before the passage. Unfortunately, the situation was less clear in the north. The exact location of the squadron through which TF 2-34 had to pass was never clear, and no information on the enemy was available in the zone.

The commander of TF 2-34 was in a difficult position with respect to where he would be clear of friendly units and when he could initiate engagements against the enemy. In the absence of further information, the commander of TF 2-34 and I jointly agreed that the 71 grid line would, by all accounts, place his battalion east of all 2d ACR units. Given the unclear picture in the north, I moved into the northern sector from my initial position centered between the two lead battalions. This was to be a wise decision as the battle unfolded.

The passage into enemy held territory was an eerie, almost surreal experience. The night sky was filled with catastrophic explosions and raging fires the likes of which I had never seen before. Even the destruction of four T-55 tanks during the breach was nothing compared to the sight that joined our eyes during the transition from friendly to enemy ground. Horrible fires roared from the turrets of Iraqi tanks with flames shooting high into the night air. At the exact point of passage through the 2d ACR in the TF 2-34 zone, a T-72 tank that the regiment had destroyed earlier that evening still burned brightly, filling the air with the pungent smell of burning oil, rubber, and flesh. There was also present a peculiar smell we all came to associate with burning Soviet combat equipment. It was a smell that no one could identify from previous experience, but one than none



of us would ever forget. The burning T-72 signaled the end of combat as we had known it — against dismounted infantry — and the beginning of what was to be absolute mounted armored warfare at its most basic level — tank against tank.

Across the division, the 3d Brigade adjacent to the south was engaging T-55 tanks just east of the 70 grid. The 1-4 Cavalry was engaging T-72 tanks about six kilometers north of TF 2-34. The 2d Brigade was trailing the 1st Brigade as division reserve. TF 5-16 had now closed on the main body and was trailing some three kilometers behind TF 2-34. Now 1-34 Armor was heavily engaged with BMPs and T-55 tanks just east of the 70 grid, while TF 2-34 remained in weapons hold until it could cross the 71 grid line. The fires of burning Iraqi vehicles punctuated the darkness. The most important function for the brigade commander at this juncture was to promote calmness and to ensure that there was absolutely no possibility of fratricide between the two lead battalions or with the brigade to the south. This was accomplished primarily by cross-talk between the commanders involved.

As 1-34 Armor moved quickly beyond the line defended by elements of the 2d ACR, enemy forces engaged it, resulting in the destruction of two Bradley Fighting Vehicles, five wounded and one soldier killed. Shortly afterward, TF 2-34 became engaged by Iraqi forces occupying a bunker complex. The 3d Brigade to the south continued to destroy enemy tanks as it moved rapidly toward Phase Line Milford. The 1st Brigade was halted on the battlefield in a major fight. A substantial gap developed between the two attacking brigades of the division, and it appeared that it would take considerable time to get the 1st Brigade on the move again. This was a time for calm, collected leadership if ever such a time existed. Predictably, both lead battalion commanders expertly maneuvered their companies to destroy the enemy defenders, evacuate the wounded and dead, then reorganize. It had seemed like hours, but these two battalion commanders restored order on the battlefield in a short 40 minutes. More important, they did not lose momentum during this very difficult and confusing action. The brigade was on the move again and closing the gap between the 1st and 3d Brigades.

As the attack continued through the night, 1-34 Armor was able to move quickly through a mixture of units equipped with T-72 and T-55 tanks, BMPs, MTLBs, and a considerable number of trucks and other thin-skinned vehicles. By 0315 on 27 February, 1-34 Armor had penetrated the Iraqi defenses in Objective Norfolk and was defending from positions in the vicinity of Phase Line Milford. Following the destruction of the enemy forces in the bunker complex, TF 2-34 immediately slammed into the first of what proved to be the T-72s of the Tawakalna Division.

Because I was with TF 2-34 because of the problems associated with the passage, and the action appeared to be more intense in the north, I remained with it for the remainder of the attack. In fact, because TF 5-16 was following TF 2-34, this axis became the main effort, notwithstanding the intense fighting. This was the appropriate place for the brigade commander.

Using volley fire and movement by bounds, TF 2-34 destroyed each successive Iraqi defensive position in short order. BFV crews used thermals to identify targets behind bermed fighting positions. M1A1s provided the range factor. Then, depending on the target, crews used main gun or 25-mm cannon fire to destroy Iraqi vehicles in each successive position. Reports that came to light days after the fighting described intense tank fire coming from the defending T-72s, however, none of this was apparent to the attacking force. I suspect that the Iraqi tank crews were firing blindly in the direction of the brigade. But because we had the advantage of thermal sights and the substantial range differential provided by the M829A1 120-mm sabot round, "The Silver Bullet," there was not one instance of either an M1A1 or a BFV in the TF 2-34 zone of action being struck by a T-72 — or anything else other than small arms fire.

Moving through the battlefield in the dead of night was much like watching a vintage black and white movie. Everything seemed to move in slow motion. There was no noticeable sound that anyone could recall even though scores of tanks and heavily laden ammunition vehicles were exploding with great regularity across the entire brigade front. As clouds floated across the moon, the battlefield was intermittently lit from above, forming a backdrop against which enemy fighting positions stood out on the horizon. In the area where tanks were burning, strange shadows flickered in the light. It was an eerie collage of tanks moving at what seemed half speed into positions from which they would send long, red shafts of light racing to their targets. Each tracer exploded from its gun tube or launcher in an immense burst of white light, and like a visible laser beam, smashed into its target an instant later. This was like nothing I had ever seen or read about in any account of armored warfare.

For virtually every main gun round fired, one of three consequences would result. In most cases, the target would explode in a huge fireball of flame and debris. These explosions were much like those seen on television shows, where space vehicles are vaporized by phasers or photon torpe-

does. Metal particles were blown two to three hundred yards into the air. Often, each massive initial explosion was followed by two or three subsequent, but equally violent, secondary explosions as fuel and remaining ammunition detonated. In many cases, burning vehicles, previously destroyed, continued to explode as we passed through each subsequent position, showering fragments down on the battalion. While engaging the second Iraqi defensive position encountered, the battalion commander of TF 2-34 asked for permission to stop destroying ammunition trucks. They were becoming hazardous to the attacking force because their contents continued to explode for hours.

The second phenomenon noted with main gun engagements was an ever expanding orange glow with a darker orange center that engulfed the target tank, often terminating seconds later in a catastrophic explosion of the sort described above. Finally, there were instances in which the bright orange glow expanded out, then contracted back to darkness. Tank crews reported seeing Iraqis rapidly dismounting their vehicles when this occurred. In the case of the subsiding orange glow, I suspect that a sabot round had completely passed through the turret, generating intense heat and light, but striking nothing vulnerable.

Smoke and haze from burning vehicles drifted over the battlefield, marking the movement of vehicles and men as silent shadows. Tanks moving through an already destroyed position were illuminated momentarily as they passed by the fires that continued to rage until morning. The illusion of watching a movie was complete.

TF 5-16 had the onerous task of follow and support and thus was left the job of cleaning up remnants of bypassed Iraqi units. This was a most difficult task due to the proximity of the lead battalions. It was impossible for them to shoot main gun or TOW missiles, even though there were several occasions when they should have. Extreme care and close coordination by cross-talking was necessary to prevent fratricide inside of the brigade formation. TF 5-16 continued to trail TF 2-34 until 1-34 Armor bypassed a large bunker complex. Because 1-34 Armor was a tank pure unit, I directed TF 5-16 to slide south across the brigade sector to engage and destroy this Iraqi position. Movement on the battlefield at night was no easy task for following units. There were enough bypassed enemy positions to make movement hazardous, and the explosions and resulting debris made the selection of routes extremely complex. TF 5-16 continued to attack in this manner until 0900 on the following morning.

As the attack continued until the early morning hours of 27 February, tank and Bradley crews became more proficient at identifying and destroying enemy targets at longer ranges. Engagements occurred between 700 and 3000+ meters, with the average approximately 1700 meters. Crews destroyed targets with first round hits in most cases, requiring few subsequent engagements. Battalion commanders managed fire distribution, with volley fire from platoons the norm. The result was the slow but very methodical destruction of the 9th Brigade of the Tawakalna Division.

By 0630 on 27 February, TF 2-34 arrived at Phase Line Milford and, along with 1-34 Armor, began refueling at approximately 0830. TF 5-16 continued to engage pockets of resistance until approximately 0900. In order to protect the logistical elements of the brigade, unit trains remained on the friendly side of the line of departure until first light. The problem now was to move them rapidly to close with their respective battalions for refueling. This was no easy task; some Iraqi fighting positions were still intact, and many Iraqi soldiers were moving about the battlefield, requiring us to determine if they were hostile or surrendering. In addition, Objective Norfolk remained a vast wasteland of burning and exploding tanks.

At 0700 on 27 February, the division commander ordered 2d and 3d Brigades to push on to a location in Kuwait approximately 30 kilometers to the east and defend in sector. At 0945 hours, division directed the 1st Brigade to continue the attack east to pass through 2d and 3d Brigades to secure a line some ten kilometers farther east. The division plan then was to move 2d Brigade on line to our left, 3d Brigade on line to our right, then attack in a division wedge to Objective Denver. Objective Denver was located about 95 kilometers to the east, half the distance between Kuwait City and Basra, Iraq, and its seizure would cut the highway linking the two.

For the second time in as many days, the brigade was to conduct an operation with virtually no preparation time, no intelligence, and with vague information on the friendly situation. The first order of business was to refuel the force. If everything worked exceedingly well, a battalion task force could refuel in 45 minutes, given that the BFVs did not need to be topped off. Forty-five minutes represented all the preparation time available before the designated start point time of this phase of the operation, so there was no margin for error. The initial brigade plan was to lead with 1-34 Armor, which had been in position since around 0315, and with TF 5-16, the follow and support force. Presumably TF 5-16 was less exhausted than TF 2-34, which had been fighting the entire night.

This plan changed quickly, based on the capability of battalions to refuel. Upon receipt of the division order, I directed the battalion commanders to report to the brigade TOC to receive instructions. The commander of TF 2-34 got the order personally because he was collocated with the brigade TOC. However, after talking with the other two commanders, it was apparent that only the commander of 1-34 Armor could reach the TOC before we would have to move. The S3 was to give him the order when he arrived.

I left in my BFV to link up with the commander of TF 5-16 half-way between our two locations to save time. Enroute to the link-up point, I determined that TF 5-16 had not completed refueling and would be unable to meet the start point time. So there we were. Time was running out, the order could not be executed as planned, and the brigade commander was ten kilometers away from the TOC in the middle of the desert. A radio call to the commander of TF 2-34 confirmed that he could be ready to move in ten minutes. 1-34 Armor was ready. A quick net call put the brigade in motion with TF 2-34 in the north, 1-34 Armor on the south and TF 5-16 trailing once again.

The brigade converged from three directions on a point in the desert specified in the order. Approximately seven kilometers beyond Phase Line Milford, I linked up with TF 2-34 and moments later, 1-34 Armor roared up on the right flank. In a matter of minutes, the leaders of the brigade turned a potentially serious delay into a routine operation with only a few short radio calls.

The next three hours saw the brigade racing against time to join the 2d and 3d Brigades, which were in light contact 30 kilometers to the east. The immediate problem was where to effect the passage of lines through the 2d and 3d Brigades. I was unable to talk to anyone at division or in the 3d Brigade, so I planned the passage enroute, over the radio, with the 2d Brigade commander. The plan was to move to a burning tank near the center of the 2d Brigade formation and pass. The passage occurred in stride with TF 2-34 on the left and 1-34 Armor on the right. In the meantime, TF 5-16, achieving speeds of 45 miles per hour, caught up at the passage point.

The brigade had just cleared the passage point when a sharp tank battle erupted between T-55 tanks of the 12th Armored Division and 1-34 Armor. These enemy vehicles were destroyed from the march. The brigade then made a wide turn north to reach the 30 grid line, where it was to halt and await the closure of the other two brigades. Moments after the turn, the lead battalions ran into a berm that required a deliberate breach drill to reduce. In 30 minutes, the brigade was pouring through several gaps, directly into the face of another Iraqi defensive position. As with the earlier engagement, this one ended quickly and unpleasantly for the Iraqi tankers. However, unlike any of the previous tank fights, this engagement was at very short range and within an area now jointly occupied by 2d Brigade. There was a new dimension to this fight because the entire division was now on line and in danger of becoming intermingled.

In fact, the area became so congested, with friendly forces all converging on what appeared to be a single GPS way point, that I ordered the brigade to hold in place until the 2d and 3d Brigades had cleared farther east. This proved to be a wise choice in maintaining the integrity of the brigade and avoiding an exchange of fires with adjacent brigades. When the other two brigades had cleared sufficiently to permit safe movement east, we pressed on toward Objective Denver. As daylight turned to darkness, the brigade found itself confined to a trail that was one tank wide in what was discovered later to be an enormous mining operation some 20 kilometers square. This was the last place any of us wanted to be deep in enemy-held territory. The lead battalion, 1-34, spent most of the early evening engaging dismounted Iraqi soldiers with coax machine guns and small arms. But that is another story.

The Gulf War was over for all intents and purposes. There was still the mop-up action to complete the following morning. We still had to clear and secure our sector of Kuwait, but the hard part was over. The operation had been unbelievably successful from start to finish. In the days following the war, I reflected on what we could have done to prepare ourselves better for war and what we could have done better during the war. My conclusion was, nothing! Every single aspect of preparation and execution was textbook perfect. There was in my mind however, one thing that made the difference between a good performance and a great one. That one thing was cohesion.

I chose the title, "A Leap of Faith" for a very good reason. Some days after the war, the commander of TF 2-34 said to me, "The Battle of Norfolk was in many ways a leap of faith." In reflecting on the entire operation, I decided that he was absolutely correct. We were able to execute incredibly difficult operations with little or no information, planning time, and intelligence because all of the leaders in the brigade had faith in the ability of each other to do what was right when things got tough. When the brigade approached the Tawakalna Division in the dead of night, there was no panic, no superfluous questions about the mission, no reluctance among the leaders. Everyone did what needed to be done — professionally, calmly, and with great precision. Cohesion made dealing with fear, uncertainty, and ambiguity not only possible, but enabled us to fight with the same aggressive spirit demonstrated during the breach. What follows are some thoughts on what made this cohesion possible.

Perhaps most important is the recognition that cohesion is singularly the most important aspect of being prepared for combat. While being well trained clearly is important, a cohesive unit can overcome many training deficiencies because everyone in the organization will strive, at the pain of death and injury, to do what is right, given only minimum leadership. Someone in every cohesive unit will rise to the occasion to lead other less trained soldiers to greatness. From my perspective as a brigade commander, cohesion is built primarily by allowing battalion commanders the latitude to run their respective organizations as they see fit, within a very broad

framework of expected standards. There is one other very important aspect to the latitude issue. The brigade commander must establish an atmosphere in which subordinates have the freedom to speak their minds, without fear of reprisal or public embarrassment. This can be, and often is, a very painful way to operate. However, things seem to work better if all of the facts, fears, and opinions of subordinates are in the open.

Cohesion in the U.S. Army today is a direct result of its investment in leader development programs over the past decade. The restructuring of branch basic and career courses to focus on warfighting skills was the first step toward excellence. This was followed by improvements both in noncommissioned officer programs and in the Command and General Staff College. The School for Advanced Military Studies established the baseline standard for intermediate level officers. Almost simultaneously, the National Training Center concept became a reality, and the first steps were made toward building the Combat Maneuver Training Center and the Joint Readiness Training Center. Finally, the Army spent considerable resources to build the Battle Command Training Program to train division and higher commanders and staffs, and the Tactical Commanders Development Course for battalion and brigade commanders. All of these programs have a common goal: to develop creative, adaptive people into professional leaders who are trained to fight.

These leader development programs made the difference in Operations URGENT FURY, JUST CAUSE, and certainly in DESERT STORM. An evaluation of these operations shows that success was made possible by competent individual soldiers and leaders who were able to adapt rapidly to changing, ambiguous situations. The message is clear: in a time when the U.S. Army must reshape itself to conform to congressional mandates, we cannot afford to lose the tools that gave us the edge over our opponents in Grenada, Panama, and Iraq. If we do nothing else, we must maintain the platform instruction and associated leader development programs that made us successful. And we must strive to constantly improve them, even in an era of diminishing resources.

Second, leaders must know their business. Part of cohesion comes from the confidence subordinates have in their leaders. Similarly, peers and superiors need to sense the competence of leaders around them as well. High speed, mounted operations at night are no place for the timid or ill-prepared leader. Even if there is no time or space to train units larger than company level in garrison, routine "brain sessions" conducted throughout the year considerably reduce the necessity for full-scale operations in the field. As a point of fact, much of what leaders do is mental anyway. So command post exercises, simulations, and participation in seminars provide excellent training if such exercises are directed by tough, uncompromising commanders who demand adherence to high standards. This war confirmed for me that preparation for the National Training Center also is great preparation for combat.

Periodic maintenance training at the brigade and battalion level is essential for proper leader professional development. This brigade runs monthly terrain walks that focus on some specific aspect of maintenance, such as services, PLL, parts flow, or AOAP. The brigade publishes a list of subjects at the beginning of the training year to ensure adequate preparation time is available to those responsible for maintenance instruction. In the case of the brigade's leader training program, I personally select the subjects, provide guidance to the instructor, and review his lesson plan and supporting VGTs.

Third, rehearsals are key to training leaders for combat. Rehearsals that rigorously tax company commanders and platoon leaders are among the very best of techniques to train for war, their value as part of the orders process notwithstanding. A competent battalion or brigade commander can jam days of professional development into a single four-hour rehearsal. And rehearsals contribute to cohesion because every leader in the organization soon gets to know how every other leader thinks in a tactical setting. There is tremendous power in an organization in which everyone knows what the plan is and how it will be executed to the smallest detail. In the 1st Brigade, rehearsals are an integral part of every CPX, orders drill, and tactical simulation. I run the brigade-level rehearsals personally and demand specific, very detailed information from the primary presenters, the company commanders. I do not allow battalion commanders, executive officers, and S3s to coach the company commanders during the rehearsal. Company commanders may cross-talk among themselves, but because they must execute the plan in actual combat as a group if the battalion commander is killed, they must train that way during the rehearsal.

The fourth point is to integrate diligently combat support (CS) and combat service support (CSS) units into the brigade battle team. The goal is to make these slice elements feel more a part of the brigade than their own parent unit. This integration must be a routine function in garrison if trust and confidence are to exist on the battlefield. Including them in unit social functions is a first step toward building a combat team. However, to build a cohesive battle team, slice elements must feel in their bones that they are an integral, important part of the brigade. Including them in the decision-making functions of the brigade will quickly promote this feeling. CS and CSS leaders play an important part in the decision processes of the brigade during combat, so why not train them that way during peace?

CS and CSS leaders should be included in rehearsals at all levels of command. This quickly reinforces their importance, and ensures that ev-

eryone on the team is familiar with the organization and thought processes of each slice, and vice versa. It is entirely possible that other units will be attached to the brigade in the theater of operations. This is not a problem if the climate of command in the brigade is one of taking attachments "under wing." If the brigade commander makes sure that every unit associated with the brigade is treated the same as an organic unit, cohesion quickly follows. During the Gulf War, it was not unusual to have as many as seven battalions at a time in some sort of command relationship with the brigade. The attitude of the entire battle team was "if they belong to us, we will take care of them just like our own." As a result of the way we treated attachments, the brigade was known by its members as the "Battleship America" — a self contained fighting machine that sailed effortlessly across the desert.

Closely related to the concept of taking care of the slice is the fifth point — humor. To be successful in building a cohesive team, the commander must have and foster a sense of humor in the organization. A little bit of humor goes a long way to speed up the integration process and provides the lubrication necessary to reduce the friction of interpersonal relations. Humor helps the younger leaders see their commander as a normal human being who not only is approachable, but also one who keeps life in perspective. Finally and perhaps most important, humor relieves tension. Although the opening quote in this article was deadly serious, there was an element of humor in it that helped to relieve the tension and stress associated with the difficult task at hand.

The fifth and final point is to recognize the importance of decentralization. Decentralization is a necessary but often overlooked component of team building that contributes directly to cohesion. In addition to the notion that it promotes self-actualization, a key ingredient for a high performing organization, decentralization has some very practical applications as well. While centralization and decentralization both produce results, a centralized unit can operate only at the speed of one brain — the boss's. However, in a decentralized outfit, operations occur at the speed of every brain in the unit. Independent and creative thinking is the hallmark of decentralized units. Initiative is rewarded, and the result is a soldier or leader who quickly develops self-confidence, tactical competence, and expertise on the battlefield. The price of learning is an occasional mistake that is corrected in training so it doesn't recur on the battlefield.

Daily life in the brigade is executed in a decentralized manner. Leaders have the authority to operate as required of their job. While I charge every staff officer with the responsibility of keeping me informed, I do not exercise control over every facet of brigade operations. That is the executive officer's job. I see my role as keeping the organization headed toward the goals jointly established by the leaders of the brigade. Some view this way of operating as fraught with danger; however, in 25 years of service, I never have been seriously let down due to inattention or failure to perform. Quite the contrary. I saw the dividends of this style of leadership every day on the battlefield in Iraq. We defeated the Iraqis under the worst of conditions precisely because leaders could act independently according to the situation.

The motivation for the leaders of the brigade to cross into the blazing inferno that was Objective Norfolk, with little information on either the friendly or the enemy situation, at the conclusion of an 18-hour approach march that was supposed to end much earlier in a nice safe corps reserve position, then attack throughout the night against a prepared defender, and then continue the attack on a few minutes notice for another 12 hours, was indeed a leap of faith. But it was a leap of faith based on the common knowledge that everyone present on the battlefield would die before they let the team down. This notion is summarized in the contents of a letter from General Grant to General Sherman after the Civil War. Grant said, "Throughout the war you were always on my mind. I knew that if I were in trouble and you were still alive, you would come to my assistance!"

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The Battle-Focused Combined Arms Training Strategy (CATS): Armor

by Colonel Joseph D. Molinari and Mike Kelley

The primary purpose of the Army is to deter war. When deterrence fails, our mission is to win wars by winning battles. The winners are soldiers, and to win, soldiers must be well trained. Thus, no soldier would ever challenge the fact that the Army's top priority, and his top priority, is to train to win. What to train on and how to train is determined by battle focus, which is the purpose of TC 17-12-7.

Training prepares soldiers, crews, leaders and units to fight and win in combat — the Army's basic mission. This requires that all leaders in the Army understand, plan, attain, sustain, and enforce high standards of combat readiness through tough, realistic, multiechelon combined arms training that challenges and develops individuals, crews, leaders, staffs, and units. This turns soldiers and leaders from individual participants in a training event into teams that are event competitors with the spirit, drive, and determination to win.

The training challenge, now and in the future, will continue to be encumbered by increasing demands on training time, operating tempo (OPTEMPO) reductions, increasing ammunition cost, and overtaxed training areas. Thus, to conserve resources, training must be focused on the battle-winning tasks that the combined arms teams must master to win on the battlefield. Armor training strategy can never look at tanks alone. It must be an armored strategy as part of the Combined Arms Training Strategy (CATS).

This article discusses Armor School plans to leverage technology to support the Army's training mission. Every soldier, crew, leader, and unit training program must be carefully planned, aggressively executed, and thoroughly assessed. Realistic, sustained, multiechelon, totally integrated combined arms training must be continually stressed at all levels. Our goal is to bring many individually trained soldiers together into a team that can collectively win battles using all the combined arms necessary to achieve victory. To achieve this goal, we exploit technology to achieve higher individual and collective training readiness, which routinely stresses the full operational capability of our equipment. The trainer must always assess performance and provide discrete, usable feedback by way of timely after-action reviews (AAR), and then provide the opportunity to try again until proficiency is attained. CATS ensures training integration of heavy, light, and special operations forces of both Active and Reserve Components.

CATS is a Total Armored Force training strategy. It initially describes how armor units (tank and cavalry) train, and identifies the training resources (ammunition; OPTEMPO, which has three components — maneuver, gunnery, maintenance; ranges; and maneuver land) required for Armor units to achieve training standards. It then transitions armor to armored training with the combined arms team. Armor CATS seeks to identify the training a unit needs to do to maintain a certain level of combat readiness. It is not limited by what a unit can currently do, given its unique training environment and other mission requirements. It expands on current constraints by presenting training events using a whole array of training aids, devices, simulators and simulations (TADSS), which, when fielded, increase readiness given constrained resources.

TAF training may be described using Figure 1. The unit starts training in its home station or local garrison training area, concentrating on individual skills and conducting as much collective training as the home station or local garrison training area allows.

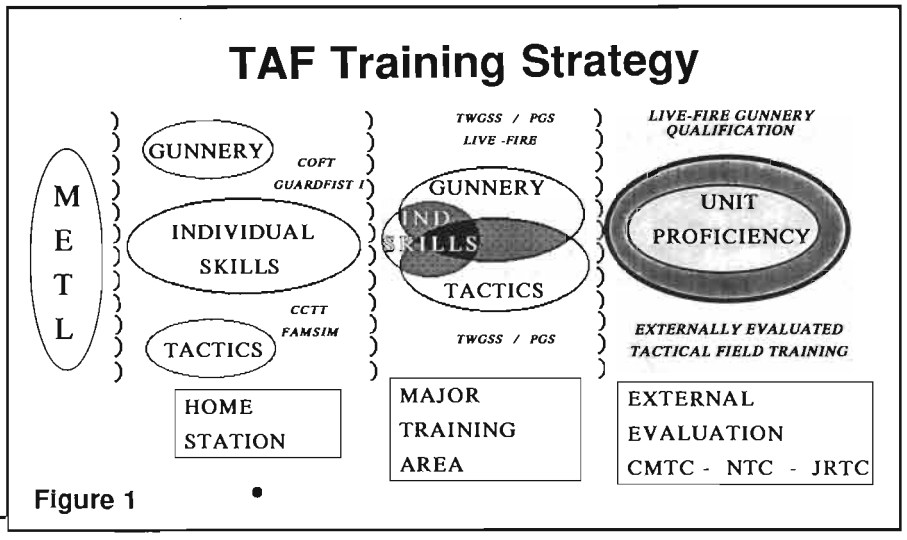

Figure 1

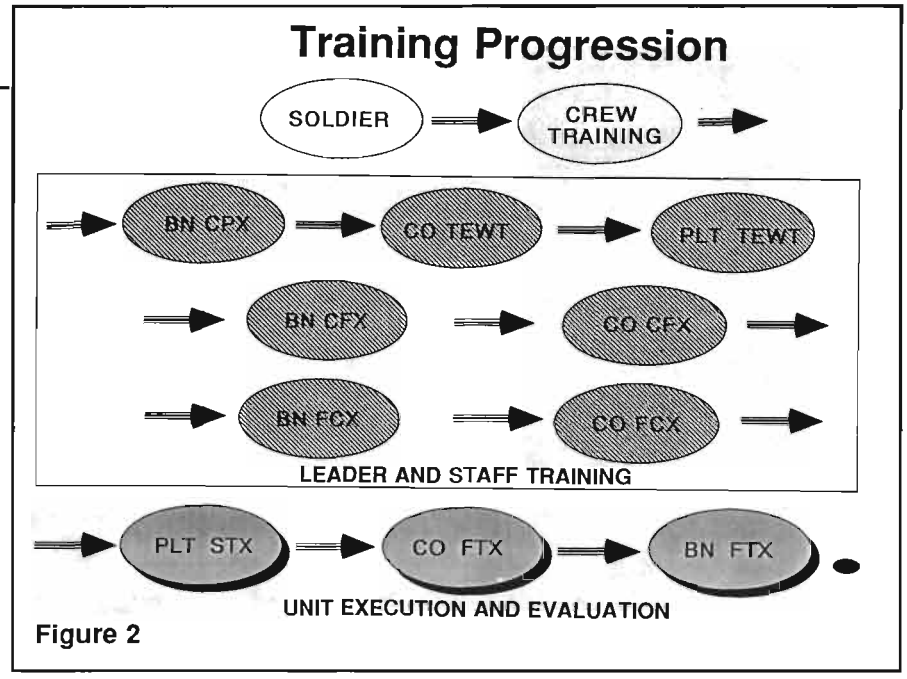

Figure 2

The focus on gunnery training would incorporate the Conduct-of-Fire Trainer (COFT) at crew/section and platoon level. Generally, the local training area will support maneuver training at the platoon level. In the close future, the platoon would train on the Close Combat Tactical Trainer (CCTT). Platoon Situational Training Exercises (STX), and Command Field Exercises (CFXs) at company and battalion levels would also be conducted in CCTT. As soon as possible, company gives way to team training and battalion to task force training. TF command post exercises would be conducted using one of the family of simulations (FAMSIM). Next, the unit would move to the Major Training Area where live-fire, full-caliber, qualification gunnery would take place through platoon level, and full scale force-on-force training exercises could be conducted through battalion/task force level. As frequently as possible, units will rotate to one of the Combat Training Centers (CTCs) to more aggressively train at team and task force level. Annually, the battalion/task force would go to a CTC for external evaluation by division or corps during a force-on-force exercise and also to conduct a Company Live-fire Exercise (CALFEX). Given the resources and training events articulated in the CATS, a unit would be able to execute this type of aggressive training strategy annually.

Individual soldier training must precede collective training. The tank driver and the battalion commander are each individual soldiers. Soldiers must never be training aids for higher headquarters. What does this mean? It means the emphasis and the allocation of resources must be on training soldiers, then crews, then sections, then platoons, and then company/teams — first using devices, simulators, and simulations, and then using OPTEMPO on their vehicle in the field. The individual soldier whether in the battalion/task force or the brigade headquarters must be trained. First, units conduct soldier- to team-level training, using TADSS then OPTEMPO to reach METL standards. Second, units train in command and control, through intensive simulation, to a high level of proficiency. Third, after teams achieve a high level of proficiency in METL tasks, and after the battalion/brigade leaders and staffs reach a high level of proficiency in their individual and collective tasks through simulation, then and only then should both be combined in field CFXs. Fourth, after TF CFXs have achieved a high level of proficiency, then full TF FTXs would be executed. Thus, to conserve resources, battalion and brigade FTXs culminate training, they do not initiate training on lower headquarters METL tasks.

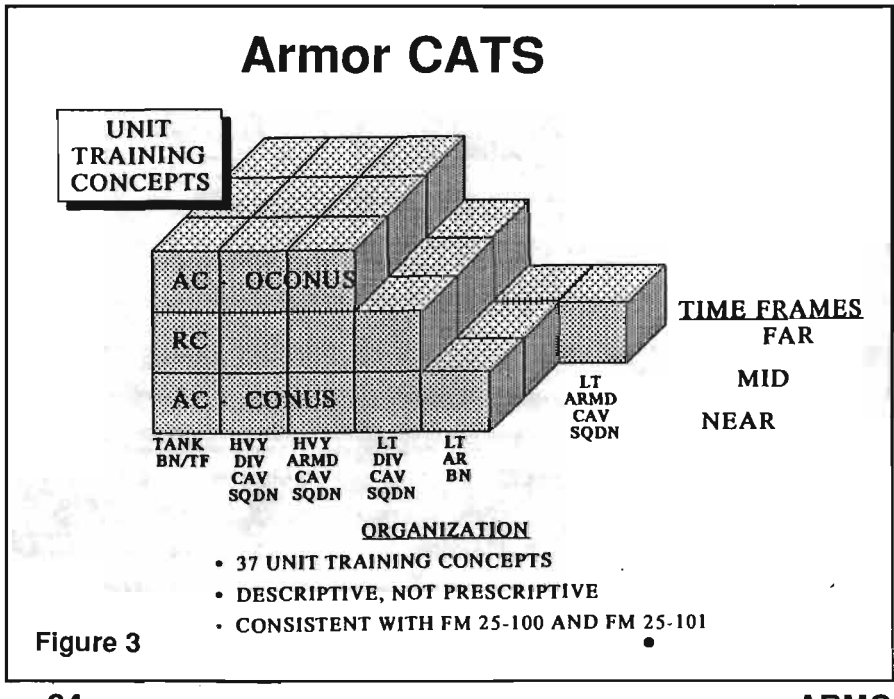

Figure 3

Figure 3 depicts the 37 different types of organizations within the Total Armor Force. Each organization will have its own unit training concept.

As depicted in Figure 4, within each unit training concept, these are the elements impacting on the type of training strategy conducted and the ability of the unit to achieve unit proficiency, as described in Figure 1.

The Armor training strategy is divided into three components: soldier training, institutional training, and unit training. The institutional and unit training strategy examples presented in this article represent the device-based training strategy the TAF will execute in the FY 1995-2000 time frame.

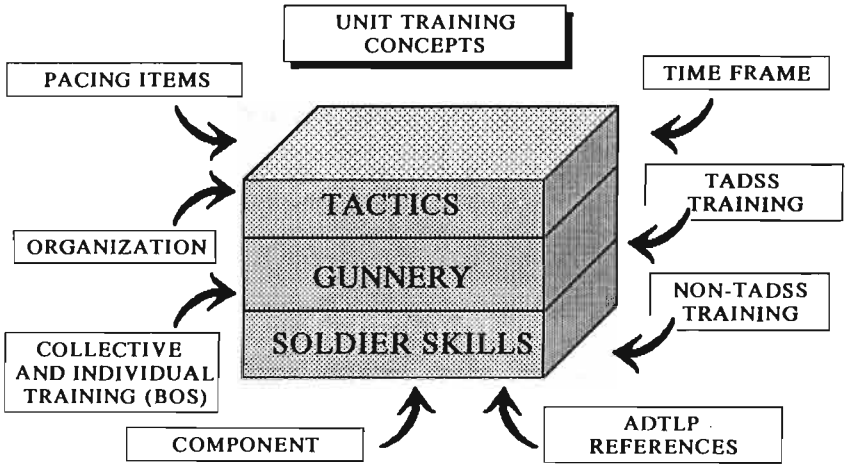

Figure 4

Soldier Training Strategy

The first and most important of the three training strategies is the soldier training strategy, which is a generic strategy for all soldiers across the Total Force. Figure 5 displays a generic soldier strategy. Most of the headings are self explanatory; however, MOS training and sergeant's time need further explanation. MOS training is focused at the soldier's MOS skill level and one higher. It is presented either by his chain of command or by the senior MOS manager, but it is always coordinated between the chain-of-command and the senior MOS manager. It assumes the soldier is proficient in the tasks found within his MOS so that he can contribute to the collective training of his chain-of-command. Sergeant's time is a specifically dedicated block of time for non-commissioned officers in the chain of command to focus on unit METL and on-the-job tasks. It may or may not be the same as MOS training. It may also include CTT. For example: MOS training for 19K in a tank platoon is partially evaluated in sergeant's time; however, MOS training for a company 76Y Supply Sergeant is done by the senior battalion 76Y MOS manager, while sergeant's time is the responsibility of the headquarters platoon sergeant.

Institutional Training Strategy

Unit training is preceded by soldier training in the institution. Because unit commanders are the primary customers of institutional training, institutional CATS ensures that training conducted in the institution directly supports the training and mission of the unit in the field. The goal of the institutional CATS is to produce confident, technically proficient leaders and soldiers. Part of the confidence

Soldier Training Strategy

EVENT / FREQUENCY		PHY TNG	APFT	SGT'S TIME	MOS TNG	SQT/ SDT	CTT	CTT TEST	CMT	NBC TNG	MAINT TNG	LDR DEV TNG	DVR TNG
DAILY	AC	X											
	RC												
WEEKLY	AC			X		X			X		X		
	RC												
MONTHLY	AC				X		X			X		X	X
	RC	X		X		X	X		X		X	X	X
QUARTERLY	AC		X										
	RC				X					X			
SEMI-ANNUAL	AC												
	RC		X										
ANNUAL	AC							X					
	RC							X					
BIENNIALLY	AC												
	RC					X							

Figure 5

Institution

- **Ensure institutional training supports field training**
- **Train all TADSS used in the field in the institution**
- **TADSS required for initial individual training like the Tank Driver Trainer found only in the institution**
- **Produce leaders who are taught and can confidently em ploy and train with the TADSS in the unit**

Figure 6

gained in the institution is the knowledge to use and integrate TADSS into the unit training strategy to build and sustain proficiency. A leader must be able to use and know the capabilities of TADSS before he can be comfortable with his ability to instruct subordinates on their use and capabilities. The institutional training strategy is oriented on producing a graduate who is TADSS proficient and confident in his ability to use the TADSS. Institutional strategies are in development and due out in September 1992.

Unit Training Strategy

Overall. The battle-focused Total Armored Force (TAF) training strategy is based on FM 25-100 and is implemented with the guidance in FM 25-101. CATS, to a large extent, is nothing new to the TAF. The Armor School has developed descriptive notional unit strategies that describe training events, their frequency, and required resources. Armor CATS has two strategies: (1) baseline strategies (device supported) for current training; and (2) projected strategies (device-based) that reflect changes caused by changing threat, technology, budget, and mission. The baseline strategies for how the Total Armor Force (TAF) trains today were developed from the current ammunition (100 rounds) and OPTEMPO (850 miles) required to train to a battle-focused standard. Projected strategies forecast changes in the mix and type of training resources needed for future training so that we have an orderly, purposeful acquisition plan for these resources. By showing the training events to be conducted, their frequency, and their resources, CATS will be able to show the relational values of training resources to the required training standard. Because the training standard remains constant, CATS will make it clear where changes in resources trade off. It must be understood that the unit strategies are meant to be descriptive in nature, describing a total training strategy that units should accomplish annually if properly resourced or augmented with the TADSS to compensate for deficiencies in the training environment. The baseline strategies for how the TAF trains today describe the events, frequencies, and resources required to train to standard. These strategies were developed using the Armor Battalion Level Training Model (BLTM), DA Pam 350-38, *Standards in Weapons Training (STRAC)* to establish the ammunition and OPTEMPO required to train to standard. From the baseline strategies evolved the device-based training strategies the TAF will implement in FY 1995-2000. In developing the FY 1995-2000 training strategies, the TADSS that are expected to be available in that time frame were compared with the training event the TADSS will train. This linkage identifies the TAF requirement for the TADSS and identifies for the testing community the fidelity and capability the TADSS must possess to provide the training transfer and training effectiveness required to train the event to standard. Further, proficiency gates were introduced into the FY 1995-2000 training strategies. Critical gates require the crew/platoon/company/battalion to execute the training in simulation to standard before executing the training event using full-caliber ammunition or OPTEMPO. While the unit training strategies are descriptive in nature, proficiency gates will require the demonstration of proficiency before evaluation/qualification, and in fact may become part of the evaluation/qualification process. Therefore, as standards like Gunnery Tables VIII and XII qualification and external ARTEP evaluation of units are prescribed by regulation, so may proficiency gates.

Maneuver. Examples of maneuver strategies for the tank battalion in FY 1995-2000 are at Figures 7, 8, and 9. The matrix is filled in with the standards, proficiency gates, frequency, resources, and TADSS required to conduct the training event. For example, simulation networking (SIMNET) and the follow-on objective system CCTT (close combat tactical trainer) will more completely integrate the combat, combat support, and combat service support elements into combined arms training at the company team and battalion task force levels. Further, simulation will provide the CO/TM and BN/TF elements increased opportunities to train together and rehearse to a proficiency level to meet the proficiency gate required before the unit can train on the actual tank in the field. Finally, the strategy provides the opportunity for higher headquarters to evaluate two levels down, and for the BN/TF to be evaluated at the Combat Training Centers (CTCs).

Notice the RC strategy is significantly different from that generally practiced today. It concentrates on

1995 Tank Battalion Gunnery Training Strategy

Platoon Maneuver

Event	TEWT	STX (CCTT)	STX	FTX (EXEVAL)
Frequency AC	4/yr	2/yr	1/yr	1/yr
RC	1/yr	2/yr	1/yr	1/yr
Proficiency Gate		CCTT MACOM GUIDANCE	MTP STDS ON METL TASKS	ARTEP STDS ON METL TASKS
OPTEMPO			25	25
TADSS AC	JANUS	CCTT	TWGSS, TSV MTG-WESS AITST, PRIME	TWGSS, TSV MTG-WESS AITST, PRIME

Figure 7

1995 Tank Battalion Gunnery Training Strategy

Company Maneuver

Event	TEWT	CFX/FTX (CCTT)	CFX	FCX	FTX	FTX (EXEVAL)
Frequency AC	2/yr	2/yr	1/yr	2/yr	1/yr	1/yr
RC		1/yr		1/yr		
Proficiency Gate		CCTT MACOM GUIDANCE	MTP STDS ON METL TASKS	MTP STDS ON METL TASKS	MTP STDS ON METL TASKS	ARTEP STDS ON METL TASKS
OPTEMPO			38	5	38	38
TADSS		CCTT	TWGSS, TSV MTG-WESS AITST, CO PRIME	TWGSS, TSV MTG-WESS AITST, CO PRIME	TWGSS, TSV MTG-WESS AITST, CO PRIME	TWGSS, TSV MTG-WESS AITST, CO PRIME

Figure 8

1995 Tank Battalion Gunnery Training Strategy

Battalion Maneuver

Event	CPX	CFX (CCTT)	CFX	FCX	DEPEX	FTX	FTX (EXEVAL)
Frequency AC	4/yr	2/yr	1/yr	1/yr	4/yr	2/yr	1/yr
RC	1/yr	1/yr	1/yr	1/yr	1/yr		
Proficiency Gate		CCTT	MTP STDS ON METL TASKS	MTP STDS ON METL TASKS		MTP STDS ON METL TASKS	ARTEP STDS ON METL TASKS
OPTEMPO			64	5	10	64	64
TADSS	BBS	CCTT	TWGSS, TSV MTG-WESS AITST	TWGSS, TSV MTG-WESS AITST		TWGSS, TSV MTG-WESS AITST	TWGSS, TSV MTG-WESS AITST

Figure 9

platoon simulation and field training. At company level the emphasis is on leader training via simulation — CCTT with both the company commander and platoon leader as active participants. This is followed by a leader-only FCX and CFX orchestrated using simulation — BBS and CCTT. It rarely would go to platoon leader level, but would always include company commanders, as would the FCX using TWGSS. The deployment exercise includes all the battalion's soldiers.

Gunnery. The format of the gunnery strategy figures is the same as for maneuver. The gunnery strategies focus the ammunition requirements for armor units to train to standard at crew, platoon, and company level and also enforce the requirement to confirm standards (qualification) with full-caliber live fire. In the mid term, TADSS focuses on the gunnery train-up for crews, platoons, and companies to ensure success during live-fire qualification with full-caliber rounds.

Training Aids, Devices, Simulators and Simulations (TADSS).

Current armor training in the unit and institution has three components — gunnery, maneuver, and driver/maintenance. The current suite of TADSS is not well integrated, but focused on gunnery, maneuver, or maintenance/driving training with very little overlap.

In the mid-term, TADSS will be used in more than one area. For example, the tank weapons gunnery simulator system (TWGSS) is a laser-based, tank-mounted, full-up, precision gunnery training device. It can be used to train up to live-fire tables, or it can replace them. It will be used in gunnery train-up as part of the tank crew proficiency course (TCPC) proficiency gate. However, because it is laser-based, its application to tactical tables and tactical situational/field training exercises (FTX) is significant. Another dual-purpose device is the thru-sight-video (TSV). This device

1995 Tank Battalion Gunnery Training Strategy
Home Station Gunnery

Event	Train-up	TCGST	TT A-C	TCPC
Frequency				
AC	12/yr	2/yr	2/yr	4/yr
RC	4/yr	1/yr	1/yr	1/yr
Proficiency Gate	RA Grp 26	GO	TT C	700 Pts & 7of10 Engmts
AMMO			150 7.62mm Blnk 100 .50 cal Blnk 200 5.56mm Blnk 2 ATWS 11 M21 (Hoffman)	
OPTEMPO (Miles)			9	12
TADSS AC	U-COFT, PGT		TWGSS/PRIME TSV, MTO-WESS, AITST	TWGSS/PRIME TSV, MTO-WESS, AITST
RC	M-COFT, VIGS PGT, GUARDFIST		TWGSS/PRIME	TWGSS/PRIME

Figure 10

1995 Tank Battalion Gunnery Training Strategy
Crew Gunnery

Event	CT V	CAL	CT VI	CT VII	CT VIIM	CT VIII
Frequency						
AC	2/yr	2/yr	2/yr	2/yr	2/yr	2/yr
RC	1/yr	1/yr	1/yr	1/yr		1/yr
Proficiency Gate	MACOM CDR GUIDANCE	CAL	MACOM CDR GUIDANCE	MACOM CDR GUIDANCE	MIN 420 pts Each ENG >70 pts	Qualification
AMMO	700 7.62mm 250 .50 cal 6 4.2 Illum 10 M21	2 APDS-T 1 HEAT	50 .50 cal 2 4.2 Illum 12 M21	150 7.62mm 50 .50 cal 2 4.2 Illum 16 M21	6 APDS-T 4 HEAT 150 7.62mm 50 .50 cal 2 4.2 Illum 16 M21	16 APDS-T 6 HEAT 250 7.62mm 50 .50 cal 2 4.2 Illum 17 M21
OPTEMPO (Miles)	3	4	4	6	6	15
TADSS AC	TSV	TSV	TWGSS, MTG-WESS TSV, AITST	TWGSS, MTG-WESS TSV, AITST	TSV AITST, MPRC	TSV AITST, MPRC
RC	TSV	TSV	TWGSS, MTG-WESS TSV, AITST	TWGSS, MTG-WESS TSV, AITST	TSV AITST, MPRC	TSV AITST, MPRC

Figure 11

1995 Tank Battalion Gunnery Training Strategy
Section/Platoon/Company Gunnery

Event	SECTION / PLATOON / COMPANY	TT D-F	CT IX	TT G-I	CT XI	CT XII	CALFEX
Frequency							
AC		2/yr	1/yr	2/yr	2/yr	2/yr	1/yr
RC							
Proficiency Gate		TT F	MACOM CDR GUIDANCE	TT I	MACOM CDR GUIDANCE	Qualification	
AMMO		250 7.62 Blnk 150 .50 cal Blnk 120 5.56 Blnk 2 4.2 Illum 9 M24	300 7.62 125 .50 cal 3 4.2 Illum 24 M24	225 7.62 Blnk 200 .50 cal Blnk 180 5.56 Blnk 6 4.2 Illum 15 M24	200 7.62 100 .50 cal	12 APDS-T 3 HEAT 200 7.62 100 .50 cal	200 7.62 200 .50 cal
OPTEMPO(Miles)		15	10	24	12	24	24
TADSS		TWGSS, PRIME TSV, MTG-WESS POT, AITST	TWGSS, PRIME TSV, MTG-WESS POT, AITST	TWGSS, PRIME TSV, MTG-WESS POT, AITST	TWGSS, PRIME TSV, MTG-WESS POT, AITST	MPRC TSV AITST, MPRC	TSV TWGSS, MTG-WESS AITST

Figure 12

The TADSS Strategy — Next 10-15 Years

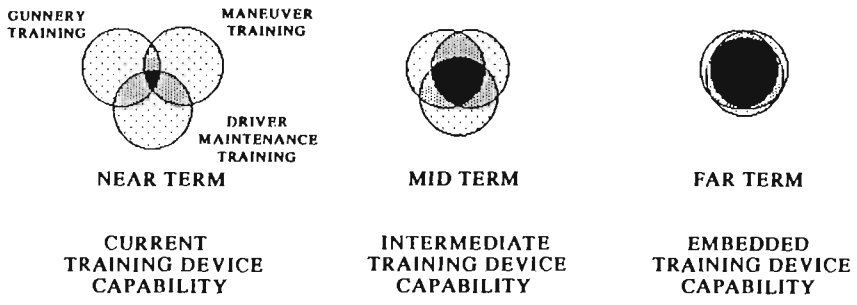

Figure 13

records the gunner's sight picture every time he pulls the trigger, whether on a live-fire range or during force-on-force maneuver training. The video recording will allow the trainer the opportunity to show the gunner exactly what he did wrong, or it will show if something in the fire control system or ammunition caused him to miss the target.

In the far term, TADSS will become embedded in the tank and the future scout vehicles (basic and advanced design) and all of the Armored Systems Modernization (ASM) variants (Advanced Field Artillery System, Future Infantry Fighting Vehicle, Future Engineer Vehicle and the Future Helicopter). The embedded capability for the tank and, as appropriate, scout vehicles will include the conduct-of-fire trainer (COFT), TWGSS, TSV and CCTT capability. The trainer will be able to train his crew/platoon/company in the combat assembly area the same way he trained them in peacetime. For example, the night before the battle, the tank commander could train his new gunner using the COFT capability, or practice engaging targets using the TWGSS and TSV capability. Using the CCTT capability, with a down-loaded terrain data base from an overhead satellite, the platoon leader could link the platoon together using the single channel ground and airborne radio subsystem — VHF (SINGARS) radios bursting CCTT-like data using the terrain the platoon will fight on the next day. The crew/unit uses its suite of training devices to train in combat the same way the crew/unit trained in peacetime. Much of this technology is available today, but without a well articulated CATS, which evolves the TAF from today to the future, our requirements will have difficulty competing for resources and may not become a reality. Many of the initiatives underway at the Armor School today will have a significant impact on how the Armor Force trains in the future. If the Armor School does not pursue the COFT, TWGSS, TSV, and CCTT capabilities today, these technologies will not be available in the far term for the future main battle tank. Because TADSS are so costly, they must offset some training resources. The Armor School is in the process of identifying the training or training events currently conducted with main gun ammunition and OPTEMPO that can be traded off to pay for the simulation capability.

Conclusion. The Combined Arms Training Strategy is an excellent roadmap to success on a battlefield that is characterized by more complex weapons systems than armor has faced in the past. Without a commitment now to the TADSS required by CATS, we are doomed to a training future constrained by environmental concerns, reduced budgets, higher OPTEMPO and ammunition costs, more complex systems requiring increased maneuver, and range space that does not and will not exist.

The TAF strategies are consolidated in TC 17-12-7, *The Battle-Focused Combined Arms Training Strategy (CATS): Armor*, which is currently in the mail to the MACOMs, AC and RC divisions, and proponent schools.

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Michael O. Kelley is currently the Chief of the Simulation Proponency Office within the Directorate of Training Development at the Armor School. He is the primary author of Training Circular 17-12-7, *The Battle Focused Combined Arms Training Strategy: Armor.* Before pursuing a Civil Service career, he served in the Active Component as a platoon leader, XO, operations officer, company commander, ORSA; and in the Reserve Component as an observer/controller. He has a BS degree from Eastern Kentucky University and an MS degree from the University of Southern California.

BACK TO BASICS:
THE ARMOR SCHOOL'S NEW RESERVE EMPHASIS IS ON CREWS AND PLATOONS

Reserve Component Enhancement Training

by Major Jimmy Jones

The dynamics of training are ever-changing. This has been true especially for the Army National Guard and U.S. Army Reserve (ARNG/USAR) in the past year. This article will bring you up to date on the efforts of the Armor School and its Directorate of Training Development (DOTD) in support of ARNG/USAR enhancement training.

Operational missions are changing. Our primary focus is no longer on a European threat but on contingency missions. We must be more flexible in our force structure. With the downsizing of Active Component forces, we must rely more heavily on the combat capabilities of the ARNG/USAR to provide reinforcements quickly in any conflict.

Operations DESERT SHIELD and DESERT STORM were the most significant events during the past several years in their impact on training. They have forced us to think critically about how we will train the Total Army in the future. Lessons learned show that there are flaws in our training strategy for both the ARNG/USAR and the Active Component.

Based on these lessons learned and changes in mission, Chief of Staff of the Army General Gordon R. Sullivan directed FORSCOM and TRADOC to examine how we train our ARNG/USAR forces. His concern was that units tended to start at too high a level of training, failing to focus on the individual tasks that support collective training. The tendency was to jump around the training matrix without building a strong foundation. We cannot afford, nor does limited time permit us to use soldiers as training aids to conduct higher-level training exercises at the expense of lower-echelon skills.

Input from FORSCOM and TRADOC has provided the Armor School with guidance for pre-mobilization training. Unit collective training will be focused at the platoon level. Platoons will gain crew-level proficiency in lane training using drills and tank tactical tables before advancing to platoon STX lane training. Once they master the requisite skills, they will move on to platoon FTXs if time permits. For staff training, simulation is the best environment in which to train during pre-mobilization. Company-level and higher collective training in the field should be accomplished during post-mobilization periods.

To implement command guidance and achieve our training goals, FORSCOM, TRADOC, and the Armor School have formulated two initiatives. One will provide short-term solutions during the coming training year, while a more comprehensive plan is designed to prepare ARNG/USAR units for their role in the Total Armor Force of the 21st century.

We believed the Armor School required a central focal point for coordinating all ARNG/USAR training needs, requirements, and products. The first step to support ARNG/USAR requirements was creation of the Reserve Component Training Branch in DOTD's Training Division. This branch focused on ways to fix the deficiencies noted.

Action plan "Bold Shift" is a "quick fix" program that focuses on annual training year 1992 (AT 92). "Bold Shift" is a significant effort, developed jointly by FORSCOM, TRADOC, and AC and ARNG/USAR units from the continental U.S. Armies. It is primarily intended for the roundout/roundup brigades, but applies to all other ARNG/USAR armor and cavalry organizations. "Bold Shift" addresses many of the training concerns discussed over the past few years. We see it as the first phase of a long-term, deliberate training program.

The Armor Center initiative "Bold Thrust" is a sustained, long-range approach focusing on an ARNG/USAR training strategy. It will start after AT 92 and take the ARNG/USAR through AT 2000. "Bold Thrust" focuses on these items:

- Front-end mission and task analysis at platoon through task force levels, followed by a training strategy that will support these units during pre-mobilization as well as post-mobilization periods.
- Leader courses that train our leaders to do their functional jobs better.

•Detailed lane training exercises, based on mission training plans (MTP), that include comprehensive checklists. These lanes can be trained in the field or in a simulation environment.

The foundation of the entire "Bold Thrust" effort is a detailed, comprehensive front-end task analysis. It will cross-walk platoon-level missions to platoon and crew collective tasks and finally link them to individual and leader tasks. This process carries over directly to the development of the four key elements of armor training: strategies, training programs, courses, and literature. It applies to all elements of the battalion, to include the staff sections and HHC platoons. Our long-term goal is to complete this process for cavalry organizations as well.

The basic doctrinal manuals and guidance we use to develop our training programs are FM 25-101, *Battle Focused Training;* TC 17-12-7 (Draft), *The Battle Focused Combined Arms Training Strategy (CATS) Armor;* and a coordinating draft USAARMS White Paper, *Battle Focused Training For The Total Armor Force.* These documents require us to focus our training at the lowest possible level, then build to higher echelons. We train to standards at each level before advancing to the next.

Our training strategy will look in detail at all echelons, crew through brigade. It will apply to all armor and cavalry units. We will take a close look at the HHC specialty platoons and battalion/brigade-level staff sections. Most current training publications devote very little space to these critical elements, especially those tasks required for tactical operations. For cavalry organizations, it will include light, heavy, divisional, and regimental units. Modernized units equipped with M1s and M3s, and units with M60s and M113s will also be addressed.

Our overarching strategy is formulated around two key premises. First, the building blocks for battalion and brigade operations are soldiers in crews and crews in platoons who are proficient in their individual and crew/platoon tasks. Second, battalion and brigade staffs must train on their command and control tasks before they bring their platoons to the field. This strategy results in parallel, simultaneously executed training programs at each echelon.

Platoons train in an environment in which the goal is to master as many tasks to standard as possible during pre-mobilization training. Tank platoons, for example, will seek to qualify each crew on tank table VIII annually and to perform to standard as many platoon missions as possible in an STX environment.

Battalions and brigades, first and foremost, support platoon training, providing planning and resourcing. Second, they train to master their command and control tasks (such as receive orders, use the military decision-making process, and publish orders), primarily using simulation (SIMNET, BBS, etc.). They then move to CPXs and finally to CFXs in pre-mobilizational training. Rarely, if ever, would they perform a full battalion or brigade FTX down to platoon level.

Company commanders interface with the levels above and below them. They plan, orchestrate, monitor, and participate in platoon training. They master their required tasks as tank commanders. Finally, they participate with their battalions in simulation exercises and CFXs to master required leadership skills, though they rarely maneuver their platoons during these exercises.

This strategy will result in well-trained platoons. It will produce company- through brigade-level headquarters that are fully trained in their tasks even if they have not maneuvered subordinate units in the field. It will give us a strong foundation on which to build post-mobilization training.

The task analysis recognized that there are too many tasks at too many

The basic doctrinal manuals...require us to focus our training at the lowest possible level, then build to higher echelons.

echelons on which ARNG/USAR units must remain proficient to be covered adequately during a limited, 39-day yearly training cycle. Tasks must be pared down to a manageable number. Only battle-focused tasks should be trained during pre-mobilization. Inactive duty training (IDT) and AT periods must include only combat-critical tasks focusing on those skills and that knowledge needed to achieve required training standards. By prioritizing tasks, we can defer those best suited for post-mobilization.

"Bold Thrust" takes into consideration the reality of pre-mobilization time constraints and the newly mandated 60-day post-mobilization trainup period for roundout/roundup units. Post-mobilization training takes the unit beyond platoon-level exercises. It incorporates the more complex elements we have labeled as "conditions of the battlefield." Gunnery table XII, individual weapons qualification, and maneuver through battalion/task force-level training take place during post-mobilization. This is when units bring it all together and hone their "going-to-war" skills.

Training Circular 17-12-7 (Draft) conceptualizes a strategy that will enable the Army to focus and manage all soldier, institution, and unit training in an integrated and relational manner. It ensures training integration of both active and ARNG/USAR heavy and light forces. "Bold Thrust" will focus on the ARNG/USAR elements of the CATS.

Devices are an important part of our ARNG/USAR training strategy. We must develop a more cost-effective way of training soldiers and units while still maintaining high training

standards. The effective use of training devices is the key to compressing training time, while increasing the number of tasks on which we are able to train to standard. We feel that the current series of training aids, devices, simulators, and simulations (TADSS) and those envisioned over the next few years will allow us to do this. The ARNG/USAR portion of CATS looks at devices currently in the inventory and how best they can be incorporated into training now. It also addresses the near-, mid- and long-term devices expected to be fielded by 2000.

Training programs, the second key "Bold Thrust" element, will integrate tactics, gunnery, and maintenance training throughout the year. Both IDT and AT must include a blend of gunnery and maneuver, with maintenance integrated throughout.

The standard two-year cycle of gunnery and maneuver is a thing of the past. No longer can we afford to focus only on one or the other. The resulting "mix" may not include as many tasks in one area or the other in a particular year; however, we expect to attain a higher proficiency level on the selected tasks. In other words, we will train fewer tasks, but all to standard, rather than many tasks, but few to standard.

Active units must perform a bigger role in the training of ARNG/USAR units, with partnership units designated for all ARNG/USAR combat arms battalions. These AC units provide roll-in/roll-out AT support. They go with their partnership unit to AT lock, stock, and barrel. They serve as mentor, train, and, where required, evaluate the progress of their partnership units. They serve as range personnel, lane controllers, and training advisors, but do not take the place of the chain of command.

Lane training for drills, tactical tables, and STXs involves setting up a controlled condition so that a limited number of collective tasks are instructed, practiced, and evaluated. This training comes straight from the soldier's manuals, common task manuals, the FM 17-12-series manuals, and ARTEP MTPs. A detailed checklist, which looks at both the individual tasks and collective tasks, is used by external trainers.

Crew training will be conducted using the crawl-walk-run method for each exercise, first in classroom situations, then on sand tables, when possible on simulation, and finally on the vehicle. After-action reviews (AAR) will follow each iteration. Crews will train until they master all requirements to standard for a particular site. That includes all collective tasks and related individual and leader tasks. Once they meet the conditions for each gate, they then advance to the next training opportunity.

Crews conduct STXs. Only those STXs designated for pre-mobilization will be trained during AT. More complex STXs such as the deliberate defense and attack will be postponed until post-mobilization. STXs will use the same crawl-walk-run process as that used in the drill and tactical table lanes. Again, units must clear a series of gates before they can advance to the next requirement.

If a unit meets all of its pre-mobilization training objectives to standard, it will then focus on more demanding conditions such as tactical operations in an NBC environment and night operations for those STXs designated as pre-mobilization training activities.

Once the close combat tactical trainer (CCTT) is available, we envision platoons participating in a series of tactical tables similar to those currently laid out in the FM 17-12-series manuals. They will be conducted first in simulation and then in a field situation. Both types of exercises will include unvarying METT-T and will be as similar as possible. The same enemy, the same terrain, and the same conditions will be presented for each iteration. Platoons will repeat each exercise until they can perform all tasks to standard. A key consideration for this type of exercise is that simulation can compress the equivalent of one week of AT into a single IDT period.

So far we have only discussed tank platoons. The scout and mortar platoons will use the same concepts, focusing on their unique battle tasks.

The other HHC elements (support, maintenance, and medical platoons; commo and battalion staff sections) usually focus only on their support missions and seldom receive the critical training they need to maintain their tactical expertise. Many commanders feel that supporting is training — that HHC elements can achieve their training standards simply by doing their jobs. Support missions do have training value; however, like tactical platoons, HHC elements must receive dedicated, deliberate training to be proficient in their tactical skills.

Currently, IDT for HHC elements tends to focus only on acquiring the technical skills required to perform their support mission and on providing that support to other units' training missions. Tactical training usually receives low priority. We are looking at how to capitalize on training support from partnership battalions to free support elements for more tactical training. How this concept can be used to best benefit HHC personnel is still to be determined.

The third element of "Bold Thrust" is courses. The Armor School currently has more than 40 courses available to the National Guard and Army Reserve, ranging from teaching technical knowledge on specific equipment to training commanders at all levels. We have 15 leader development courses specifically designed to meet ARNG/USAR needs.

The Reserve Component Course Configuration Branch at DOTD is specifically tasked to analyze all Armor and Cavalry ARNG/USAR courses. These include courses for MOSs 19E, 19K, and 19D as well as for officers.

We believe that initial-entry courses are necessary for both enlisted and of-

ficers. Other than reduction in length, we do not anticipate significant changes in these courses. However, there are significant developments in other course-related areas. Exportable courses are the wave of the future at the Armor School. Some already have been developed. We are looking at additional ones, especially courses to train staff sections and HHC platoons. With dollars becoming scarce, exportable training will become the norm. This training could be presented via printed text, television tape, computer-based instruction, teleconferencing, or interactive videodisc.

Although leaders at all levels need training, most critically at crew and platoon levels, many ARNG/USAR commanders believe there are too many leader development courses. A common concern for them is that their subordinates must spend too much time away from the unit just to meet professional development requirements. An average ARNG/USAR NCO who stays with a company for 10-15 years must miss at least four AT periods just to attend professional development courses. Add other special qualification training courses such as NBC, TCCC, and IO training, and this number may go as high as eight or nine.

Officers have similar training requirements.

We cannot afford to have our key leaders away from our units for over one-third of their duty time. Conversely, we cannot afford to have untrained leaders. A fresh look must be taken at our leader development courses. Leaders must understand not only what to train, but also how to train.

Functional courses may be the answer. They would focus only on those skills necessary for an individual to maintain proficiency in his battle-related position. An example is a vehicle commander course for NCOs selected to become tank or reconnaissance vehicle commanders. This could give each NCO his BNCOC credit. Once an NCO is selected to become a platoon sergeant, he would attend a platoon sergeant course in lieu of ANCOC. Company officer courses, in place of the Armor Officer Advanced Course, could become a reality.

Functional courses must be battle-focused and position-specific and primarily teach only those skills necessary for that level or position. Shorter course lengths and elimination of frills and administrative requirements are goals of these courses.

A final note on courses: Because many M60A3 tanks remain in the inventory, there is still a need to train 19E armor crewmen. We are looking at the best way to accomplish this training. The Armor School will continue to train all initial-entry soldiers; however, the responsibility for training 19E ANCOC and M60 master gunner courses must be transferred to the ARNG/USAR, with assistance and support from the Armor School.

The fourth element of "Bold Thrust" will entail a detailed look at our training literature. Our doctrine is sound and common for both AC and ARNG/USAR; however, many training products do not address ARNG/USAR concerns. Most are too vague and general. We are currently working on manuals to correct that.

ST 17-12 RC, *Reserve Component Tank Gunnery Training Program,* is an example of a manual that focuses on the RC. It is a positive step.

We are updating our ARTEP MTPs for the first time in several years. As field manuals are revised, we are attempting to bring MTPs on line. Our goal is to have a new MTP developed simultaneously with or within six months of an FM revision. We are also looking to develop a crew-level manual similar to an MTP, as well as an MQS publication for officers that would be equivalent to the trainer's guide used for enlisted training programs. Our current MQS manuals focus only on tasks and do not include valuable "how to train" methods.

We have recently developed a Task Dictionary. It lists all individual tasks by type of organization and skill level and provides a narrative description of each task, to include conditions, standards, and references. This single-source document is especially valuable to trainers when trying to determine where a task is located and what it covers without searching through several manuals.

Task dictionaries can be tailored to your needs. We can produce an armor-specific dictionary or a cavalry dictionary, a Skill Level 1 through 4 dictionary or an officer task dictionary.

The Armor School's mission is to provide the Total Armor Force with professional training development. DOTD is your advocate in this effort.

But we cannot do it alone or in a vacuum. We recognize the need to change the thrust of ARNG/USAR training. We have a base plan that can make it happen, but we need your input.

Major Jimmy W. Jones was commissioned in Armor in 1974 from Weber State University. He currently serves as chief, Reserve Component Training Branch, at the Directorate of Training Development, Fort Knox. In Germany from 1975 to 1983 with the 3d Squadron, 7th Cavalry, and the 3-64 Armor, he served as cavalry platoon leader, squadron adjutant, tank company XO, battalion adjutant, and commander of both a tank and headquarters company. He was an assistant professor of military history at Utah State University. At Fort Knox, he has been chief of the Combat Service Support Branch of the Command and Staff Department, and chief of the New Systems Training Division and Training Division of DOTD.

Integrating IPB into Paragraph Three (And Other OPORD Briefing Techniques)

by Captain Gregory P. Rowe

The S2 stands up. "The enemy's most probable course of action is to attack along avenues of approach three and four, approaching us from the northeast." Two paragraphs later in the operations order (OPORD), after the presentation of the friendly situation, the mission, the intent, and several drops of rain have leaked through the TOC canvas onto your notes, the S3 stands up. "The task force will defend BP 21 with a primary orientation to the southeast."

What is wrong with this picture? For one thing, as so often happens in the rush of the combat planning process, the S3's plan in paragraph three (execution) does not properly integrate the S2's Intelligence Preparation of the Battlefield (IPB) contained in paragraph one (situation). The S3 oriented the task force in a different direction from which the S2 thinks the enemy will come. But indicative of a worse problem, most of the OPORD briefing audience will not have remembered the S2's analysis any better than the S3 applied it due to the disjointed nature of the presentation. Both the S2 and S3 may independently impress the audience with their excellent products, but in scenarios such as that above, if the S2 is right, the S3's plan is academic. Why even have IPB if you do not use it? Why brief it if it is not logically integrated into the order? As training center experiences have shown, IPB is too important to be lost in the shuffle.

There is a simple solution to the common dissonance between the S2's IPB and the S3's plan. It begins with a seemingly minor rearrangement of the OPORD briefing format. Specifically, the results of the IPB belong in paragraph three! The enemy's most probable course of action is clearly the logical precursor to the plan of execution. It defeats IPB's purpose to place the friendly situation and the mission between IPB and the concept of the operation. Putting IPB in paragraph three creates a more logical sequence, as well as invents a great method to force the S3 and S2 to cooperate in producing a coherent, combined product. It is possible to do this while retaining the much revered five-paragraph format. This article suggests how, while also presenting several other suggestions to make the OPORD briefing format more unified.

A briefing ought to progress logically, with each paragraph building upon the previous paragraphs. It should present what you need to know when you need to know it. The short-term human memory is too limited to allow anything else, especially when you add battle fatigue. The remainder of this article applies that obvious fact to the OPORD briefing format. Use what suggestions you think are feasible; consider the rest as food for thought.

As described above, the first and most significant suggestion here is to rearrange IPB in the order, making it more useful and forcing the S2 and S3 to coordinate. The S2 still briefs the enemy situation in paragraph one, but saves the most probable course of action for paragraph three. A third tremendous benefit to such a rearrangement is the resulting creation of a focal point in the order. The concept paragraph becomes a vehicle to get ALL parties together and focused on the objective. Here is an example of what that would sound like. The concept paragraph begins with the S2's IPB, concluding with:

S2: If the enemy's first echelon fails in the center, as it normally would at our main defensive belt, he probably would then send the second echelon to the north, around to our flank.

S3: Therefore, we will present stronger initial resistance in the north with one company forward to engage enemy lead elements as they cross the phase line near the line of contact. This will encourage the enemy to commit his second echelon to the center, where we can mass forces.

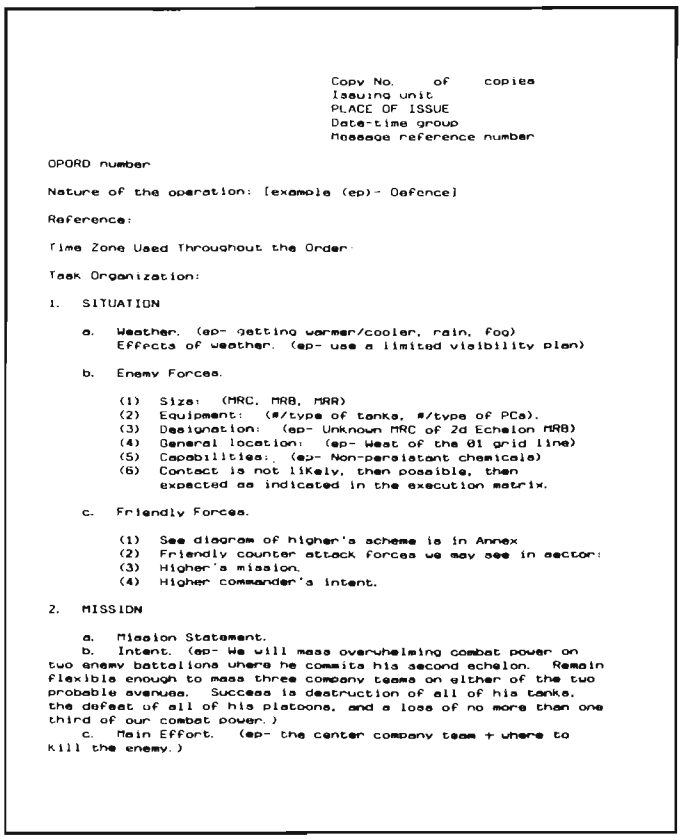
FSO: Concurrent with contact in the north, massed artillery initially lands on the enemy battalion in the north at a choke point at Target Group ABA, located west of the engagement area of the company in the north. On order, shift fires to the center.

S2: When our scouts report having seen four or more platoons of enemy tanks at the center NAI (named area of interest), we know the second echelon battalion is committed to the center.

S3: At this point we will commit the reserve, so that three companies mass in the center on the remainder of his first echelon, and subsequently his second echelon, all in the center engagement area.

ALO: We want any available aviation assets to engage simultaneously with the companies in the center, assisting in the destruction of the two enemy battalions there. We will initially concentrate on the second echelon battalion while you earth pigs take out the first echelon.

Engineer: The most critical obstacle, based on all of that, is the blocking obstacle, which plugs the exit



Copy No. of copies
Issuing unit
PLACE OF ISSUE
Date-time group
Message reference number

OPORD number

Nature of the operation: [example (ep)- Defence]

Reference:

Time Zone Used Throughout the Order:

Task Organization:

1. SITUATION

a. Weather. (ep- getting warmer/cooler, rain, fog)
Effects of weather. (ep- use a limited visibility plan)

b. Enemy Forces.

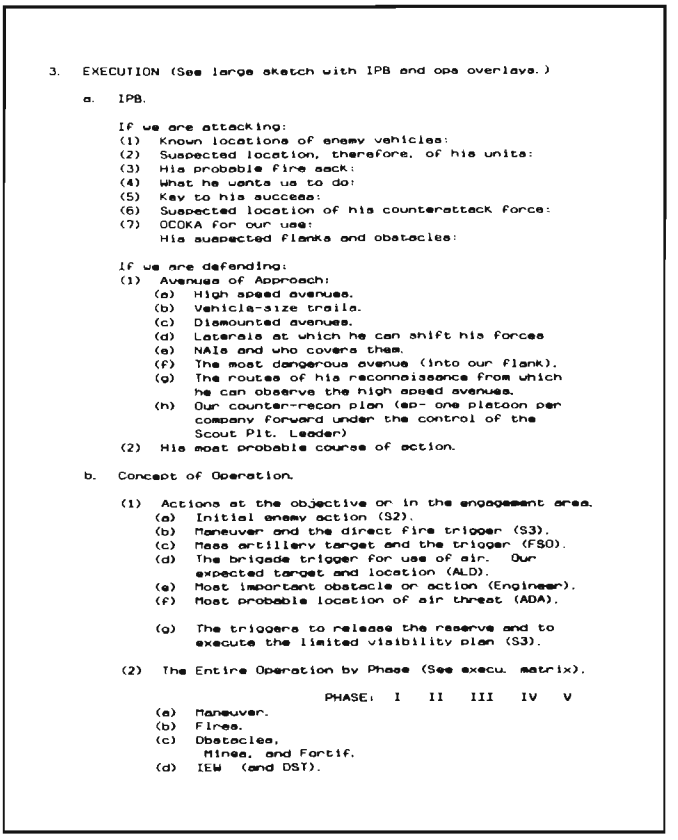
(1) Size: (MRC, MRB, MRR)
(2) Equipment: (#/type of tanks, #/type of PCs).
(3) Designation: (ep- Unknown MRC of 2d Echelon MRB)
(4) General location: (ep- West of the 01 grid line)
(5) Capabilities: (ep- Non-persistant chemicals)
(6) Contact is not likely, then possible, then expected as indicated in the execution matrix.

c. Friendly Forces.

(1) See diagram of higher's scheme is in Annex
(2) Friendly counter attack forces we may see in sector:
(3) Higher's mission.
(4) Higher commander's intent.

2. MISSION

a. Mission Statement.
b. Intent. (ep- We will mass overwhelming combat power on two enemy battalions where he commits his second echelon. Remain flexible enough to mass three company teams on either of the two probable avenues. Success is destruction of all of his tanks, the defeat of all of his platoons, and a loss of no more than one third of our combat power.)
c. Main Effort. (ep- the center company team + where to kill the enemy.)



3. EXECUTION (See large sketch with IPB and ops overlays.)

a. IPB.

If we are attacking:
(1) Known locations of enemy vehicles:
(2) Suspected location, therefore, of his units:
(3) His probable fire sack:
(4) What he wants us to do:
(5) Key to his success:
(6) Suspected location of his counterattack force:
(7) OCOKA for our use:
His suspected flanks and obstacles:

If we are defending:
(1) Avenues of Approach:
(a) High speed avenues.
(b) Vehicle-size trails.
(c) Dismounted avenues.
(d) Laterals at which he can shift his forces
(e) NAIs and who covers them.
(f) The most dangerous avenue (into our flank).
(g) The routes of his reconnaissance from which he can observe the high speed avenues.
(h) Our counter-recon plan (ep- one platoon per company forward under the control of the Scout Plt. Leader)
(2) His most probable course of action.

b. Concept of Operation.

(1) Actions at the objective or in the engagement area.
(a) Initial enemy action (S2).
(b) Maneuver and the direct fire trigger (S3).
(c) Mass artillery target and the trigger (FSO).
(d) The brigade trigger for use of air. Our expected target and location (ALO).
(e) Most important obstacle or action (Engineer).
(f) Most probable location of air threat (ADA).

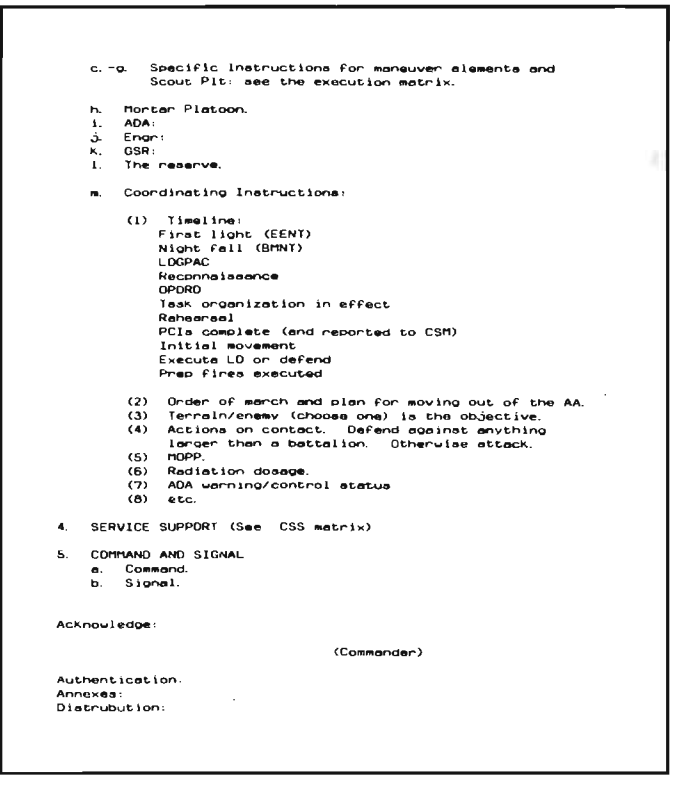
(g) The triggers to release the reserve and to execute the limited visibility plan (S3).

(2) The Entire Operation by Phase (See execu. matrix).

PHASE: I II III IV V
(a) Maneuver.
(b) Fires.
(c) Obstacles,
Mines, and Fortif.
(d) IEW (and DST).

Reorganizing the OPORD

This three-page example, above and at right, illustrates how the author proposes reorganizing the OPORD format to increase the amount of coordination between the S2 and S3.



c.-g. Specific instructions for maneuver elements and Scout Plt: see the execution matrix.

h. Mortar Platoon.
i. ADA:
j. Engr:
k. GSR:
l. The reserve.

m. Coordinating Instructions:

(1) Timeline:
First light (EENT)
Night fall (BMNT)
LOGPAC
Reconnaissance
OPORD
Task organization in effect
Rehearsal
PCIs complete (and reported to CSM)
Initial movement
Execute LD or defend
Prep fires executed

(2) Order of march and plan for moving out of the AA.
(3) Terrain/enemy (choose one) is the objective.
(4) Actions on contact. Defend against anything larger than a battalion. Otherwise attack.
(5) MOPP.
(6) Radiation dosage.
(7) ADA warning/control status
(8) etc.

4. SERVICE SUPPORT (See CSS matrix)

5. COMMAND AND SIGNAL
a. Command.
b. Signal.

Acknowledge:

(Commander)

Authentication.
Annexes:
Distribution:

from the engagement area in the center. We will also plan FASCAM to back up the company in the north, and to restrict the bypass to our south.

ADA: Our air umbrella covers all air avenues, but we'll plan to concentrate our efforts on the HINDs that will support the enemy's main effort, which we expect in the center.

Synchronization! It's beautiful! Thorough synchronization begins with focus in the order. To have focus, there must be one clear focal point, not several independent briefings by various staff officers. An integrated concept in paragraph three is the best way to facilitate that. As pictured in the example, imagine the S2 on one side of the map board or sketch and the S3 on the other, passing the pointer between them, with the combat multipliers chiming in on cue. Everyone is singing in harmony, almost as if they were the Pointer Sisters. (A little humor there. Note: this kind of harmony requires some sort of rehearsal of the concept paragraph before it is presented.) Nevertheless, if this picture does not fit your particular S3 and S2, who happen to have a cat-and-mouse, major-second lieutenant relationship, then an alternative is for the S3 to brief the IPB and all of the combat multipliers himself in para-

graph three. Operations officers often like to do everything themselves, anyway. Whatever you do, put the IPB in paragraph three! Otherwise, it is practically useless to the audience.

What follows are other similar suggestions on how to make the OPORD progress more smoothly and naturally. Most of the suggestions are not as critical as the need to put IPB in paragraph three. Yet they are intended to make minor adjustments and provide food for thought in the continuing evolution of the OPORD format.

For starters, it only makes sense that the audience ought to know the nature of the operation before they hear about the current situation. Many of us have dumbfoundedly sat through a briefing of the enemy situation wondering if we were to attack or defend. A statement as simple as, "This order applies to our next attack," would be helpful before paragraph one. If the audience does not hear that first, they will not be able to visualize how the situation will affect the operation. Bottom line up front, right? Then appropriately comes the situation, the mission, and the commander's intent. It should be no surprise that those already in the most logical place in our format.

In addition to intent, it would be beneficial for the commander to name the main effort at this point, to ensure that it, too, is not lost in the shuffle. Next, as suggested above, IPB belongs immediately before the concept in paragraph three. To make the concept more clear, a single, large sketch with both IPB and operations overlay drops would demonstrate the concept while integrating the IPB.

For starters, it only makes sense that the audience ought to know the nature of the operation before they hear about the current situation. Many of us have dumbfoundedly sat through a briefing of the enemy situation wondering if we were to attack or defend. A statement as simple as, "This order applies to our next attack," would be helpful before paragraph one.

So what does all of this look like in an orders briefing? The S3 or commander starts by saying, "Gentlemen, we attack at dawn." Then the S2 presents the general situation of the 3d Echelon of the 2d Echelon of the 1st Echelon defending along the 01 grid line. Next, the S3 tells everyone what the higher headquarters is up to, and reads the mission (twice). Then the S2 suggests what the enemy will probably do. Finally, the S3 and combat multipliers tell us what we are going to do about it. That is followeed by a load of detailed information concerning the plan as a whole, in the traditional format, with perhaps a few minor adjustments.

A few logical rearrangements of the details of the OPORD would include such things as putting the next day's sun and lunar data in a timeline of events in the coordinating instructions, rather than hidden away in the weather, as the current format requires. These and other suggestions are all integrated into the example format which follows. Take note of the new execution matrix, which encompasses more than most techniques, including a space to indicate whether enemy contact is not likely, possible or expected. Also, the change in paragraph two may look radical, but makes more sense that way. It consolidates the commander's input in paragraph two, and the S3's in paragraph three.

Without changing the NATO five-paragraph format, the above suggestions would simplify any organization's briefing of its OPORDs. They can easily be applied at the task force level. Most of the changes are desperately needed to improve the use of IPB, as well as synchronize all of the combat multipliers and integrate all Battlefield Operating Systems. As the synchronization of plans and operations becomes more demanding, the format of the OPORD briefing must evolve accordingly. Those improvements should include maintaining focus and providing a smooth presentation.

The improvements presented above are in order with the well-established principles of the Army Writing Program, such as bottom-line up front; common sense solutions, such as one-page summaries; and lessons learned from the Training Centers, including the CSS matrix. It is critical that the military operations order briefing format stay in stride with the inherent complexity of modern warfare. It must continue to evolve appropriately to keep up with the highly successful, space-age, training center-hewn Army.

Captain Gregory P. Rowe is a 1984 graduate of the U.S. Military Academy. A graduate of AOB, AOAC, Ranger, Airborne, and S1 Schools; he has served as a light cav scout platoon leader, an S4, and S1 at Ft. Ord, and S3 (air) and tank company commander in Mannheim, Germany. He is currently Assistant G3 (Plans) at 8th ID in Germany.

Dust Clouds on the Horizon Thoughts of the Future

by Command Sergeant Major Kurt G. Bensch Jr.

Centurions stand quietly talking. Soldiers of the legion wait patiently together. They wait for their orders, for each of them knows other battles wait as dust clouds grown on the horizon. Quietly, nervously, they wait. Soon, orders must come...

My intent is to spark some deep thought about the forces facing the American military's evolution in the next two decades — forces that will be both economic and political and that will mirror changes in our national policy. My aim is to direct and clarify the nature and composition of this thought process about this future Army, the Army of the "Pax Americana."

We are in the midst of an era of great uncertainty. We stand proudly, feeling a sense of victory tinged with self satisfaction and a bit of smugness. We are surrounded by our beaten and vanquished foes. Sadly, we are aware our victories have made us less needed and are beginning to understand such terms as "build down" and "peace dividend." Both terms simply mean we have begun to dismantle parts of the world's premier combat force.

What Army will enter the 21st Century? What will its order of battle be? Many of us here today will only be distant memories, our sons and daughters will be leaders of the Army we will leave them. We absolutely need to leave them a vigorous Army and one that will have worldwide capabilities, an Army that will be the power that allows Americans to defend its national interest anywhere, anytime.

From today's 26-division and 750,000-soldier Army, how far can we go? What will the end product look like? Suggestions, comments and ideas follow. Remember that I only seek to cause you to think!

Our Army must continue to provide special forces of many types. Many of our allies still hesitate to let our troops fight on their soil. Small units, training teams, and advisors must continue to be high quality and readily available to countries desiring and needing them. A key area of concern will be native language speakers, who not only speak a foreign language, but can also blend in with indigenous populations. The early defeat of a guerrilla army can bring a quick end to evolving conflicts that threaten to involve the main body of our heavy forces.

Our heavy and light divisions must be able to deploy rapidly anywhere in this troubled world. If the next world war is fought in a theater where we have no friendly sea or airports, how will we deploy those divisions? When was the last time we practiced WWII-style amphibious landings? A national training center on a coastal area then becomes a major concern for planners and trainers. Training these expensive divisions will become increasingly difficult as the budget shrinks. Another major factor will be the rising percent-

ages of female soldiers integrated into these divisions. Is America ready to send its first female tankers and grunts into combat?

What role will Reserve Components play in this future Army? What capabilities should they have, and what percentage of the total force should they make up? The Iraqi war has shown us that much thought will have to be given to the composition and training levels of all reserve units. Should Reserve Component capabilities mirror the Active Force capability, or should they become an augmenting force of special abilities and roles? Emphasis must also be given to the activation process. The need to speed up this process will become critical as we become a smaller active component once again, we can only begin to imagine paying the costs on this level of restructuring.

Another area of great importance concerns the types of weapons we will need to develop, upgrade, or purchase in the future. The recent events in Southwest Asia have revived many old arguments about the mix of the future Army. Are tanks obsolete; has artillery been replaced by rocketry; and who needs infantry divisions anymore? Each branch has its arguments both for and against them. However, most are driven by the growing battle for a share of the decreasing budget.

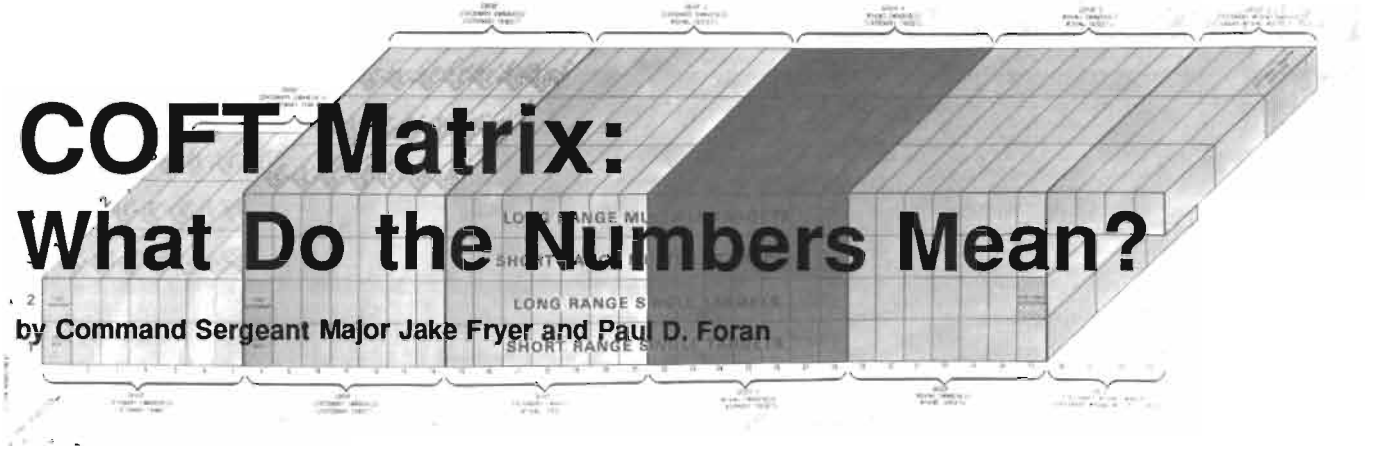
Consideration must also be given to the rate of improvement for military oriented technology. With the collapse of the Soviet Army's offensive capability and a worldwide shortage of research dollars, will defense contractors simply abandon military research and development projects as too expensive and risky? How many will simply drop out of the defense market and move into more stable and profitable civilian markets? We may become a second rate country in defense research and development and thus become even more dependent on foreign technology in order to maintain a qualitative edge. Additionally, the rapid proliferation of nuclear, chemical, and biological weapons is also an area that needs our attention. This growth may cause many smaller nations to feel they are on a tactical par with us and make their leaders more comfortable about challenging us worldwide. If we lose our qualitative lead, what kind of quantitative superiority will we be forced to maintain?

What will future benefits packages be for our soldiers? Where should we put these dollars — in pay and allowances, or in enhanced retirement packages, or will we even be able to retain our better educated and technically advanced soldiers? Recruiting emphasis may have to shift to that of "A lifetime career." In order to recoup our training investment, there may be no choice but to alter the ways we enlist and reenlist soldiers.

The ability of our trainers to train in a tight budget environment becomes the key to success. Resource availability and time constraints will always influence the training management process. But how much more difficult will the process become? The educational requirements for NCOs are currently aimed at technical and tactical competence. We will have to add a third requirement, that of teaching ability. This requirement will be caused by a more technologically sophisticated Army and by the need to use limited resources more efficiently. FM 25-101, *Battle Focused Training,* will become the most important book for all trainers and planners.

Ultimately, all seems to come back to one theme, the availability of dollars. The dollar amount available drives all of the segments of the big picture. How soon will the budget picture be clear? What size and composition of forces will we be allowed to retain, and will we be able to afford the type of Army envisioned here? As modern day centurions, it will be the responsibility of the NCO Corps to implement the decisions of our political leaders. It would serve us all well to become more aware of the forces and processes that shape the Army of the future. We owe it to the Army, the country, and most of all, to those soldiers we lead.

Command Sergeant Major Kurt G. Bensch Jr. is the command sergeant major of 6th Cavalry Brigade, Ft. Hood, Texas.



COFT Matrix: What Do the Numbers Mean?

by Command Sergeant Major Jake Fryer and Paul D. Foran

As a whole, we as armor leaders are falling short in our responsibility to provide meaningful feedback to our tank crews when using the Unit Conduct of Fire Trainer. Commanders at all levels, as well as COFT instructor/operators, should have an in-depth knowledge of the COFT matrix and, most important, must have the ability to translate numerical levels of proficiency into meaningful words.

Instructor/operators on COFT have been known to say, "Why do I need to know the matrix when the computer does the work and recommends the next exercise?" Although this is true, how much good does it do for a tank crew to progress blindly through the matrix without the benefit of knowing exactly where its weaknesses and strengths are? Numerical progress has to be translated into words.

"Tank commander, you are at TA1, RA5, and SM1; as a crew, you are at TA3, RA10, and SM2. Do you have any questions? OK, see you at your next session."

"Gee, thanks."

The example above is a non-starter. We, as leaders, must realize that most tank crews have no clue as to the meaning of these numbers. It is up to us to talk to the crewmembers in a language they can understand.

First, we must educate ourselves. We must know what each number represents. The table below applies.

Refer back to the example of a COFT final brief. The meaningful translation would go something like this.

"Tank commander, on the commander's matrix, you are currently shooting in daylight with unlimited visibility. Your own vehicle is stationary, and you are engaging stationary targets/trucks. You are employing the CWSS in the manual mode, and your targets are at short range. As a crew, you are shooting in battlefield conditions. Your own vehicle is stationary and your targets are stationary. You are in an NBC environment, and your targets appear singularly at long range."

In order for us to translate this information, we must know, as an I/O, the commander/gunner matrix and the matrix movement rules, along with the translation of the numbers. We have all learned this in the I/O courses, but our biggest failing is that we don't use it when we should use it, for the tank crews, before, during, and after training sessions.

In addition, the I/O can explain to the crew what is holding it back, if anything, using the computer generated grades for target acquisition, system management, and reticle aim.

With this type of feedback, COFT training takes on new meaning. Crews will know where they've been and where they're going. As armor leaders, they deserve the best instruction. Give it to them!

COFT Numbering System

Exercise Numbering

Exercise Identifier 3
1. Special Purpose
2. Commander
3. Cmdr/Gunner

System Mgmt 4
4. Long-Range Multi Targets
3. Short-Range Multi Targets
2. Long-Range Single Targets
1. Short-Range Single Targets

#1

Reticle Aim Group 5
1. Sta Own vs Sta Tanks
2. Sta Own vs Sta Tgts
3. Mov Own vs Sta Tgts
4. Sta Own vs Mov Tgts
5. Mov Own vs Mov Tgts
6. Sta/Mov Own vs Sta/Mov Long-Range Multi Tgts

#2

Reticle Aim Level 6

Cmdr	Cmdr/Gunner
1. Normal	1. Normal
2. Stab/Lead	2. Night
3. LRF	3. NBC
4. CWSS Power	4. Stab/Lead
5. CWSS Manual	5. LRF
	6. GAS Power
	7. GAS Manual

Target Acquisition 2
3. Battlefield
2. Limited
1. Unlimited

Replication 0

0 1 2 3	European
4 5 6 7	Desert
0 1	Mov Own

CSM Jake Fryer is the Command Sergeant Major of the Armor Center. Paul D. Foran is a COFT instructor/operator, Weapons Department, USAARMS.

Letters (continued from page 3)

Reply to COL Clarke

Dear COL Clarke:

The Armor Center shares your concern for the development of combined arms leaders in the Army National Guard and U.S. Army Reserve.

First, let me address some uniquenesses of the Army National Guard/U.S. Army Reserve. As we all know, they are allocated 39 training days a year. Once travel, administration and state required time is subtracted, most units are lucky to have 29 real training days per year. Of course, some soldiers spend much more time, in uniform or out, working their military requirements. Of the 29 unit training days, as much as 20 percent of the unit can be absent due to required military professional development schools, and the average National Guard company has a 20 percent turnover every year. So, from here we must start.

Your ideas are excellent, but here are some real world considerations. First is tank gunnery. We feel tank gunnery is extremely important — important enough to spend at least 10 and maybe even 15 days per year on individual tasks and crew-level gunnery training. Gunnery skills are very perishable.

Second, there are nine platoon-level missions in the tank platoon MTP and they consist of 59 combat critical collective tasks. At company/team level, there are seven missions with 53 combat critical collective tasks. Our position, as brought out in "Reserve Component Enhancement Training" (p. 40), is that the basic building block is individual training, then crew training, then platoon training. We simply do not believe the average National Guard or Army Reserve tank platoon can master their individual, crew and platoon tasks and then proceed to company/team tasks in 14 to 19 days of training spread over a year. We emphasize platoon-level maneuver and crew-level gunnery during pre-mobilization training. Training above that level is leader simulation training in pre-mobilization or left to post-mobilization.

A true Reserve Component training center would be able to train maybe six battalions in the normal AT period (June to August). The remaining nine months of the year they might be able to train six more battalions — out of summer AT.

We believe platoon maneuver training can best be accomplished with lane training under the observer/controller supervision of an Active Component unit. Again, the accompanying article amplifies this.

We at Fort Knox most certainly want, and indeed support, the Army National Guard and U.S. Army Reserve units in our Total Armor Force.

Your thoughts and efforts are appreciated. After reading the article, give us your comments. We actively solicit them from all members of the Total Armor Force.

JOSEPH D. MOLINARI
COL, Armor
Director of Training Development
USAARMS

Mustache Comment "Troubling"

Dear Sir:

Colonel Stephen Wilson's "Ruminations of a Branch Chief" in the September-October 1991 edition was a well-written, informative article that reinforces my perception that Armor Branch takes care of its own. I have always been treated fairly by my assignment officer and trust Branch to get the word out. The Armor Branch News is a case in point. Fellow officers in other branches envy the quality of Armor Branch personnel management.

However, COL Wilson's article touched a nerve with his statement on the perceived negative effect of a mustache. I understand that he was only repeating the comments of some board members, yet it is troubling that he would sanction such dubious comments by repeating them in a forum like *ARMOR*.

Manner of performance should be what determines selection by a board. The fact that I have had a mustache for most of my Army career and have been selected for competitive assignments, appropriate schooling and on-time promotions seems to bear this out. Non-substantive comments based on personal bias do not deserve a public forum and fly in the face of Army Regulations authorizing mustaches. Would we ever see a statement such as "Many board members also comment on the negative effect of being African-American, or female, or having a big nose."?

There was a time not too many years ago when mustaches were quite common in our Army. I will keep the faith; that time may come again.

QUENTIN W. SCHILLARE
LTC, Armor
I Corps
Ft. Lewis, Wash.

Command from the Turret

Dear Sir:

Major Faulconbridge's article in the September-October 1991 *ARMOR* reminded me of a number of techniques I observed while in command of a tank company during combat operations in Southwest Asia.

First topic of interest was the location and transport of the company first sergeant. There is mention that "the first sergeant would be at undue risk operating from his HMMWV." The first sergeant "must" be forward in a "hard vehicle" in order to "command" the company combat trains. He belongs at no other place. The trains are the company's fourth platoon and must be as thoroughly briefed and rehearsed as any other. The second-in-command of this organization is the maintenance team chief. The first sergeant rides with him in the maintenance M113. There is an MTOE change staring at us here. We equipped our M113 with dual net using some of the hardware found in the first sergeant's HMMWV. The first sergeant could then operate on company command and battalion A/L nets. Where does his HMMWV go? I will address that shortly, but we trained as we fought. Soft skinned vehicles remained in the rear. It might be easy for leaders to "scoot" around in HMMWVs in garrison, but it is unrealistic. Considering the threat of mines, aircraft, artillery, and especially the ever present danger of small arms, the M113 is the best choice. Again, it takes rehearsal to make this arrangement work.

Where does the first sergeant's HMMWV go when the company is in operations? One technique is to keep it in the battalion combat trains. Here it can perform a number of functions. Because it still has a radio system remaining, it can act as a hasty relay station with the battalion ALOC. The operator, with proper training, could possibly be a liaison with the combat trains. Based on practical experience, the vehicle and operator provided additional transportation and care for the wounded, EPWs and maintained effective local security. This proved to be of vital importance because of the number of EPWs encountered.

I would advise company commanders to operate from the tank as much as possible. As with the first sergeant's vehicle, the commander's HMMWV is a secondary form of transportation when the unit conducts operations. I recommend loading very little "essential" equipment on the HMMWV. Equip the tank with all the items you will need for combat operations, such as maps, acetate, rehearsal kits and manuals. Detail

is the key, I carried a spare optical insert in my TC's armrest, just in case. The whole goal is being comfortable commanding from the tank in all conditions. It is far more practical performing recons to forward areas in a fighting vehicle. How can this work in peacetime? When practical, command from your tank. Don't ride the HMMWV when the whole company moves out to an LTA. Establish the company CP out of the headquarters tank section, not the HMMWVs.

Finally, where does the commander's HMMWV go? A technique is to have it remain near the battalion CP. It can serve as an additional relay or messenger for LNOs if practical. Based on METT-T, the operators can provide additional security for the TOC. When the situation permits, the vehicles can move forward during a LOGPAC and marry up with the company. This concept is very flexible. The commander's HMMWV can also perform the same mission in the combat trains as described earlier.

In conclusion, I believe the first sergeant must be forward in a hard vehicle and that both he and the company commander must avoid the pitfall of operating out of their HMMWV and practice commanding from their tracks.

BART HOWARD
CPT, Armor
3d Bde, 1st Cav Div
Ft. Hood, Texas

Tanks: "No Better Investment"

Dear Sir:

The Commander's Hatch article, "An Armored Force for the Future, 2000 and Beyond — Technology," by MG Thomas C. Foley, in the September-October issue of *ARMOR*, was excellent — timely and informative. We share his concern about an armored force for the future. However, we fear that decisions being made today may erode our nation's ability to ensure that "America's Army" remains the best equipped fighting force in the world.

While we share his concern for the future, we look at the issues a bit differently than General Foley. We leave the war fighting strategies to leaders like him who know far bettter than we how to successfully engage an enemy. But, from an industrial view, we know how to produce the kind of superior equipment warriors need to dominate the battlefield. Sometimes, however, warriors insist on directing the process. History is replete with examples of successes and failures, with valuable lessons from each.

Before the M1-series Abrams main battle tank (MBT), which was designed in the mid-1970s, the most striking examples of armored success were the M48 and M60 tanks, which represented an evolutionary approach to acquisition; each grew out of predecessor tanks. Revolutionary approaches that failed, such as the Shillelagh Gun System and the MBT 70, provide sharp contrast; the Shillelagh was never successfully fielded and the MBT 70 was never fully developed.

More recently, the M1-series MBT began with a program management concept that represented the first time the Army allowed industry to design, develop and build an MBT starting with a clean sheet of paper. This approach reduced the systems development period to six years (previously 9-12 years), produced an MBT that exceeded the Army's expectations, proved itself to be unrivaled in Gulf War combat, and is the envy of the world.

Unfortunately, because of fiscal constraints, the government is about to risk this proven approach by jeopardizing the industrial/technological base that is necessary for our nation to retain its ability to build tanks. Other major industrial nations, e.g., France, Germany, Great Britain, and Japan, are already entering production for domestic and international customers with new model MBTs, while our Defense Department seems prepared to let its MBT production line sit cold until the next tank is fielded as part of ASM. Given the foreseeable budgetary constraints, even under the most optimistic projections, it's unlikely the $60 billion ASM program will be fielded in the next 15-20 years. That's an intolerable gap that flies in the face of historical lessons. Unless the United States fields M1A2 tanks, it will soon no longer be able to boast that its soldiers have the best MBT in the world — and there is no get well date if the Army does not take steps now to change its course.

As the Army Chief of Staff said in the January issue of *ARMY* magazine, the Army is often "...criticized for fighting the last war." Unfortunately, too many people have drawn the wrong conclusions from the Gulf War. They are willing to let our soldiers get by with less capable "good enough" older Abrams tanks that will be 30 years old by the turn of the century, without assurance that we can or will field a next generation tank. The realistic answer is to field M1A2 tanks that are already in pilot production and to modernize existing M1 tanks by upgrading them to M1A2 configuration.

As a logical approach to force modernization, the M1 to M1A2 conversion offers revolutionary capabilities at affordable evolutionary prices. It also preserves the industrial/technological base, and sends an important message to the international community. At a time when "America's Army" is going to operate with only 75 percent of its current force, we need to make sure our soldiers and Marines have the latest and greatest battlefield technology. An affordable M1 to M1A2 conversion program would mitigate potential catastrophes to the MBT program and the industrial/technological base, and assure that we continue to have the world's best main battle tank as the centerpiece of the Army's force structure well into the 21st Century.

We are convinced that a continued evolutionary approach through the M1A2 and conversion programs makes economic, industrial, and military sense. It is a historically sound approach that is a logical bridge to the next generation tank. The U.S. Congress has approved the program and provided start-up funds in the FY 91 and FY 92 budgets. We hope the DOD and Army leadership consider these facts carefully as they formulate policies that take "America's Army" into the 21st Century. To those who say "we can't afford it," I say that's absurd. What are you going to spend your money on, aviation and missiles? The main battle tank is the heart of the Army's close combat capability, second only to its soldiers in importance. You can make no better investment!

GEORGE P. PSIHAS
Vice President - General Manager
General Dynamics
Land Systems Division
Warren, Mich.

The More Things Change...

Dear Sir:

In reading the article "Designing a Live-Fire Exercise for Scout Platoons" by MAJ Tim Edinger in the July-August 1991 issue, I was suddenly thrown back 15+ years to Fort Hood, Texas. At that time, the 1-9th Cavalry (hard to believe it is the same unit!) pioneered the cav platoon live-fire exercise (with mortars, Cobras, etc.) at Fort Hood. There was even an article written on the effort — "Air Cav, Ground Cav" in *Aviation Digest* (sometime in the fall of 1976). As the action officer for that project — and the author of the article — I could really have used the information in MAJ Edinger's article!

On the other hand, if he is going to do this again, he might find reviewing that bit of ancient history interesting!

FRAME J. BOWERS III
LTC, AV, USAR
Terrace Park, Ohio

Application of M1-Series Fire and Safety MWOs

Problems recently have been encountered in tracking application of various Modification Work Orders (MWOs). The previous system of recording MWOs on DA Form 2407 and forwarding this information to a Materiel Readiness Support Activity (MRSA) data base ceased October 1989, leaving no system tracking MWO application. To resolve this problem, PM Abrams is now using depot and contractor teams to apply and verify completion of Abrams MWOs. PM Abrams teams will apply all MWO levels, with one exception — units may still request to apply through their local MWO coordinator.

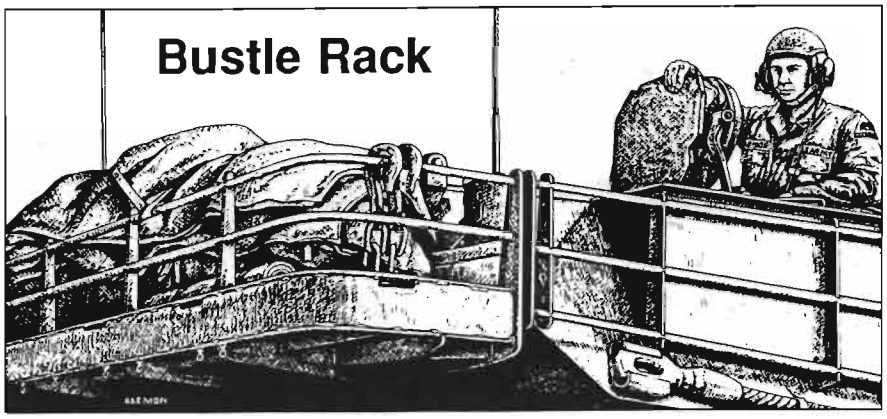
PM Abrams, through Division Materiel Management Centers (DMMCs), is now staffing time line proposals for application of new MWOs. A new MWO verification system called Modification Work Order Application Completion System (MODACS) has been developed and went on line 15 November 1991. The MODACS system will track MWOs that are applied from 15 November 1991 forward, but will not track MWOs applied before that date.

To bring the Abrams fleet up to date, a Chief of Armor memo went to each Armor unit in mid-January, requesting that units verify which fire and safety MWOs have or have not been applied to their vehicles. This information will go back to the Armor Center's Directorate of Total Armor Force Readiness, which will coordinate with the Abrams Program Manager to verify fleet application.

For more information concerning this article or for a copy of the current M1 fire and safety MWOs, please write Directorate of Total Armor Force Readiness, ATTN: ATZK-TFR (SFC Thomas), Ft. Knox, Ky. 40121-5000 or phone DSN 464-4847 or 464-TANK, commercial (502) 624-TANK.

TRADOC Systems Manager Hotline

Because the Army relies heavily on field input in its efforts to modernize doctrine, equipment, and support for the soldier, the Training and Doctrine Command Systems Manager-Soldier now has a 24-hour hotline.



The hotline gives soldiers and commanders a voice in deciding what a soldier wears, carries, or consumes in a tactical environment.

Recommendations to improve battlefield capabilities of lethality, command and control, survivability, sustainment, and mobility are being sought as recommendations on lightening the soldier's load.

To make recommendations, call the hotline at commercial (404) 545-1245 or DSN 835-1245.

These numbers will be used until a toll free line can be established.

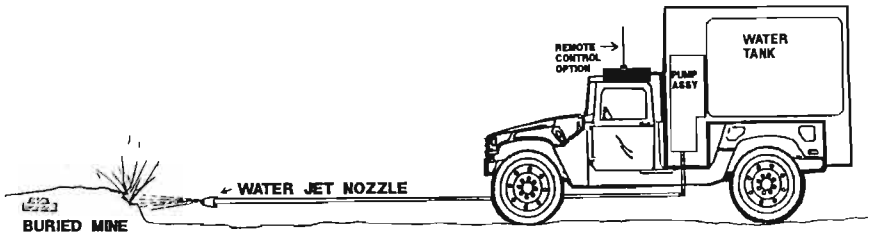
215th Armor Ball

Armor officers and their ladies throughout the greater Washington area will gather in honor of the Combat Arm of Decision Saturday, March 28, 1992, at the 215th Anniversary Armor Ball.

This year's event, hosted by the Creighton W. Abrams Chapter of the U.S. Armor Association, will be held at the Bolling Air Force Base Officer's Club at 6:30 p.m.

The theme for the 215th Armor Ball is the "50th Anniversary Commemoration of World War II and the Dedication of the Armored Forces Monument." Colonel (Ret.) Fred Greene will be the master of ceremonies, and General Frederick M. Franks Jr., commander of Training and Doctrine Command, will be the guest speaker.

The deadline for reservations is March 11. For more information, call CPT W.S. deCamp at (703) 325-9696.



Water Jet System Could Clear Minefields

An engineer at the U.S. Department of Energy's Sandia National Laboratory in Albuquerque, N.M. has proposed using high pressure water jets to clear minefields. At least one company hired to clear minefields in Kuwait has expressed interest in the technique, originally developed for mines of another kind.

The technology is being used in coal mining to cut through rock and also for cutting concrete. Engineer Mike Ford proposed that high pressure water jets could expose and deactivate buried land mines, which have hampered oil well firefighters in Kuwait and have rendered many areas of the Falkland Islands still uninhabitable. Tests indicate the concept works.

Ford envisions a lightly armored vehicle with a water tank, a pump, and a barrel capable of aiming the water jet at areas in front of the vehicle. A low pressure nozzle — about 10,000 PSI — can erode the soil around the mine, exposing it so that a higher pressure spray (60,000 PSI) can cut the mine apart or wash it out of the way, depending on its composition. Plastic and wooden mines disintegrate under this pressure; steel-cased mines do not. Even if a mine is detonated, the vehicle would be far enough away to avoid damage from the explosion, according to the test results.

A 122-HP pump driving a single nozzle system is capable of clearing an 8-foot-wide by 100-meter-long strip to a depth of four inches in less than 15 minutes. When no hostilities exist, the vehicle could be operated by a driver, but in combat situations, the vehicle might be operated by remote control.

Incursion: From America's Choke Hold on the NVA Lifelines to the Sacking of the Cambodian Sanctuaries by J.D. Coleman. St. Martin's Press, 1991.

This is a great book, but one I have mixed emotions about. On the one hand, it has several superb elements. On the other, it has serious limitations that restrict the book's usefulness and audience.

Several themes are interweaved through the story. The first (and main) theme is that the period from 1969 to 1972 is not treated properly by historians yet is a crucial time in the war. The second is the General Creighton Abram's strategy of interdiction and pacification was a certain war-winner and, had it been tried earlier, could have had a far-reaching effect on the outcome of the war. The third theme, or rather story, is a history of the 1st Cavalry Division during the years mentioned. The fourth is the story of the Cambodian invasion; a lengthy discussion of the prelude and a presentation of the nitty-gritty part of the combat. The final theme concerns how the decisions made at all levels affected the soldiers in the field.

Coleman has provided a well-written, exciting war story that acquaints the reader with the war in one crucial area of Vietnam using a journalistic style that is fluid and highly readable. He covers not only the successes that the Americans (and their South Vietnamese allies) had, but also the abysmal failures. In these, he is not sparing of the blame. There are heroes to admire in the story (GEN Creighton Abrams, GEN George Casey, and most importantly, the soldiers of the First Team) and there are villains to despise (LTG Julian Ewell, Henry Kissinger, Richard Nixon, Melvin Laird).

The negatives are few but at times serious. The first is that the maps do no support the text or are not located near the appropriate portions of the text. As an example, the battle around Firebase Grant is critical to the success of the interdiction campaign. Yet you cannot find it on the map where the others are listed. The development of the ferocious fighting around the firebases is exciting, but Coleman's valiant attempts to recognize the sacrifices of the American soldier can occasionally detract from the flow of his argument. Finally, and this is the most serious failing of the book, *you cannot check the facts as listed in the text because there are no footnotes!* What this means is that the book cannot be treated as anything more than a popular history of the war. It is a style those with a journalistic background use to their great detriment and it limits the utility of a book that might otherwise be called a classic.

So what's the bottom line? I plan on going out to find a copy of his other book — *Pleiku: The Dawn of Helicopter Warfare.* My knowledge of the period covered by both books is limited. Coleman provides a way to rapidly acquire the basics. I would use him sparingly, however, to buttress an argument.

Michael Cannon
Ft. McPherson, Ga.

The Savage Wars of Peace: Soldiers' Voices, 1945-1989 by Charles Allen. Penguin Group, London, England, 1990, $22.95. 290 pages.

Buy this book. Where was this book when low intensity conflict (LIC) was the military buzzword? When all energy was directed towards planning for some future backwater conflict? When lightening the armed forces was the focus of strategy and budgeting?

Charles Allen's book, *The Savage Wars of Peace,* proves there is nothing low about the intensity of combat at any level, especially not if you are in it. While normally peace makes poor reading, Allen's book chronicles Great Britain's savage wars of peace from 1945 to 1989, when British soldiers and Royal Marines fought somewhere every year but the year 1968. Allen has produced a magnificently exciting and insightful soldiers' history of those bloody wars. Because no major world war has been fought since 1945, most people still believe we must be at peace. Great Britain, however, was undergoing significant change within its empire and with its relations with other nations. During those years (and into today), British troops have fought lengthy, violent wars around the world, in jungles, deserts and cities. For the British soldier there has been no peace.

The author, Charles Allen, is an accomplished writer and historian. He has researched the savage wars extensively, using a format of oral history which brings the soldiers' own words into sharp and biting focus. While the author provides the lucid background and continuity, the soldiers actually tell their own story. Their collective experience and insight covers war in Indo-China and Palestine, Malaya, Kenya, Cyprus, Brunei, Borneo, Aden, Oman and Northern Ireland. That is quite a menu, but Allen covers it well, from the political and operational perspective of the commanding general and battalion commander, to the eyeball raid and ambush view of the corporal and rifleman. He also skillfully reinforces the text with numerous photos and well-drawn maps.

Of all these wars, the only one not satisfactorily concluded were Cyprus and Northern Ireland. The British's greatest success was in Malaya (1948-1960), fighting against communist insurgents. Allen shows clearly how the British thought about fighting in the LIC environment, pointing out their mistakes and successes against an always elusive enemy. It is interesting to note that as the years pass, from 1945 to 1989, the media and public opinion assume a greater role in political and even tactical decision-making. For example, in Malaya there was no media coverage of the war, as directed by the government. The military were able to conduct operations without media interference, without media second-guessing, and without media efforts to shape of shift popular support for either side. The result was a totally successful LIC "small war" which eradicated the communist problem entirely.

As the years pass, however, British military operations become more and more encumbered by political and media interference. Perhaps that is a major reason why British troops are still fighting in Northern Ireland. Of course, the British soldier also finds himself being used as a military solution to a political problem in many cases, like Cyprus and Kenya. But the real value of *The Savage Wars of Peace* is in the soldier's stories. They tell us how to properly fight and win a "small war," using aggressive patrols and ambushes, winning the "hearts and minds" of the local, perfecting individual combat skills and especially small unit (NCO) leadership and initiative. Interestingly, throughout all the savage wars of peace, the British soldier behaved with remarkable restraint and mercy towards enemy prisoners, making friends instead of more enemies. Many prisoners captured by the British were "turned" and ended up fighting for the government forces.

This book strongly reinforces proven lessons for victory in a LIC operation: Adapt, don't compromise; make enemies only on purpose; be constantly on the offensive; and maximize intelligence efforts. Throughout all this, Allen has taken all the soldiers' stories and lessons and tightly woven them into interlocking bands of grazing excitement. This book is history, but remember, history used to be the future. More savage wars of peace are waiting for all of us, and Allen's book is a must read now for the professional officer. This book is also an excellent companion to *Small Wars* by Colonel Charles Caldwell (1940) and *War Since 1945* by Michael Carver (1980).

W.D. Bushnell
COL, USMC
Overland Park, Kan.

MAIN BATTLE TANKS

OF THE WORLD

M1A2

LECLERC

T80U

MERKAVA 3

TYPE 90

LEOPARD 2(I)

TYPE 90-II

CHALLENGER 2

CHARACTERISTICS

	M1A2	CHALLENGER 2	LEOPARD 2(I)	LECLERC	MERKAVA 3	TYPE 90	T80U	TYPE 90-II
COUNTRY OF MANUFACTURE	US	UK	GR	FR	IS	JP	CIS	CH
CREW COMPOSITION	4	4	4	3	4	3	3	3
WEIGHT, (mt/tus ton)	63/69.5	62.5/68.8	62.5/68.8	53.5/58.4	62/68.3	50/55.1	43/47.3	46/52.9
LENGTH, GUN FORWARD (m)	9.82	11.55	9.67	9.87	8.78	9.7	9.8	INA
WIDTH, W/SIDE PROT (m)	3.65	3.52	3.7	3.71	3.7	3.4	3.6	3.4
HEIGHT, TOP OF SIGHT (m)	2.88	2.95	2.78	2.92	2.78	2.3	2.2	INA
SPEED, MAX ON ROAD (kph/mph)	67/42	58/37	71/44	71/44	55/34	70/43	75/47	60/37
ROAD RANGE (km/miles)	465/290	450/279	550/341	500/341	500/310	300/186	500/310	400/248
MAIN WEAPON								
CALIBER (mm)	120	120	120	120	120	120	125	125
BASIC LOAD (rd)	40	52	42	40	50	40	45	39
AUTOLOADER	NO	NO	NO	YES	NO	YES	YES	YES
SECONDARY ARMAMENT								
COAXIAL MACHINE GUN								
CALIBER (mm)	7.62	7.62	7.62	12.7	7.62	7.62	7.62	7.62
TANK COMMANDER'S ARMAMENT								
CALIBER (mm)	12.7	7.62	7.62	7.62	7.62	12.7	12.7	12.7
RANGEFINDER								
TYPE	LASER	LASER	LASER	LASER	LASER	LASER	LASER	LASER
ENGINE	GAS TURBINE	DIESEL	DIESEL	DIESEL	DIESEL	DIESEL	DIESEL	DIESEL
RATED OUTPUT (hp)	1500	1200	1500	1500	1200	1500	1000	1200
NBC PROTECTION	YES	YES	YES	YES	YES	YES	YES	YES

ATSB-CD-950-1-15, Feb 92

PR-1178-O-Army-Knox-Mar 92-1C

This 24-by-27-inch poster of Main Battle Tanks of the World is the latest in a series on Threat tanks, armored vehicles, helicopters, and ATGMs to be produced by Threat Division, Directorate of Combat Developments, Fort Knox. Units may request copies by phoning DSN-464-AWTS or 502-624-AWTS.

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